JULY 2023

ENVIRONMENTAL IMPACT ASSESSMENT REPORT VOLUME 2 - APPENDICES

LARGE SCALE RESIDENTIAL DEVELOPMENT (LRD) AT DALGUISE HOUSE MONKSTOWN ROAD, MONKSTOWN, BLACKROCK, COUNTY DUBLIN

PREPARED FOR:

GEVD MONKSTOWN OWNER LIMITED
3RD FLOOR
KILMORE HOUSE
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APPENDICES

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To be read in conjunction with the relevant chapters of this EIAR.

APPENDIX 8.1

ZONE OF INFLUENCE

No.	Revision	Date	By	Chk'd	App'd

ROUGHAN & O' DONOVAN
CONSULTING ENGINEERS
ARENA HOUSE, ARENA ROAD,
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Project Title	DALGUISE HOUSE RESIDENTIAL DEVELOPMENT
Drawing Title	ZONE OF INFLUENCE
Drawing Number	Project: DHSH - Originator: ROD - Volume: ENV - Location: SW_AE - Type: DR - Role: V - Number: Fig. 2.1

Drawn: RoH	Designed: RH	Checked: PO'S	Approved: BC	Status: S3 - Review & Comment	Scale (A1) 1:40,000	Date: January 2022	Job No: 21-120	Rev: V1.0

DO NOT SCALE USE FIGURED DIMENSIONS ONLY

APPENDIX 8.2

DALGUISE HOUSE LRD HABITAT MAP


Legend
Study Area Boundary
BL3 - Buildings and artificial surfaces
FW1 - Eroding/upland rivers
GA2 - Amenity grassland (improved)
WD2 - Mixed broadleaved/conifer woodland
WD5 - Scattered trees and parkland
WL2 - Treelines
WS3 - Ornamental / non-native shrubs
0
50
100 m

APPENDIX 8.3

CAT LOW TREES TABLE

692	Beech	704	Copper Beech
753	Norway Maple	707	Sycamore
761	Eucalyptus	711	Sycamore
694	Holm Oak	714	Sycamore
695	Sycamore	478	Sycamore
696	Beech	479	Sycamore
453	Sycamore	490	Sycamore
455	Beech	483	Austrian Pine
456	Horse Chestnut	484	Austrian Pine
457	Horse Chestnut	489	Sycamore
458	Beech	500	Scot's Pine
742	Wallnut	563	Copper Beech
734	Horse Chestnut	565	Norway Maple
736	Horse Chestnut	566	Sycamore
739	Norway Maple	569	Sycamore
740	Lodgepole Pine	571	Hybrid Black Poplar
741	Eucalyptus	557	Monterey Cypress
772	Norway Maple	558	Monterey Pine
773	Eucalyptus	560	Sycamore
777	Eucalyptus	549	Sycamore
778	Lombardy Poplar	553	Silver Birch
763	Eucalyptus	542	Sycamore
764	Eucalyptus	544	Norway Maple
765	Eucalyptus	545	Monterey Pine
766	Eucalyptus	514	Scot's Pine
726	Sycamore	516	Silver Birch
715	Austrian Pine	500	Scot's Pine
717	Austrian Pine	510	Blue Gum
653	Beech	511	Blue Gum
633	Sycamore	513	Lawson Cypress
635	Austrian Pine	484	Austrian Pine
641	Monterey Pine	485	Sycamore
642	Beech	486	Norway Maple
588	Beech	490	Sycamore
579	Sycamore	460	Lime
574	Sycamore	461	Sycamore
575	Sycamore	465	Sycamore
578	Monterey Cypress	466	Sycamore

APPENDIX 8.4

GREY HERON CONSERVATION PLAN

(PREPARED BY ROD, DATED SEPTEMBER 2022)

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Dalguise House Large-Scale Residential Development, Monkstown, Co. Dublin

Grey Heron Conservation Plan

September 2022

<u>Client:</u>
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ROD
ROUGHAN & O'DONOVAN

Dalguise House Large-Scale Residential Development

Grey Heron Conservation Plan

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1. INTRODUCTION

1.1 Background

Roughan & O'Donovan (ROD) was commissioned by GEDV Monkstown Owner Ltd ("the Applicant") to prepare this Grey Heron Conservation Plan, as requested by the National Parks & Wildlife Service (NPWS) in their pre-planning consultation submission, to inform the planning application for the Dalguise House Large-Scale Residential Development (LRD) ("the proposed development") in Monkstown, Co. Dublin.

The proposed development site is located approximately 300 m to the west of Monkstown Village and 240 m south of Seapoint Beach. The site is 3.58 ha in area, predominantly rectangular in shape and currently in use as a private dwelling.

The overarching aim of this conservation plan is to maintain and enhance the conservation condition of the Grey Heron population at Dalguise House. In order to ensure that the approach to Grey Heron conservation management set out in this plan is evidenced-based, it describes in detail the current understanding of the Grey Heron population at Dalguise House and the wider South Dublin area and provides for adaptive implementation based on continued monitoring of this population.

The EIAR identified potential for short-term and permanent impacts on the heronry on the grounds of Dalguise Houseas a result of the proposed development. The impacts on Grey Heron include habitat loss and habitat degradation during the construction phase and habitat degradation, disturbance and direct mortality during the operational phase. Grey Heron is protected under the Section 40 of the Wildlife Act, 1976 (as amended) ("the Wildlife Act"). This conservation plan was prepared to ensure the long-term maintenance and enhancement of the heronry at Dalguise House.

The following guidance documents have been used for reference and guidance in the preparation of this conservation plan:

- *Guidelines for Ecological Survey Techniques for Protected Flora and Fauna during the Planning of National Road Schemes* (NRA, 2008)
- *CBS Manual Guidelines for Countryside Bird Survey participants* (Birdwatch Ireland 2012)
- *Bird Atlas 2007-11* (British Trust of Ornithology, 2011)
- *Birds of Conservation Concern in Ireland 2020-2026 (*Gilbert, Stanbury, & Lewis, 2021).

Mitigation and monitoring described in this document are identical to those described in the EIAR for the proposed development. Therefore, this Grey Heron Conservation Plan may be treated as a standalone document.

1.2 Site Description

The proposed development site, currently in use as a private dwelling, is bordered and divided by a network of hedgerows and mature treelines and linear woodlands. It is bounded to the south, east and west by residential developments and to the north by the Stradbrook Stream, residential developments and Monkstown Road. The surrounding area is dominated by suburban residential development. It is within the catchment of the Stradbrook Stream, which flows east-west and eventually discharges into Dublin Bay. The Stradbrook Stream is characterised by artificial embankments along most of its length. The stream is highly modified and is culverted until it reaches its outfall at the west pier in Dún Laoghaire. The EPA have no monitoring points and it is not assessed under the Water Framework Directive. The coastal waterbodies of Dublin Bay are monitored by the EPA. The site contains good quality habitat for bats and bird species. An established heronry exists in the mature trees along the western site boundary.

The following describes the habitats recorded during field surveys in 2021. A total of seven habitats were recorded within the study area. Table 1-1 lists the habitats recorded. Habitats were classified according to *A Guide to Habitats in Ireland* (Fossitt, 2000). No Annex I habitats were recorded.

Table 1-1 Habitats recorded within the study area

Habitat Name	Fossitt Code
Buildings and Artificial Surfaces	BL3
Eroding/Upland Rivers	FW1
Amenity Grassland (Improved)	GA2
Mixed Broadleaved/Conifer Woodland	WD2
Scattered Trees and Parkland	WD5
Ornamental/ Non-native Shrubs	WS3
Treelines	WL2

2. GREY HERON

2.1 Ecology and Distribution

Grey Heron (*Ardea cinerea*) is the only species of the *Ardea* genus in Ireland. The species is widespread throughout Ireland and are a common resident at wetlands, estuaries and along rivers and are easily identified by their large size, grey plumage and dagger-shaped yellow bill (Figure 1-1). They fly with slow, irregular beats and their loud, harsh croaking is often heard in flight.

Grey Heron breed either in colonies or solitary, in woodlands with tall trees adjacent to lakes and brackish sea-bays. Grey Heron feed along the edge of a wide range of wetland habitats from coastal waters and estuaries to loughs, streams, and marshy grounds. Their diet consists of fish, amphibians, small mammals, insects, and reptiles.

During the wintering season, Grey Heron are found in the same wetland habitats as in the breeding season. Individuals breeding in Ireland are thought to be sedentary and any migrants from Britain and Scandinavia join our resident population for the winter. The Irish Wetland Bird Survey (I-WeBS) which monitors overwintering waterbird populations, estimated the Grey Heron population size in the Republic of Ireland to be 1,943 between 2011 – 2016 (Lewis et al., 2019). According to I-WeBS, Grey Heron numbers have shown a gradually increasing trend between 1994 – 2016. The current breeding population of Grey Heron in Ireland are estimated to be 4,000 breeding pairs.

Booterstown Marsh is the only remaining area of saltmarsh in Dún Laoghaire-Rathdown. This area is an important roosting and feeding area for Grey Heron, who use the young fish taking refuge in the area as a food source. Between the East Pier and the old Dún Laoghaire baths, Grey Heron are often observed during bird watching activities, notably during the wintering season, when many different individuals can be found in one location. This area represents an important habitat for Grey Heron in Dublin.

Figure 1-1 Grey Heron – © BirdWatch Ireland

2.2 Conservation Status and Legislative Protection

Grey Heron are currently listed on the Green List of the fourth assessment of *Birds of Conservation Concern in Ireland* (BoCCI4) (Gilbert et al., 2021). Their Green List status has not changed from the third assessment of *Birds of Conservation Concern in Ireland* (BoCCI3) (Colhoun & Cummins 2013).

Grey Heron are protected under Section 40 of the Wildlife Act. As such, it is an offence to deliberately destroy vegetation on uncultivated land during the bird nesting season, which takes place annually from 1st March – 31st August.

The *Dún Laoghaire-Rathdown Biodiversity Action Plan 2009-2013* identified Grey Heron as a species which required further survey work to assess their current conservation status and proposed action to support/undertake survey work to prepare an inventory of heronries for the county.

The current *Dún Laoghaire-Rathdown County Biodiversity Action Plan 2021-2025* continues to include survey work as an important action of *Objective 1: "Strengthen the knowledge base for conservation, management and sustainable use of biodiversity".* This action plan also sets outs goals for conserving important habitats for biodiversity, which are laid out under *Objective 3: "Conserve and restore biodiversity and ecosystems, and support ecosystem services in DLR, including coastal and marine".*

3. CURRENT PRESSURES AFFECTING GREY HERON

Grey Heron is a widespread, adaptable and globally abundant species. They are not listed as a conservation concern in Ireland or at the European level and populations are considered secure. The IUCN-SSC (International Union for the Conservation of Nature–Species Survival Commission) Heron Specialist Group has stated that the European populations are likely at carrying capacity and are now being influenced by winter conditions and the availability of habitat rather than human activity and habitat destruction.

The influence of winter conditions on Grey Heron is supported by *Review of the Derogation Process under Article 9(1)(a) of the EU Birds Directive* (Crowe et al., 2018) which reported a short-term decline in Grey Heron populations in Ireland during three cold winters between 2009/10 – 2011/12. Nonetheless, trends in wintering populations illustrate stable increases overall.

3.1 Habitat Degradation

Grey Heron are an important wetland bird and play a vital role in maintaining the balance of wetland ecosystems. Wetlands cover a significant proportion of Ireland, making up 5% of Ireland's total land cover. As of 2018, Ireland holds one the largest shares of total wetland cover in the EU Member States. In November 2021, Wetland Surveys Ireland mapped 182 wetlands in Dublin, although the inventory of wetlands in Dublin is incomplete. Despite the proportionally large area of wetlands in Ireland, there are several threats to Irish wetlands, and consequently, Grey Heron habitat. Threats to wetlands include peat extraction, drainage for water extraction, agriculture, private forestry and industrialisation. Development also poses a threat to wetland habitats due to the increased potential for flooding, biodiversity loss, pollution and industrial and agricultural run-off.

3.2 Disturbance

There is little research on the impact of human disturbance to Grey Heron in Ireland. A study by Jakubas & Manikowsha-Slepowronska (2012) examined the response of Grey Heron to frequent human disturbance in a large heron colony in Poland between 2009 and 2012. The study found evidence showing increases in egg losses and decreases in the density of occupied nests following increases in area of land covered by buildings within 200 m of the colony section perimeters. It is acknowledged that Grey Heron are known to breed regularly in proximity to human residences (Kushlan & Hafner, 2000) and responses to disturbance can vary among individuals.

4. POTENTIAL IMPACTS OF THE PROPOSED DEVELOPMENT

The EIAR that was prepared in respect of the proposed development identified several potential impacts of its construction and operation on the local Grey Heron population. These impacts are described below.

4.1 Habitat Loss and Degradation

The design of the proposed development has been undertaken in consultation with an Arborist with a view to retaining as many mature trees as possible. Nevertheless, the proposed development will lead to some habitat loss in order to facilitate the construction of the buildings, roads, paths and services.

4.2 Increased Disturbance

Construction of the proposed development will result in temporary noise, vibration, lighting and visual disturbance and will affect species both within outside the construction footprint. In addition to this, proposed boundary walls will create an exclusion barrier for species within and adjacent to the site.

Following the completion of the proposed development, the volume of pedestrian and vehicle traffic to the site is expected to increase. This, along with the introduction of artificial lighting will inevitably lead to increase instances of disturbance and thus an overall reduction in habitat quality.

4.3 Direct Mortality

Direct mortality is possible as a result of site clearance, tree felling and vegetation removal. Grey Heron are vulnerable during the nesting season (1st March – 31st August) when construction works could lead to the loss of nests.

During the operational phase of the proposed development, the windows of the buildings could lead to bird mortality through collision. The risk of this depends on a variety of factors including the local bird population density, the bird species present, landscape conditions and the building design.

5. MITIGATION PROPOSED IN THE EIAR

A range of measures were detailed in the EIAR to prevent, minimise and compensate for the impacts on Grey Heron arising from the proposed development, as described in Sections 3 and 4, of this report.

5.1 General Mitigation Measures

The relevant construction phase mitigation measures are reproduced below:

- **B_1** The contractor will appoint a suitably qualified Ecological Clerk of Works (ECoW) for the duration of the construction contract to ensure that the mitigation and monitoring proposed in this chapter are implemented during the construction phase.
- **B_2** Any lighting being used at night on site during construction should be considerate of the impacts it might have on nocturnal species in the area. The lights will not be left on overnight. If lighting is required during construction the lights will only be illuminating work areas when necessary and will avoid illuminating any woodland habitats and trees.
- **B_3** Trees which are being retained will be protected by fencing in accordance with BS 5837:2012, as defined in the *'Tree Survey, Arboricultural Impact Assessment and Tree Protection Scheme to BS 5837:2012'* report, which is included as part of the planning application. See *Part 5 – Tree Protection Scheme* of the report for full descriptions of the tree protection measures that will be implemented during the construction phase of the proposed development. An Arborist be retained as required by the principal contractor to monitor and advise on any works within the Root Protection Area (RPA) of retained trees to ensure successful tree retention and planning compliance. All recommendations contained in the '*Tree Survey, Arboricultural Impact Assessment and Tree Protection Scheme to BS 5837:2012'* will be followed.

- **B_31** The public lighting has been designed will comply with the following:
  - o Lux levels on roads and paths will be set to the minimum required by BS 5489-1:2013, P4.
  - o Bollard lighting will be used in wooded areas which will avoid light spill above the horizontal.
  - o Lighting outside the intended area of illumination will be minimised. Where light spill cannot be avoided, louvres, cowls or shields will be fitted to the columns.
  - o Lighting will be LED and have no upward light spill (apart from intentional up-lighting) and a sharp horizontal cut off.
  - o Lighting will be a warm-white colour of 3000K or less.
  - o There will be no lighting on the pond.
  - o Up-lighting will be limited to discreet points of interest.

5.2 Specific Mitigation Measures

Mitigation measures specific to Grey Heron include the following:

- **B_40** Site clearance during construction and tree and shrub maintenance during operation will take place outside the nesting bird season (1st March - 31st August inclusive). If site clearance is required during the nesting bird season, the area will be checked by a suitably qualified ecologist. If nesting birds are found to be present, the site clearance works will cease until the chicks have fledged, or, until the NPWS have been consulted to determine the course of action.
- **B_41** In order to protect the heronry from disturbance which could lead to nest abandonment, no site clearance works will commence during the pre-nesting and nesting season (February- July). The absence of active nests will be confirmed by the ECoW.
- **B_43** Fencing will be erected around the trees containing the heronry within the site as part of the tree protection plan. These will also serve to reduce disturbance close to the trees. The tree protection fencing will be retained for the duration of the construction phase.
- **B_49** The heronry will be surveyed during the breeding season for three consecutive years. The tree number of each tree containing a nest will be recorded (using the numbering convention in the tree report for this application), and any signs of activity will also be recorded. The results will be sent to the NPWS and Dún Laoghaire Rathdown County Council following each survey. Should a noticeable decline in the heronry be discovered, protective measures will be put in place, in consultation with the NPWS.

6. TARGETS AND ACTIONS

This Grey Heron Conservation Plan is important to ensure the long-term viability of the heronry. The following is a list of targets to protect and enhance the Grey Heron population:

1. To reduce the impacts on Grey Heron during construction of the proposed development.
2. To maintain the existing habitats for Grey Heron.
3. To ensure habitat connectivity between the Dalguise House heronry and Booterstown Marsh by encouraging natural behaviour and not impeding flightlines.
4. To monitor the population of Grey Heron.

Table 1. Specific actions, corresponding targets and responsible parties.

Action	Target	Party Responsible
A suitably qualified Ecological Clerk of Works (ECoW) will be employed during the construction phase.	1, 2, 3, 4	GEDV Monkstown
Site clearance will take place outside the nesting bird season (1st March - 31st August inclusive). If site clearance is required during the nesting bird season, the area will be checked by a suitably qualified ecologist.	1, 2	ECoW
In order to protect the heronry from disturbance which could lead to nest abandonment, no site clearance works will commence during the pre-nesting and nesting season (February – July).	1, 2	ECoW
Fencing will be erected around the trees containing the heronry within the site as part of the tree protection plan. These will also serve to reduce disturbance close to the trees. The tree protection fencing will be retained for the duration of the construction phase.	1, 2, 3	Arborist, ECoW
Tree felling during site clearance and phased tree felling should be supervised by a suitably qualified ecologist to ensure herons have time to leave the areas being felled.	1, 2, 3	Arborist, ECoW
The Construction Environmental Management Plan should identify and protect selected tree features.	1, 2, 3	GEDV Monkstown, ECoW
Public signage should be used to deter members of the public from feeding Grey Heron.	3, 4	GEDV Monkstown, Public
The heronry will be monitored for three consecutive years following the completion of the proposed development.	4	GEDV Monkstown,
This conservation plan should be updated annually following monitoring of Grey Heron at the site.	4	GEDV Monkstown

7. REFERENCES

BirdWatch Ireland (2012). *CBS Manual Guidelines for Countryside Bird Survey Participants.*

BSI (2012) *Trees in relation to design, demolition and construction – Recommendations*. British Standards Institution.

BTO, (2011). *Bird Atlas 2007-11.* British Trust of Ornithology.

Colhoun, K., and Cummins, S. (2013). *Birds of Conservation Concern in Ireland 2014-2019*. Irish Birds 9:523-544.

Crowe, O., Goggins, G., McLoughlin, D., (2018) *Review of the Derogation Process under Article 9(1)(a) of the EU Birds Directive.*

DLRCC, (2021). *Dún Laoghaire-Rathdown County Biodiversity Action Plan 2021-2025*.

DLRCC, (2009). *Dún Laoghaire-Rathdown Biodiversity Action Plan 2009-2013*

Fossitt, J. (2000). *A Guide to Habitats in Ireland.* The Heritage Council, Kilkenny.

Gilbert, G., Stanbury, A. and Lewis, L. (2021). *Birds of Conservation Concern in Ireland 2020-2026*. Irish Birds 9:523-544.

Jakubas, D., Manikowsha-Slepowronska, B., (2013) *Response of Grey Herons (*Ardea cinerea) *to human disturbance in a suburban village in Poland. Ornis Fennica*, **90:** 86-93.

Kushlan, J.A., Hafner, H., (2000). *Heron Conservation.* Academic Press, California, San Diego, USA.

NRA, 2008 *Guidelines for Ecological Survey Techniques for Protected Flora and Fauna during the Planning of National Road Schemes*. National Roads Authority, Dublin.

Wildlife Act, 1976, No. 39 of 1976.

Wildlife Act, 1976 (Protection of Wild Animals) Regulations, 1990, SI No. 112/1990.

Wildlife (Amendment) Act, 2000, No. 38 of 2000.

Wildlife (Amendment) Act, 2012, No 29 of 2012.

APPENDIX 8.5

INVASIVE ALIEN SPECIES CONTROL AND MANAGEMENT PROGRAMME

(PREPARED BY ROD, DATED SEPTEMBER 2022)

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Dalguise House Large-Scale Residential Development, Monkstown, Co. Dublin

Invasive Alien Species Control and Management Programme

September 2022

<u>Client:</u>
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Dalguise House Large-Scale Residential Development

Invasive Alien Species
Control and Management Programme

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1. INTRODUCTION

1.1 Background

Roughan & O'Donovan (ROD) was commissioned by GEDV Monkstown Owner Ltd ("the Applicant") to prepare this Invasive Alien Species Control and Management Program to inform a planning application for the proposed Dalguise House Large-Scale Residential Development (LRD) ("the proposed development") in Monkstown, Co. Dublin.

During the initial ecological surveys of the site, which were carried out in 2021 and 2022, to inform the Biodiversity chapter of the Environmental Impact Assessment Report (EIAR) for the proposed development, invasive alien plant species (IAPS) were identified within the footprint of the proposed development. In the absence of appropriate management, there is a significant risk that IAPS will continue to spread, either independently of or assisted by construction or operational activities associated with the proposed development.

The continued presence of IAPS within the footprint of the proposed development or the spread of such species to, from or within the site poses a significant threat to l biodiversity. Furthermore, the introduction or spread of invasive species, particularly IAPS listed on the Third Schedule to the European Communities (Birds and Natural Habitats) Regulations, 2011 (as amended) ("the Habitats Regulations"), poses a risk to the proposed development itself, as, in the absence of appropriate preventative measures, any such introduction or spread would constitute an offence under Section 49 of the Habitats Regulations.

The *Dún Laoghaire-Rathdown County Development Plan 2022-2028* (DLRCC, 2022) sets out the policy objectives and the overall strategy for the proper planning and sustainable development of the county over the plan period. The plan sets out an approach centred on the core principle of sustainability with a focus on creating vibrant, liveable, climate resilient communities. The following policy is relevant in relation to invasive species:

> *"**GIB28:** To prepare an 'Invasive Alien Species Action Plan' for the County which will include actions in relation to Invasive Alien Species (IAS) surveys, management and treatment and to also ensure that proposals for development do not lead to the spread or introduction of invasive species. If developments are proposed on sites where invasive species are or were previously present, the applicants will be required to submit a control and management program for the particular invasive species as part of the planning process and to comply with the provisions of the European Communities Birds and Habitats Regulations 2011 (S.I. 477/2011)."*

Invasive species are also discussed under Objective 2 of the *Dún Laoghaire-Rathdown County Biodiversity Action Plan 2021 – 2025* (DLRCC, 2021) under Action 2.4:

> *"**Action 2.4:** Produce an Invasive Alien Species (IAS) Action Plan and ensure the implementation and monitoring of actions."*

In order to address and manage the risks associated with IAPS, ROD have prepared an IAPS Control and Management Plan for the proposed development. This document comprises the IAPS Control and Management Plan for the proposed development and was prepared by ROD on behalf of GEDV Monkstown Owner Ltd. The intention is that this will form the basis for the plan which will be adopted if consent for the proposed development is granted.

1.2 Location

The proposed development site is located approximately 300 m to the west of Monkstown Village and 240 m south of Seapoint Beach. The site is 3.58 ha in area, predominantly rectangular in shape and currently in use as a private dwelling.

The proposed development site is bordered and divided by a network of hedgerows, mature treelines and linear woodlands. It is bounded to the south, east and west by residential developments and to the north by the Stradbrook Stream, residential developments and Monkstown Road. The surrounding area is dominated by suburban residential development. It is within the catchment of the Stradbrook Stream, which flows east-west and eventually discharges into Dublin Bay. The Stradbrook Stream is characterised by artificial embankments along most of its length. The stream is highly modified and is culverted until it reaches its outfall at the west pier in Dún Laoghaire. The EPA have no monitoring points on this watercourse and it is not assessed under the Water Framework Directive. The coastal waterbodies of Dublin Bay are monitored by the EPA.

1.3 Evaluation of Risk

Prior to preparing this IAPS Management Plan, the risk of IAPS both within and in the surrounding area was assessed. This involved the following:

- A desk study to collect existing records of IAPS within 2 km of the development boundary.
- An IAPS survey of the site of the proposed development.
- An evaluation of the risk of IAPS to biodiversity.

1.4 Purpose of this Plan

The purpose of the IAPS Control and Management Plan is:

- To prevent the spread of IAPS within and outside the proposed development boundary during the construction phase.
- To provide clear instruction and a timeline for the monitoring and eradication of IAPS within the site.
- To evaluate the risk of re-infestation from surrounding properties.

2. METHODOLOGY

2.1 Desk Study

The purpose of the desk study was to review publicly available information and recent and historical records of IAPS within the footprint of the proposed development and the surrounding area. Records of IAPS within 2 km of the proposed development were obtained from the National Biodiversity Data Centre (NBDC).

As with all desk studies, the data considered was only as good as the data supplied by the recorders and recording schemes. The recording schemes provide disclaimers in relation to the quality and quantity of the data they provide, and these were considered when examining the outputs of the desk study.

2.2 Survey Methodology

Invasive species surveys of the site were carried out on the 20th June and 5th July 2021. The entire site was walked to determine the distribution and abundance of all invasive species. Invasive plants, including species listed on the Third Schedule to the Habitats Regulations, but also other species which can negatively impact biodiversity were recorded and their distributions sketched on field maps. Target notes were taken which detailed height, density, and any signs of previous management. The locations and extents of invasive species were mapped using ArcGIS.

Standard survey methods (TII, 2020) were followed. However, any biases or limitations associated with these methods could potentially affect the results collected. Whilst every effort was made to provide a full assessment and comprehensive description of the site, it is unlikely that one survey can achieve full characterisation due to temporal variation. It is recognised that whenever a survey is carried out (within the defined season), it is a compromise, suitable for the vast majority of species, but possibly too early or too late for some species. The surveys was carried out in the months of June and July which fall within the optimal time of year for botanical surveys (April to September).

3. RESULTS

3.1 Desk Study

Table 3.1 lists the invasive species recorded within 2km of the proposed development.

Table 3-1 Records of Invasive species. Source: NBDC (2021)

Common name	Scientific name
Giant Hogweed	*Heracleum mantegazzianum*
Grey Squirrel	*Sciurus carolinensis*
Harlequin Ladybird	*Harmonia axyridis*
Japanese Knotweed	*Fallopia japonica*
Japanese Skeleton Shrimp	*Caprella mutica*
Stalked Sea Squirt	*Styela clava*
New Zealand Pigmyweed	*Crassula helmsii*
Three-cornered Garlic	*lium triquetrum*
Wakame	*Undaria pinnatifida*

3.2 Field Survey

The field surveys confirmed the presence of Grey Squirrel (*Sciurus carolinensis*) and Three-cornered Garlic (*Allium triquetrum*) within the site. These species are listed on the Third Schedule to the Habitats Regulations and, as such, Section 49 of those regulations apply to this species. Grey Squirrel is highly mobile is common and widespread in Dublin and there is no effective mitigation for this species at the site level. Three-cornered Garlic is common in gardens, riverbanks, hedgerows and woodland. This species is located in the northeast corner of the site on the bank of the Stradbrook Stream (ITM 722851 728549) as shown in Figure 3.1. Two other species, Snowberry (*Symphoricarpos albus*) and Cherry Laurel (*Prunus laurocerasus*) were recorded on the site of the proposed development. These species are common in suburban environments and parks and can negatively affect native habitats and species, however they are not subject to restrictions.

Figure 3.1 Location of Three-cornered Garlic (*Allium triquetrum*) within the proposed development boundary.

4. OVERVIEW OF THREE-CORNERED GARLIC

4.1 Ecology and Distribution

Three-cornered Garlic, also known as Three-cornered Leek, is a member of the genus *Allium*, which includes the cultivated onion, garlic, scallion, shallot, leek and chives. This is a spring-flowering bulb with bell-like white flowers on three-sided stems up to 45 cm in height (Plate 4.1). Three-cornered Garlic is native to the Mediterranean basin (i.e. South-western Europe, North-western Africa, Madeira and the Canary Islands). While it is thought to have been introduced to Ireland approx. three-hundred years ago, and has naturalised in many countries, it is considered invasive in Ireland due to its ability to colonise rapidly and dominate waste ground, thus outcompeting native vegetation (Booy et al., 2015). This species has established itself throughout Ireland, particularly in the south and southeast. There is potential for this species to spread further under the influence of a warming climate (Dowen, 2011; O'Rourke & Flynn, 2014).

Plate 4.1 Three-cornered Garlic – © Down Garden Services

4.2 Identification

The following provides a brief summary of the defining characteristics of Three-cornered Garlic:

- The stems can grow up to 60 cm in height and each stem produces a one-sided drooping umbel of white flowers. The stem is concavely triangular in shape and along the centre of each flower petal is a narrow, green line.
- The leaves give a strong, distinct garlic aroma when crushed.

It is not easily confused with other wild plants found in Ireland.

5. CONTROL AND MANAGEMENT PROGRAM

The management measures described below are based on the following guidance documents:

- TII (2020a) *The Management of Invasive Alien Plant Species on National Roads – Standard*. Transport Infrastructure Ireland, Dublin.
- TII (2020b) *The Management of Invasive Alien Plant Species on National Roads – Technical Guidance.* Transport Infrastructure Ireland, Dublin.
- TII (2010). *The Management of Noxious Weeds and Non-Native Invasive Plant Species on National Roads, Ireland*: National Roads Authority.

5.1 General Control and Management Procedures

In order to minimise risk of introduction or spread of IAPS during construction, all works shall be executed in accordance with best practice for biosecurity in construction. In particular, prior to commencement, the Contractor shall prepare a detailed Bio security Protocol describing his/her proposed approach to ensuring that IAPS are not imported or spread during the construction of the proposed development. The Contractor's Biosecurity Protocol shall be in accordance with *The Management of Invasive Alien Plant Species on National Roads – Technical Guidance* (TII, 2020) and subject to approval by the Ecological Clerk of Works (ECoW) prior to its acceptance and implementation. The Biosecurity Protocol shall include, as a minimum, the following measures to prevent the spread of invasive species:

- **B_51** All plant and equipment employed on the construction site (e.g. excavators) will be thoroughly cleaned down using a power washer unit prior to arrival on site to prevent the spread of IAPS.
- **B_52** All washing must be undertaken in areas with no potential to result in the spread of IAPS, as detailed in the Construction Environmental Management Plan.
- **B_53** Any soil and topsoil required on the site will be sourced from a stock that has been screened for the presence of any IAPS and where it is confirmed that none are present.

5.2 Specific Control and Management Procedures

The known infestation of Three-cornered Garlic should be eradicated prior to commencement of construction. The measures outlined below shall be followed to eradicate this species from the site:

- **B_54** In advance of the works, the extent of Three-cornered Garlic established will be fenced off. Under the direction of the ECoW, the bulbs will be excavated by hand to avoid damaging the roots of nearby trees.
- **B_55** The bulbs will be broken up using a spade and buried on site to a minimum depth of 1 m.
- **B_56** The site will be resurveyed the following year to check if any plants have re-established. If Three-cornered Garlic is found, the process will be repeated until none re-appear.

- **B_57** If the infestation of Three-cornered Garlic cannot be eradicated prior to construction, it should be fenced off at the outset and the access prohibited except for monitoring for treatment purposes. All site staff shall be made aware of the Contractor's Biosecurity Protocol and receive training in the importance of good site biosecurity.

6. TRAINING AND OPERATIVE COMPETENCY

6.1 Legislative Context

It is recommended that a suitably qualified person with sufficient training, experience, and knowledge in the control of IAPS should be employed to assist in the planning and execution of control measures in relation to Three-cornered Garlic. While treating invasive species, operators must comply with all legislation regulating the treatment and management of invasive species. The relevant standards and legislation that will dictate how eradication is undertaken include:

- Waste Management Acts, 1996 to 2013, and related legislation;
- Safety, Health and Welfare at Work Act, 2005;
- Safety, Health and Welfare at Work (Construction) Regulations, 2013;
- Safety, Health and Welfare at Work (General Application) Regulations, 2007;
- European Communities (Birds and Natural Habitats) Regulations, 2011 to 2015; and,
- Wildlife Act, 1976 (as amended) ("the Wildlife Act").

6.2 Health and Safety

All works to be compliant with the Safety, Health and Welfare at Work Act, 2005 as well as the Safety, Health and Welfare at Work (General Application) Regulations, 2007. Supervision of operatives is required on site to answer any questions and visit treated areas on a regular basis to ensure that work continues to be carried out to a high standard.

7. REFERENCES

Booy, O., Wade, M. & Roy, H., (2015) A Field Guide to Invasive Plants & Animals in Britain. s.l.:Bloomsbury.

Council of Europe (1982) Bern Convention: *Convention on the conservation of European Wildlife and Natural Habitats.*

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HSA (2007). Guide to the Safety, Health and Welfare at Work (General Application) Regulations 2007; Part 4: work at heights, Ireland: Health and Safety Authority.

NBDC (2022) *Biodiversity Maps* <https://maps.biodiversityireland.ie> [Accessed 30/08/2022]. National Biodiversity Data Centre, Waterford.

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O'Rourke, E., O'Flynn, C., (2014) Risk Assessment of *Allium triquetrum*. Inland Fisheries Ireland and the National Biodiversity Data Centre.

TII (2010). The Management of Noxious Weeds and Non-Native Invasive Plant Species on National Roads, Ireland: National Roads Authority.

TII (2020a) *The Management of Invasive Alien Plant Species on National Roads – Standard*. Transport Infrastructure Ireland, Dublin.

TII (2020b) *The Management of Invasive Alien Plant Species on National Roads – Technical Guidance.* Transport Infrastructure Ireland, Dublin.

Safety, Health and Welfare at Work Act, 2005. *No. 10 of 2005.*

Safety, Health and Welfare at Work (Construction) Regulations, 2013*. S.I. No. 291 of 2013.*

Safety, Health and Welfare at Work (General Application) Regulations, 2007. *S.I. No. 299 of 2007.*

Waste Management Acts, 1996 to 2013. *No. 10 if 1996*.

Wildlife Act, 1976. *No. 39 of 1976.*

Wildlife Act, 1976 (Protection of Wild Animals) Regulations, 1990, *SI No. 112/1990.*

Wildlife (Amendment) Act, 2000. *No. 38 of 2000.*

Wildlife (Amendment) Act, 2012. *No 29 of 2012*

APPENDIX 8.6

MACROINVERTEBRATE AND WATER CHEMICAL SURVEY OF STRADBROOK STREAM

Data Summary: Macroinvertebrate and Water Chemical Survey of the Stradbrook Stream

Roughan & O'Donovan

P00007357

December 2021

Dr Bláithín Ní Ainín

Client: Roughan & O'Donovan

Address: Arena House, Arena Road, Sandyford, Dublin D18 V8P6

Project reference: P00007357

Date of issue: December 2021

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Revision and Amendment Register

Version Number	Date	Section(s)	Page(s)	Summary of Changes	Approved by
1	09/12/21	All	All	First draft for client review	MKD
2	10/10/22			Finalisation and removal of watermark	BNA

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List of Tables

1. Introduction

1.1 Background

APEM Ireland Ltd (APEM) was commissioned by Roughan and O'Donovan (ROD) to conduct freshwater macroinvertebrate surveys and chemical analysis on the Stradbrook Stream, Monkstown, Co. Dublin in advance of a Strategic Housing Development at Dalguise House. A single survey was conducted at each site, giving a general indication of baseline conditions of the stream prior to the construction phase of the project.

2. Methods

1.1 Sampling Locations

The Stradbrook stream runs from the west to the east of the development site, forming the northern edge of the site. Two locations were selected for the survey, upstream (Site 1 at Drayton Close) and downstream (Site 2 at Richmond Green) of the development area, so that data collected during the works can be used to determine if any impact from the works is occurring by comparing results to an upstream control site (Figure 1). Photos of both sites are provided in Appendix 1.

Figure 1 The two sampling sites surveyed on the Stradbrook Stream

1.2 Field Sampling

Macroinvertebrate sampling was conducted on the 12th of October 2021 according to the standard methodology used by the EPA (Toner *et al.,* 2005). Surveys were conducted in dry conditions and mild weather, with an air temperature of 13.5°C. Water levels were moderate, suitable for kick sampling. A two-minute macroinvertebrate kick sample was conducted at each site using a standard 1 mm mesh size long-handled net, from the faster flowing riffle habitats. A further one-minute hand search was carried out to locate macroinvertebrates that remained attached to the underside of the cobbles. Samples were sorted 'bankside' and taxa present were recorded to the lowest possible level possible under field conditions; their relative abundance was also estimated and recorded. Voucher specimens were kept for each of the major groups – these were preserved in alcohol on site to be returned to the lab for as detailed (genus and species where possible) an identification as possible. The remaining sample material was returned to the stream.

In addition to the macroinvertebrate sampling, measurements of dissolved oxygen concentration, temperature, conductivity and pH were measured on-site using an YSI Professional Plus handheld multiparameter probe. Water samples were collected at each site and subsequently analysed. Additional Qualifying Criteria, as specified for Q value assessment, were recorded (described in Appendix 2).

1.3 Laboratory Analysis

Macroinvertebrate voucher specimen samples were processed in the APEM laboratory in accordance with the methodology described in the Environment Agency's Operational Instruction 024_08 (issued 28/01/2014). The invertebrates identified, under a binocular microscope, to the lowest possible level using the standard range of identification keys published by the Freshwater Biological Association, AIDGAP and others. A list of the macroinvertebrate taxa recorded, as well as their percentage relative abundance, can be found in Table 3. This list informed the calculation of all macroinvertebrate indices, including the Q-value. Water bottles were delivered to City Analysts Ltd for chemical analyses and results returned to APEM subsequently.

1.4 Metrics Calculation

Several metrics were applied to the benthic invertebrates collected at each site (Table 4). An EPA Q-value classification was assigned to each site. The Q-values were assigned based on the presence and relative abundance of sensitive groups and the consideration of additional qualifying criteria, as described by Toner *et al.* (2005), outlined in more detail in Appendix 2. Ecological status of the macroinvertebrate biological quality element of each site (as required by the Water Framework Directive) is reported in Table 4, based on the Q values assigned.

Additional standard metrics (Biological Monitoring Working Party (BMWP) score, Average Score Per Taxon (ASPT), Whalley Hawkes Paisley Trigg (WHPT), WHPT-ASPT and WHPT-NTAXA (number of taxa)) scores were calculated for each site, described in more detail in Appendix 2.

The BMWP and ASPT scores are similar to the Q-value, in that they are based on the sensitivity and tolerance of macroinvertebrate taxa to organic pollution. Families with low tolerance to pollution score higher in the BMWP and pollution-tolerant taxa score lower. BMWP index may depend on numerous other factors as well, such as physical habitat structure and may be altered significantly depending on whether the sampling process captures species found in some habitats but not in others. Standardisation of the BMWP score is provided by the ASPT, allowing robust comparisons among sites.

The WHPT is an enhancement of the BMWP, and is used in the UK for monitoring, assessing and classifying rivers in accordance with the requirements of the Water Framework Directive (WFD). This classification is generated by calculating the number of abundance weighted WHPT scoring families found during sampling (WHPT NTAXA), and the WHPT-ASPT, which standardises the WHPT score to an average per taxa to allow a standardised comparison among sites and comparing these values to the values that might be expected under undisturbed or reference conditions for that site. More detail on all macroinvertebrate metrics are given in Appendix 2.

3. Data Summary

The following results have also been provided to ROD as excel files.

3.1 Physico-chemical readings

Table 1 Summary of physicochemical readings recorded *in situ* at each site

Parameter	Unit	Site 1	Site 2
Temperature	(°C)	11.4	10.9
Dissolved Oxygen	(mg/l)	123	100
Dissolved Oxygen (calculation)	(%)	13.6	11.1
Salinity	ppt	0.22	0.22
Specific conductivity	µS/cm	453	458
pH		9.05	9.45
Additional Information	Substrate	Predominantly pebble and sand (75%), remaining a mix of cobble, gravel, silt and woody debris (25%)	Predominantly pebble (75%), remaining a mix of gravel, sand, silt and woody debris
	Notes	Piped underground directly upstream; Sewage Fungus visible; litter present; moderately silted; storm drains present	Sewage Fungus visible; litter present; moderately silted; storm drain present above bridge

Table 2 Summary of water quality parameters analysed in the laboratory for each site

Parameter	Unit	Site 1	Site 2
Alkalinity	mg/l	101	176
Ammonia as N	mg/l	0.265	0.290
BOD (biochemical oxygen demand)	mg/l O_2	3	**2***
Calcium, Soluble	mg/l	121.314	75.311
COD (chemical oxygen demand)	mg/l O_2	**8.0***	8.0
Copper, Soluble	µg/l	2.19	**2.00***
Dissolved Organic Carbon	mg/l	9.75	9.23
Hardness as CaCO3	mg/l	341	213
Nitrite as N02	mg/l	0.259	0.288
Nitrate as N03	mg/l	16.8	10.1
Iron - Total	ug/l	48.2	45.7
Cadmium, Soluble	ug/l	**0.2***	**0.2***
Iron, Soluble	ug/l	**7.2***	**7.2***
Zinc, Soluble	ug/l	6.1	**2.8***
Orthophosphate as P	mg/l	0.444	0.039
Phosphorus, Total as P	mg/l	0.599	0.158
Total Dissolved Solids	mg/l	508.000	235.000
Total Suspended Solids	mg/l	9	9
Arsenic - Dissolved	µg/l	5.0	1.3

*Values in bold are lower than laboratory limit of detection, and are presented at face value

3.2 Macroinvertebrates Survey Results and Indices

Table 3 Taxa list and % relative abundance of macroinvertebrate taxa recorded at each site

Order/Group	Family	Species/genus	Site 1	Site 2
Tricladida	Planariidae	*Polycelis nigra/tenuis*	<5%	<5%
		Dugesia lugubris/polychroa	<1%	<1%
Gastropoda	Tateidae	*Potamopyrgus antipodarum**	5-10%	5-10%
	Lymnaeidae			<5%
Oligochaeta			<1%	<5%
Hirudinea	Glossiphoniidae		<5%	<5%
		Glossiphonia complanata	Confirmed	
	Erpobdellidae		<5%	5-10%
		Trocheta pseudodina (bykowskii)	Confirmed	
Isopoda	Asellidae	*Asellus aquaticus*	<5%	<5%
Amphipoda	Gammaridae		>75%	>75%
		Gammarus duebeni	Confirmed	
Trichoptera	Limnephilidae			<1%

Order/Group	Family	Species/genus	Site 1	Site 2
		Micropterna sequax		Confirmed
Diptera	Ceratopogonidae			<1%
	Chironomidae		<5%	5-10%
Coleoptera	Elmidae			<1%

*Invasive alien species (IAS)

Table 4 Summary of macroinvertebrate indices including Q value assigned and total number of taxa observed at each site

Site	Q Value	WFD Ecological Status	BMWP*	ASPT*	WHPT*	WHPT – ASPT*	WHPT-NTAXA
Site 1	Q3	Poor	26	3.25	31.8	3.53	9
Site 2	Q3	Poor	41	3.73	52	4	13

*calculated based on presence/absence data as total abundance was not recorded.

4. References

Feeley, H.B., Bradley, C., Free, G., Kennedy, B., Little, R., McDonnell, N., Plant, C., Trodd, W., Wynne, C., and O'Boyle, S., 2020. A national macroinvertebrate dataset collected for the biomonitoring of Ireland's river network, 2007–2018. Sci Data 7, 280.

Toner, P., Bowman, J., Clabby, K., Lucey, J., McGarrigle, M., Concannon, C., Clenaghan, C., Cunningham, P., Delaney, J., O'Boyle, S., MacCarthaigh, M., Craig, M. and Quinn, R., 2005. Water Quality in Ireland: 2001– 2003. Environmental Protection Agency, Johnstown Castle Estate, Wexford, Ireland.

Appendix 1 Photos

Figure A Site 1 - Facing Upstream

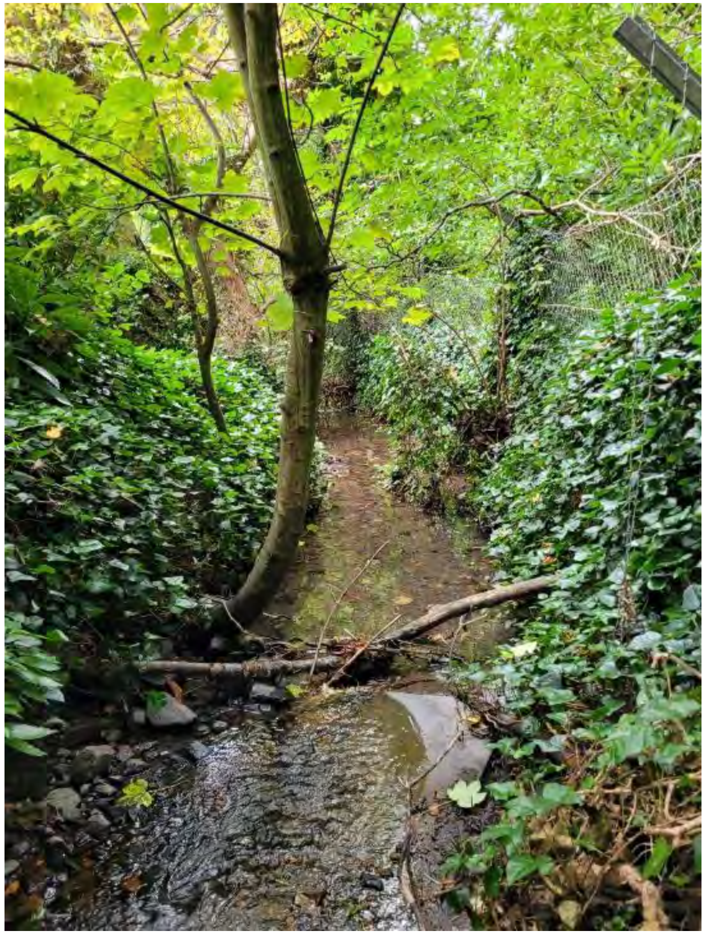

Figure B Site 1 - Facing Downstream

Figure C Site 1 - Sewage fungus

Figure D Site 1 - Storm drain

Figure E Site 2 - Facing upstream

Figure F Site 2 - Facing downstream

Figure G Site 2 - Storm drain adjacent to bridge

Figure H Site 2 - Sewage fungus at base of drain

Appendix 2 Macroinvertebrate Metrics

Q-Value Assessment

The EPA Q-value classification is assigned based on the assessment of the macroinvertebrate sample, which involves recording the taxa present at a suitable and attainable taxonomic resolution (under field conditions) and their categorical relative abundance determined using approximate counts (as described in Feeley *et al*., 2020). From this, the number of taxa present and categorical relative abundance of sensitive (Group A), less sensitive (Group B), tolerant (Group C), very tolerant (Group D) and most tolerant (Group E) taxa to organic pollution is examined. Additional Qualifying Criteria are also considered, consisting of recording the abundance of *Cladophora* spp, Macrophytes, and slime growths / sewage fungus, as well as the Dissolved Oxygen Saturation % and the level of substratum siltation. Then, based on the combination of number and relative abundance of the sensitive or tolerant groups present, a Q-value is assigned. Details on the assignment of the scores can be found in Toner *et al*., (2005).

In Ireland, macroinvertebrates are the main Biological Quality Element (BQE) determining the ecological status in rivers (required by the Water Framework Directive; WFD) and are based on the Q-value. The WFD requires BQE scores to be expressed as an Ecological Quality Ratio (EQR) to standardize and provide a common scale of ecological quality across participatory Member States using differing national methods. Intercalibration of the Q-value with the EQR and the corresponding ecological status are described in Table A.

Table A: EPA water quality status summary, comparing the Q-value, ecological quality ratio (EQR), corresponding Water Framework Directive (WFD) status and pollution gradient resulting from anthropogenic pressures (Feeley et al., 2020).

Q value Score	EQR	Pollution Gradient	WFD Ecological Status
Q5	1.0	Unpolluted	High
Q4-5	0.9	Unpolluted	High
Q4	0.8	Unpolluted	Good
Q3-4	0.7	Slightly Polluted	Moderate
Q3	0.6	Moderately Polluted	Poor
Q2-3	0.5	Moderately Polluted	Poor
Q2	0.4	Seriously Polluted	Bad
Q1-2	0.3	Seriously Polluted	Bad
Q1	0.2	Seriously Polluted	Bad

BMWP and ASPT

The Biological Monitoring Working Party (BMWP) index was designed to identify the degree of organic pollution based on the natural sensitivity of taxon to the pollution. Aquatic organisms respond to chemical changes in water, in particular to the changes in dissolved oxygen concentrations. As pollution levels increase, the microbial oxygen demand rises, resulting in a decline in available oxygen concentrations. Many stream organisms require high dissolved oxygen concentration and are therefore not found in water bodies with lower oxygen concentrations. Macroinvertebrate families which are sensitive to pollution are assigned high BMWP scores, while pollution-tolerant taxa score low. In the BMWP system, benthic invertebrate taxa are assigned a score between 1 (tolerant to organic pollution) and 10 (intolerant to organic pollution). The BMWP score is the sum of the values for all families present in the sample. The number of BMWP-scoring families is typically recorded alongside the BMWP score, as is the Average Score Per Taxon (ASPT), which can be determined by dividing the BMWP score by the number of scoring taxa present. The BMWP score may vary significantly depending on whether the sampling process captures species found in some habitats but not in others. Standardisation of the BMWP score is therefore provided by the ASPT, with the average BMWP score per taxon allowing robust comparisons among sites.

WHPT and WHPT-ASPT

The Whalley Hawkes Paisley Trigg (WHPT) metric is used in the UK for monitoring, assessing and classifying rivers in accordance with the requirements of WFD based on assessing the ecological quality of the macroinvertebrates present when sampled. It is a revised version of the original BMWP index. Empirical data was used in the development of the WHPT index to assign abundance related sensitivity weights to taxa. The taxa included in the index are modified from those used for the BMWP index and a number of taxa were removed due to insufficient data; some additional families were included where sufficient data were available, and some existing BMWP composite taxa were split into their constituent families. The WHPT-ASPT values typically range from 1 (indicative of sites with high organic pollution and degradation) to 13 (indicative of sites with very low organic pollution and degradation). The WHPT-ASPT score standardises the WHPT score to an average per taxa to allow a robust comparison among sites.

In the UK, a WFD macroinvertebrate classification for a river site is generated by calculating the number of abundance weighted WHPT scoring families found during sampling (WHPT NTAXA), and the WHPT-ASPT, and comparing these values to the values that might be expected under undisturbed or reference conditions for that site. These undisturbed or reference scores are predicted by statistical models produced by the River Invertebrate Classification Tool (RICT) – as RICT predicts invertebrate communities at reference conditions. The observed values of WHPT ASPT and WHPT NTAXA are compared to the predicted values to generate an Environmental Quality Ratio (EQR). EQRs close to 1.0 indicate that invertebrate communities are close to their natural state. However, the RICT is only appropriate for use in the UK and is not used in Ireland.

APPENDIX 9.1

SITE INVESTIGATION REPORT

(GROUND INVESTIGATIONS IRELAND, 2018)

Report: Site Investigation Report

Project: Residential (Apartments & Housing) Development, Dalguise, 71 Monkstown Road, Monkstown, Co. Dublin.

Client: Lulani Dalguise Limited

Project No. 1012 SHD Application

 March 2020






benchmark PROPERTY

Contact Information: -

Benchmark Property Consultancy Limited
2 Lansdowne Terrace
Shelbourne Road
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D04 TD90

Tel No. 01-2349600
Email: info@benchmarkproperty.ie

Document Information: -

Proposed Residential (Apartment & Housing)) Development
Dalguise House Site
Monkstown Road, Monkstown
Co. Dublin

Project No: - 1012

Document Title: - **Site Investigation Report**

Document History: -

ISSUE	DATE	DESCRIPTION	ORIG	PM	ISSUE CHECK
P	Nov 2019	Issued for Pre-app submission	SD	JON	-
PB	March 2020	SHD Application	SD	SCD	

Contents

1.0 Ground Investigation Ireland Limited- Ground Investigation Report

Sean Drudy

From: Fergal McNamara <FMcnamara@gii.ie>
Sent: 16 August 2019 11:03
To: Sean Drudy
Cc: Steve McLaughlin; Conor Finnerty
Subject: RE: 81A Monkstown Road

Sean,

There was a lot of FILL on the site with CLAY underneath, WRAP level 4.

Kind Regards,
Fergal Mc Namara,
Director,
Ground Investigations Ireland Ltd.
Catherinestown House,
Hazelhatch Road,
Newcastle,
Co. Dublin
Tel: 01-601 5175 / 6
DD: 01-9015042
Mob: 087 0521950
Email: fmcnamara@gii.ie

-----Original Message-----
From: Sean Drudy [mailto:Sean.Drudy@benchmarkproperty.ie]
Sent: 16 August 2019 07:39
To: Fergal McNamara <FMcnamara@gii.ie>
Cc: Steve McLaughlin <SMcLaughlin@gii.ie>; Conor Finnerty <CFinnerty@gii.ie>
Subject: 81A Monkstown Road

Gents
Can you revert with an indicative WRAP level for soils at above

Need value for Suds calculations and to satisfy query from Dun Laoghaire Rathdown County Council

Sean Drudy
Benchmark Property Consultancy

Sent from my iPhone

Ground Investigations Ireland Ltd.,
Catherinestown House,
Hazelhatch Road,
Newcastle, Co Dublin.
Tel: 01 601 5175 / 5176 | Fax: 01 601 5173
Email: info@gii.ie | Web: gii.ie

Ground Investigations Ireland

Dalguise, Monkstown

Ground Investigation Report

DOCUMENT CONTROL SHEET

Project Title	Dalguise, Monkstown
Client	Benchmark Properties
Project No	8005-08-18
Document Title	Ground Investigation Report

Rev.	Status	Author(s)	Reviewed By	Approved By	Office of Origin	Issue Date
A	Final	S. Connolly	A. McDonnell	A. McDonnell	Dublin	13 September 2018

GROUND INVESTIGATIONS IRELAND

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GROUNDWATER MONITORING

Dalguise Development Monkstown

BOREHOLE	DATE	TIME	GROUNDWATER (mBGL)	Comments
BH01	30/08/2018	8.00am	2.40m	
BH01	05/03/2019	2.35pm	1.45m	
BH01	03/09/2019	8.00am	2.52m	

Ground Investigations Ireland Ltd.,
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CONTENTS

APPENDICES

1.0 Preamble

On the instructions of Benchmark Properties, a site investigation was carried out by Ground Investigations Ireland Ltd., between August and September 2018 at the site of the proposed residential development in Monkstown, Dublin 18.

2.0 Overview

2.1. Background

It is proposed to construct a new residential development with associated services, access roads and car parking at the proposed site. The site is currently occupied by a large residential building and is situated in on the Monkstown Road, Monkstown, Dublin 18. The proposed construction is envisaged to consist of conventional foundations and pavement make up with some local excavations for services and plant.

2.2. Purpose and Scope

The purpose of the site investigation was to investigate subsurface conditions utilising a variety of investigative methods in accordance with the project specification. The scope of the work undertaken for this project included the following:

- Visit project site to observe existing conditions
- Carry out 7 No. Soakaways to determine a soil infiltration value to BRE digest 365
- Carry out 4 No. Cable Percussion boreholes to a maximum depth of 6.00m BGL
- Installation of 1 No. Groundwater monitoring well
- Report with recommendations

3.0 Subsurface Exploration

3.1. General

During the ground investigation a programme of intrusive investigation specified by the Consulting Engineer was undertaken to determine the sub surface conditions at the proposed site. Regular sampling and in-situ testing was undertaken in the exploratory holes to facilitate the geotechnical descriptions and to enable laboratory testing to be carried out on the soil samples recovered during excavation and drilling.
The procedures used in this site investigation are in accordance with Eurocode 7 Part 2: Ground Investigation and testing (ISEN 1997 – 2:2007) and B.S. 5930:2015.

3.2. Soakaway Testing

The soakaway testing was carried out in selected trial pits at the locations shown in the exploratory hole location plan in Appendix 1. These pits were carefully excavated and filled with water to assess the infiltration characteristics of the proposed site. The pits were allowed to drain and the drop in water level was recorded over time as required by BRE Digest 365. The pits were logged prior to completing the soakaway test and were backfilled with arising's upon completion. The soakaway test results are provided in Appendix 2 of this Report.

3.3. Cable Percussion Boreholes

The Cable Percussion Boreholes were drilled using a Dando 2000 drilling rig with regular in-situ testing and sampling undertaken to facilitate the production of geotechnical logs and laboratory testing.
The standard method of boring in soil for site investigation is known as the Cable Percussion method. It consists of using a Shell in non cohesive soils and a clay cutter in cohesive soils, both operated on a wire cable. Very hard soils, boulders and other hard obstructions are broken up by chiselling and the fragments removed with the Shell. Where ground conditions made it necessary, the borehole was lined with 200mm diameter steel casing. While the use of the Cable Percussion method of boring gives the maximum data on soil conditions, some mixing of laminated soil is inevitable. For this reason, thin lenses of granular material may not be noticed. Disturbed samples were taken from the boring tools at suitable depths, so that there is a representative sample at the top of each change in stratum and thereafter at regular intervals down the borehole until the next stratum was encountered. The disturbed samples were then sealed and sent to the laboratory where they were visually examined to confirm the description of the relevant strata.
Standard Penetration Tests were carried out in the boreholes. The results of these tests, together with the depths at which the tests were taken are shown on the accompanying borehole records. The test consists of a thick wall sampler tube, 50mm external diameter, being driven into the soil by a monkey weighing 63.5kg and with a free drop of 760mm. For gravels and glacial till the driving shoe was replaced by a solid 60º cone. The Standard Penetration Test number referred to as the 'N' value is the number of blows required to drive the tube 300mm, after an initial penetration of 150mm. The number gives a guide to the consistency of the soil and can also be used to estimate the relative strength/density at the depth of the test and also to estimate the bearing capacity and compressibility of the soil. The cable percussion borehole logs are provided in Appendix 3 of this Report.

3.4. Groundwater Monitoring Installations

A Groundwater Monitoring Installation was installed upon the completion of a borehole to enable sampling and the determination of the equilibrium groundwater level. The typical groundwater monitoring installation consists of a 50mm HDPE slotted pipe with a pea gravel response zone and bentonite seal installed to the Engineers specification. Where required the standpipe is sealed with a gas tap and finished with a durable steel cover fixed in place with a concrete surround. The installation details are provided on the exploratory hole logs in the appendices of this Report.

4.0 Ground Conditions

4.1. General

The ground conditions encountered during the investigation are summarised below with reference to insitu and laboratory test results. The full details of the strata encountered during the ground investigation are provided in the exploratory hole logs included in the appendices of this report.

The sequence of strata encountered were consistent across the site and are generally comprised;

- Topsoil/Surfacing
- Made Ground
- Cohesive Deposits

TOPSOIL: Topsoil was encountered in all the exploratory holes and was present to a maximum depth of 0.30m BGL. Tarmac surfacing was present in BH03 only, to a depth of 0.10m BGL.

MADE GROUND: Made Ground deposits were encountered beneath the Surfacing in BH03, and was present to a depth of 0.30m BGL. These deposits were described generally as *grey angular Gravel Fill.*

COHESIVE DEPOSITS: Cohesive deposits were encountered beneath the Topsoil or Made Ground Deposits and were described typically as *brown/light brown slightly sandy gravelly CLAY with occasional cobbles* overlying a *stiff brown/grey slightly sandy gravelly CLAY with many cobbles.* The secondary sand and gravel constituents varied across the site and with depth, with granular lenses occasionally present in the glacial till matrix. The strength of the cohesive deposits typically increased with depth and was firm to stiff or stiff below 1.00m BGL in the majority of the exploratory holes. These deposits had occasional or many cobble and boulder content where noted on the exploratory hole logs.

4.2. Groundwater

Groundwater strikes are noted on the exploratory hole logs where they occurred and where possible drilling was suspended for twenty minutes to allow the subsequent rise in groundwater to be recorded. We would point out that these exploratory holes did not remain open for sufficiently long periods of time to establish the hydrogeological regime and groundwater levels would be expected to vary with the tide, time of year, rainfall, nearby construction and other factors. For this reason, a standpipe was installed in BH01 to allow the equilibrium groundwater level to be determined.

5.0 Recommendations & Conclusions

5.1. General

The recommendations given and opinions expressed in this report are based on the findings as detailed in the exploratory hole records. Where an opinion is expressed on the material between exploratory hole locations, this is for guidance only and no liability can be accepted for its accuracy. No responsibility can be accepted for conditions which have not been revealed by the exploratory holes. Limited information has been provided at the ground investigation stage and any designs based on the recommendations or conclusions should be completed in accordance with the current design codes, taking into account the variation and the specific details contained within the exploratory hole logs.

5.2. Foundations

An allowable bearing capacity of 125 kN/m^2 is recommended for conventional strip or pad foundations on the firm to stiff or stiff cohesive deposits at a depth of 1.00m BGL. Where the cohesive deposits are deeper, such as at the location of BH01, lean mix trench fill to a depth of 2.80m BGL is recommended to achieve the recommended allowable bearing capacity. Given the shallow refusal at this location, it would be prudent to carry out rotary coring to fully identify the bearing stratum.

A ground bearing floor slab is recommended to be based on the firm to stiff or stiff cohesive deposits with an appropriate depth of compacted hardcore specified by the consulting engineer and in accordance with the limits and guidelines in SR21:2014+A1:2016 and/or NRA SRW CL808 Type E granular stone fill.

5.3. Excavations

Excavations in the Made Ground or soft Cohesive Deposits will require to be appropriately battered or the sides supported due to the low strength of these deposits.

Short term temporary excavations in the cohesive deposits will remain stable for a limited time only and will require to be appropriately battered or the sides supported if the excavation is below 1.25m BGL or is required to permit man entry.

Any material to be removed off site should be disposed of to a suitably licenced landfill.

5.4. Soakaway Design

Infiltration rates of 2.235 x 10^{-6} and 1.977 x 10^{-6} m/s respectively were calculated for the soakaway locations SA02 and SA03. At the locations of SA01, SA04, SA05, SA06 and SA07 the water level dropped too slowly to allow calculation of 'f' the soil infiltration rate. These locations are therefore not recommended as suitable for soakaway design and construction.

The recommendations provided in this report should be verified in the design of the proposed buildings, using the full details of the loading conditions and taking into consideration the allowable tolerable settlements/movements that the building can accommodate. The founding strata should be inspected and verified by a suitably qualified engineer prior to construction of the building foundations.

APPENDIX 1 - Site Location Plan

Site Location Plan - Dalguise, Monkstown

Cable Percussion Borehole Location

Soakaway Location

GROUND INVESTIGATIONS IRELAND

APPENDIX 2 – Soakaway Records

Ground Investigations Ireland Ltd www.gii.ie			Site Dalguise, Monkstown	Trial Pit Number **SA01**
Machine : 3.5T Tracked Excavaor **Method :** Trial Pit	**Dimensions** L x W x D 2.20 x 0.50 x 1.60m	**Ground Level (mOD)**	**Client** Benchmark Properties	**Job Number** 8005-08-18
	Location	**Dates** 30/08/2018	**Engineer**	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.20) 0.20	TOPSOIL with roots		
0.50	B				(0.70) 0.90	Firm to stiff light brown/brown slightly sandy gravelly CLAY with occasional sub-angular to sub-rounded cobbles		
					(0.70) 1.60	Stiff brown/grey slightly sandy gravelly CLAY with many sub-angular cobbles		
						Complete at 1.60m		

Plan

Remarks

Trial pit stable
No groundwater encountered
Soakaway completed in trial pit
Trial pit backfilled upon completion

Scale (approx)	Logged By	Figure No.
1:25	S. Connolly	8005-08-18.SA01

Ground Investigations Ireland Ltd
www.gii.ie

Site: Dalguise, Monkstown			Trial Pit Number: SA02
Machine : 3.5T Tracked Excavaor Method : Trial Pit	Dimensions L x W x D 1.50 x 0.50 x 1.90m	Ground Level (mOD)	Client: Benchmark Properties	Job Number: 8005-08-18
	Location	Dates 30/08/2018	Engineer	Sheet 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.30)	TOPSOIL		
					0.30	Soft to firm brown slightly sandy slightly gravelly silty CLAY with occasional sub-angular to sub-rounded cobbles		
0.50	B							
					(1.20)			
					1.50	Firm brown/grey sandy gravelly CLAY with many sub-angular cobbles		
					(0.40)			
					1.90	Complete at 1.90m		

Plan

Remarks

Trial pit stable
No groundwater encountered
Soakaway completed in trial pit
Trial pit backfilled upon completion

Scale (approx)	Logged By	Figure No.
1:25	S. Connolly	8005-08-18.SA02

Ground Investigations Ireland Ltd www.gii.ie	Site: Dalguise, Monkstown	Trial Pit Number: SA03
Machine : 3.5T Tracked Excavaor Method : Trial Pit	Dimensions L x W x D: 1.90 x 0.50 x 1.80m	Ground Level (mOD):	Client: Benchmark Properties	Job Number: 8005-08-18
	Location:	Dates: 30/08/2018	Engineer:	Sheet: 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.30)	TOPSOIL		
					0.30	Soft to firm light brown/brown slightly sandy slightly gravelly silty CLAY with rare sub-angular to sub-rounded cobbles		
0.60	B				(0.70)			
					1.00	Firm brown/grey sandy gravelly CLAY with rare sub-angular cobbles		
					(0.80)			
1.50	B							
					1.80	Complete at 1.80m		

Plan

Remarks

Trial pit stable
No groundwater encountered
Soakaway completed in trial pit
Trial pit backfilled upon completion

Scale (approx)	Logged By	Figure No.
1:25	S. Connolly	8005-08-18.SA03

Ground Investigations Ireland Ltd www.gii.ie			Site Dalguise, Monkstown	Trial Pit Number **SA04**
Machine : 3.5T Tracked Excavaor Method : Trial Pit	Dimensions L x W x D 2.20 x 0.50 x 1.50m	Ground Level (mOD)	Client Benchmark Properties	Job Number 8005-08-18
	Location	Dates 04/09/2018	Engineer	Sheet 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.20)	TOPSOIL		
					0.20	Firm light brown/brown sandy slightly gravelly CLAY with occasional sub-angular cobbles		
0.50	B				(0.60)			
					0.80	Stiff light brown/brown sandy slightly gravelly CLAY with occasional sub-angular cobbles		
					(0.70)			
					1.50	Complete at 1.50m		

Plan

Remarks

Trial pit stable
No groundwater encountered
Soakaway completed in trial pit
Trial pit backfilled upon completion

Scale (approx)	Logged By	Figure No.
1:25	S. Connolly	8005-08-18.SA04

Ground Investigations Ireland Ltd www.gii.ie			Site Dalguise, Monkstown	Trial Pit Number SA05
Machine : 3.5T Tracked Excavaor Method : Trial Pit	Dimensions L x W x D 2.30 x 0.50 x 1.50m	Ground Level (mOD)	Client Benchmark Properties	Job Number 8005-08-18
	Location	Dates 04/09/2018	Engineer	Sheet 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.20)	TOPSOIL with roots		
					0.20	Stiff brown sandy gravelly CLAY with many sub-angular cobbles		
0.50	B							
					(1.30)			
					1.50	Complete at 1.50m		

Plan

Remarks

Trial pit stable
No groundwater encountered
Soakaway completed in trial pit
Trial pit backfilled upon completion

Scale (approx)	Logged By	Figure No.
1:25	S. Connolly	8005-08-18.SA05

Ground Investigations Ireland Ltd www.gii.ie			Site Dalguise, Monkstown	Trial Pit Number SA06
Machine : 3.5T Tracked Excavaor Method : Trial Pit	Dimensions L x W x D 1.40 x 0.50 x 1.90m	Ground Level (mOD)	Client Benchmark Properties	Job Number 8005-08-18
	Location	Dates 04/09/2018	Engineer	Sheet 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.20)	TOPSOIL		
					0.20	Soft to firm brown sandy gravelly CLAY with occasional angular cobbles		
					(1.10)			
					1.30	Stiff light brown/brown slightly sandy slightly gravelly CLAY with rare sub-angular cobbles		
1.50	B				(0.60)			
					1.90	Complete at 1.90m		

Plan

Remarks

Trial pit stable
No groundwater encountered
Soakaway completed in trial pit
Trial pit backfilled upon completion

Scale (approx)	Logged By	Figure No.
1:25	S. Connolly	8005-08-18.SA06

Ground Investigations Ireland Ltd www.gii.ie	Site Dalguise, Monkstown	Trial Pit Number **SA07**

Machine : 3.5T Tracked Excavaor Method : Trial Pit	Dimensions L x W x D 2.10 x 0.50 x 1.50m	Ground Level (mOD)	Client Benchmark Properties	Job Number 8005-08-18
	Location	Dates 04/09/2018	Engineer	Sheet 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.20) 0.20	TOPSOIL with fragments of brick and glass		
					(1.30)	Stiff light brown/brown sandy gravelly CLAY with many sub-angular cobbles		
1.50	B				1.50	Complete at 1.50m		

Plan

Remarks

Trial pit stable
No groundwater encountered
Soakaway completed in trial pit
Trial pit backfilled upon completion

Scale (approx)	Logged By	Figure No.
1:25	S. Connolly	8005-08-18.SA07

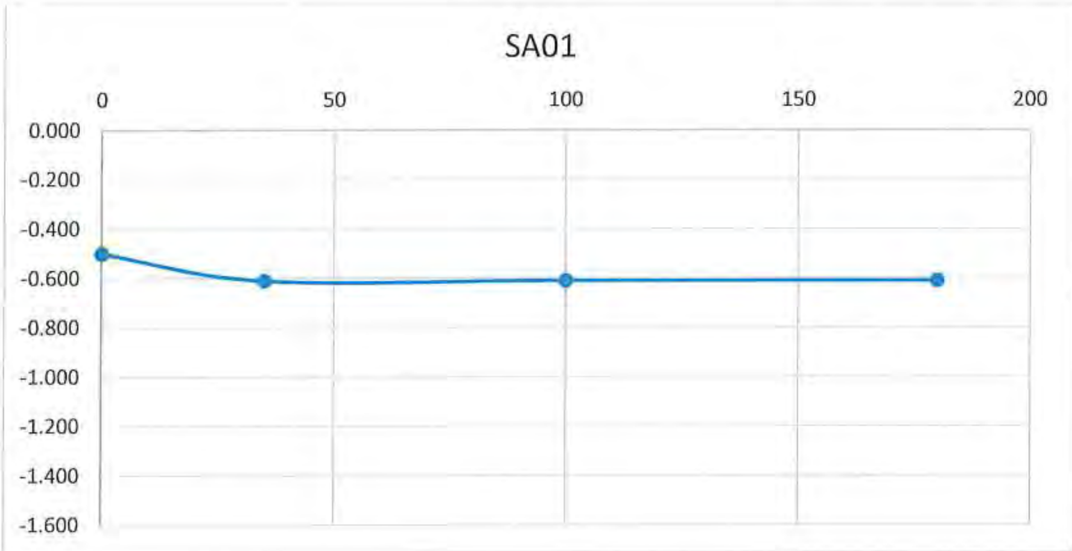
SA01

Soakaway Test to BRE Digest 365
Trial Pit Dimensions: 2.20m x 0.50m x 1.60m (L x W x D)

Date	Time	Water level (m bgl)
30/08/2018	0	-0.500
30/08/2018	35	-0.610
30/08/2018	100	-0.610
30/08/2018	180	-0.610

***Soakaway failed - Pit backfilled**

Start depth	Depth of Pit	Diff	75% full	25%full
0.50	1.600	1.100	0.775	1.325



SA02

Soakaway Test to BRE Digest 365
Trial Pit Dimensions: 1.50m x 0.50m x 1.90m (L x W x D)

Date	Time	Water level (m bgl)
30/08/2018	0	-0.600
30/08/2018	25	-0.720
30/08/2018	85	-0.900
30/08/2018	170	-1.020
30/08/2018	205	-1.110
30/08/2018	245	-1.110
30/08/2018	290	-1.150
30/08/2018	335	-1.250

Start depth	Depth of Pit	Diff	75% full	25%full
0.60	**1.900**	**1.300**	**0.925**	**1.575**

Length of pit (m)	Width of pit (m)	75-25Ht (m)	Vp75-25 (m3)
1.500	0.500	0.650	0.49

Tp75-25 (from graph) (s)	**65100**	50% Eff Depth	ap50 (m2)
		0.650	3.35

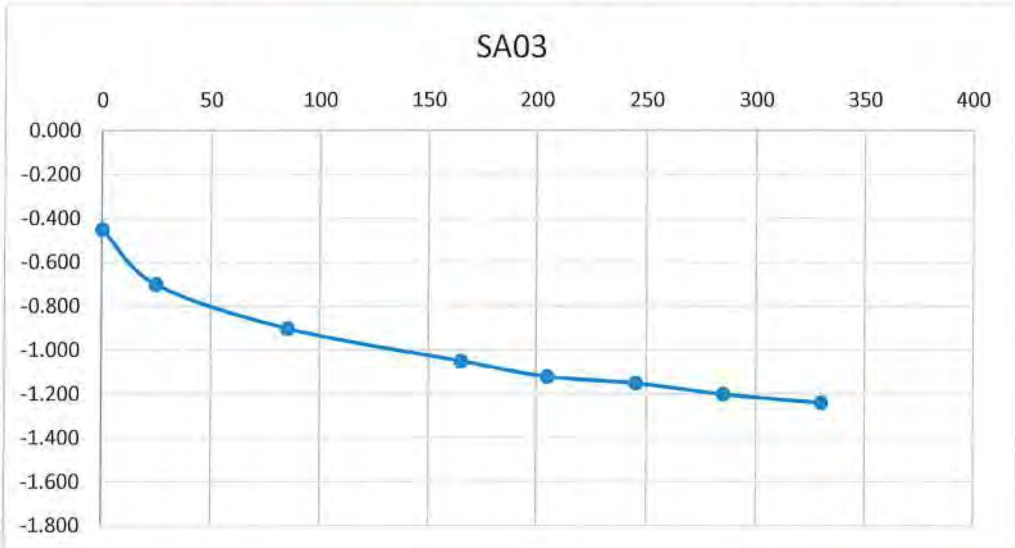
f = 2.235E-06 m/s

SA03

Soakaway Test to BRE Digest 365
Trial Pit Dimensions: 1.90m x 0.50m x 1.80m (L x W x D)

Date	Time	Water level (m bgl)
30/08/2018	0	-0.450
30/08/2018	25	-0.700
30/08/2018	85	-0.900
30/08/2018	165	-1.050
30/08/2018	205	-1.120
30/08/2018	245	-1.150
30/08/2018	285	-1.200
30/08/2018	330	-1.240

Start depth	Depth of Pit		Diff	75% full	25%full
0.45	**1.800**		**1.350**	**0.7875**	**1.4625**
Length of pit (m)	Width of pit (m)			75-25Ht (m)	Vp75-25 (m3)
1.900	0.500			0.675	0.64
Tp75-25 (from graph) (s)		**77400**		50% Eff Depth	ap50 (m2)
				0.675	4.19
f =	**1.977E-06**	**m/s**			



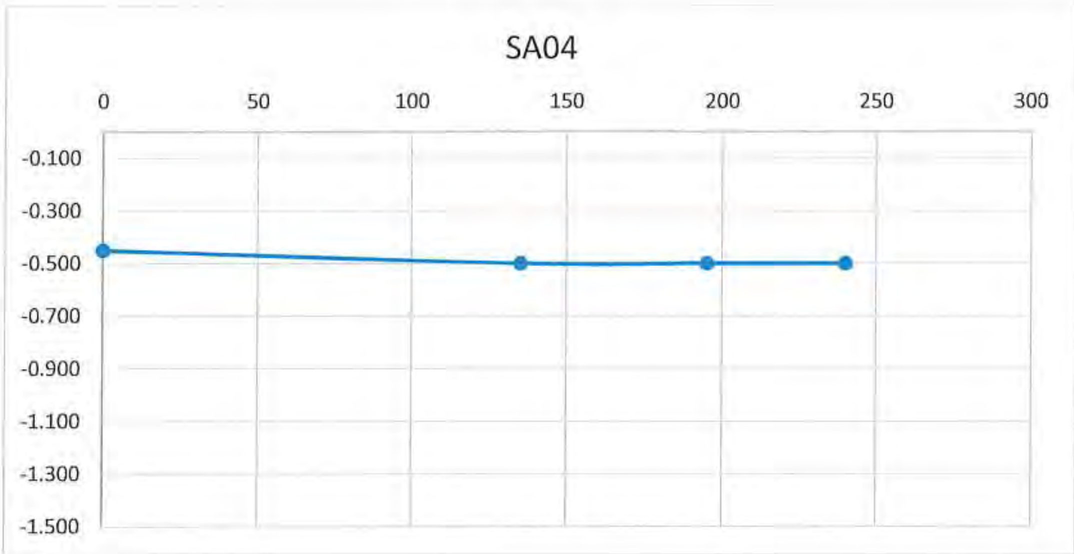
SA04

Soakaway Test to BRE Digest 365
Trial Pit Dimensions: 2.20m x 0.50m x 1.50m (L x W x D)

Date	Time	Water level (m bgl)
04/09/2018	0	-0.450
04/09/2018	135	-0.500
04/09/2018	195	-0.500
04/09/2018	240	-0.500

***Soakaway failed - Pit backfilled**

Start depth	Depth of Pit	Diff	75% full	25%full
0.50	1.500	1.000	0.75	1.25



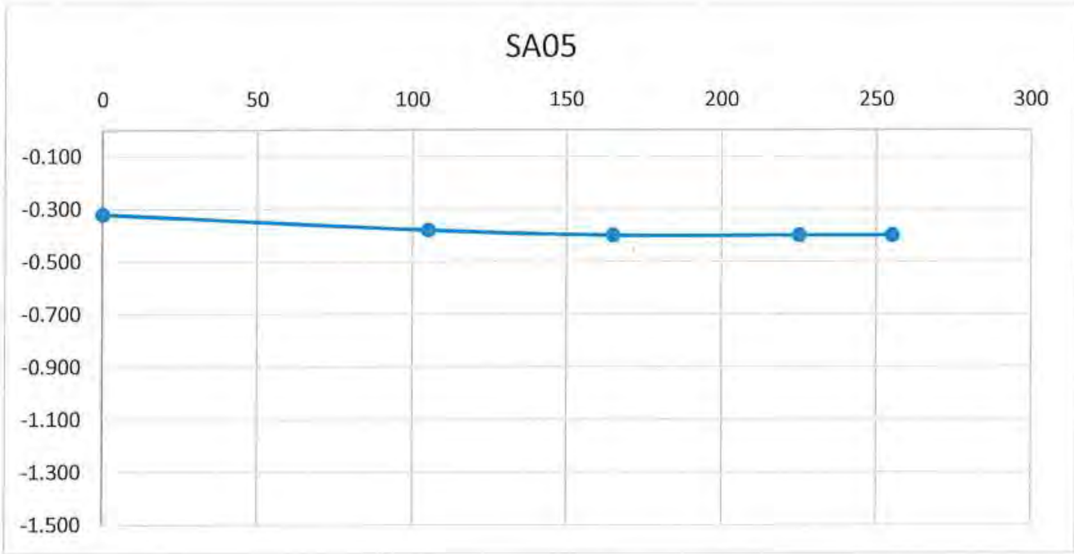
SA05

Soakaway Test to BRE Digest 365
Trial Pit Dimensions: 2.30m x 0.50m x 1.50m (L x W x D)

Date	Time	Water level (m bgl)
04/09/2018	0	-0.320
04/09/2018	105	-0.380
04/09/2018	165	-0.400
04/09/2018	225	-0.400
04/09/2018	255	-0.400

***Soakaway failed - Pit backfilled**

Start depth	Depth of Pit	Diff	75% full	25%full
0.32	1.500	1.180	0.615	1.205



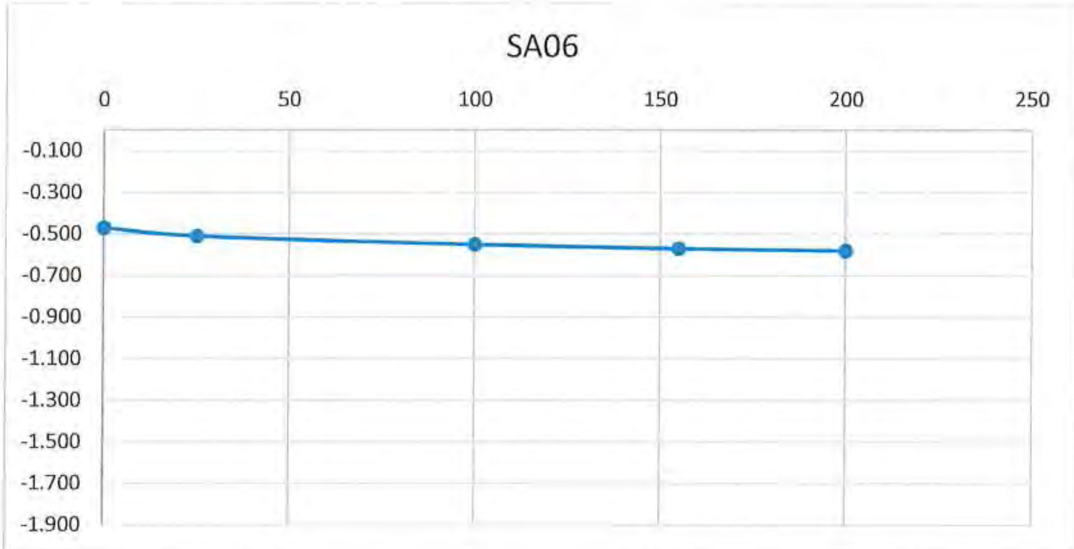
SA06

Soakaway Test to BRE Digest 365
Trial Pit Dimensions: 1.40m x 0.50m x 1.90m (L x W x D)

Date	Time	Water level (m bgl)
04/09/2018	0	-0.470
04/09/2018	25	-0.510
04/09/2018	100	-0.550
04/09/2018	155	-0.570
04/09/2018	200	-0.580

***Soakaway failed - Pit backfilled**

Start depth	Depth of Pit	Diff	75% full	25%full
0.47	1.900	1.430	0.8275	1.5425



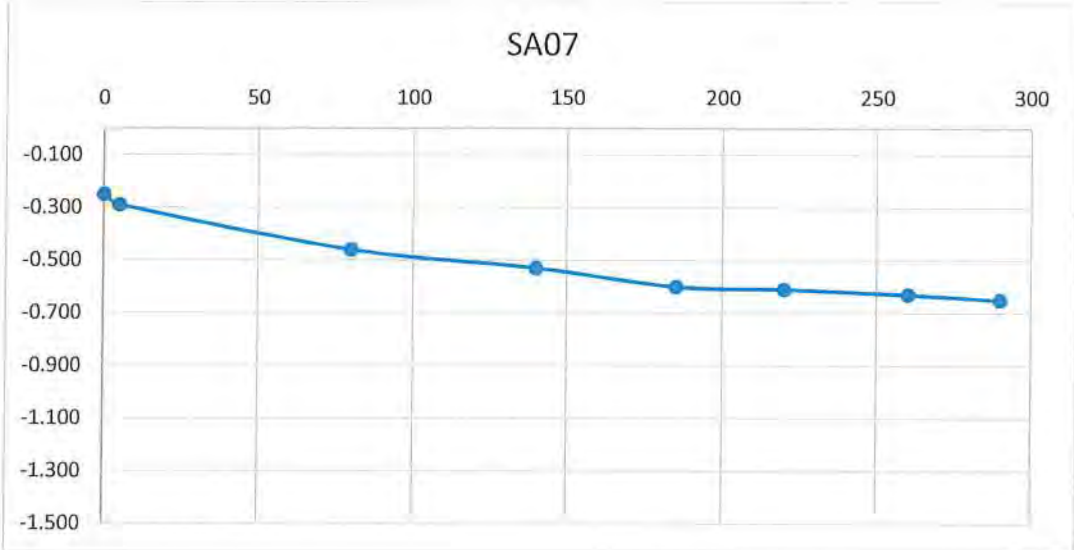
SA07

Soakaway Test to BRE Digest 365
Trial Pit Dimensions: 2.10m x 0.50m x 1.50m (L x W x D)

Date	Time	Water level (m bgl)
04/09/2018	0	-0.250
04/09/2018	5	-0.290
04/09/2018	80	-0.460
04/09/2018	140	-0.530
04/09/2018	185	-0.600
04/09/2018	220	-0.610
04/09/2018	260	-0.630
04/09/2018	290	-0.650

***Soakaway failed - Pit backfilled**

Start depth	Depth of Pit	Diff	75% full	25%full
0.25	1.500	1.250	0.5625	1.1875



Dalguise Development, Monkstown – Soakaway Photos

SA01

SA01

SA01

SA01

SA02

SA02

SA02

SA02

SA03

SA03


SA03


SA03

SA04

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SA04


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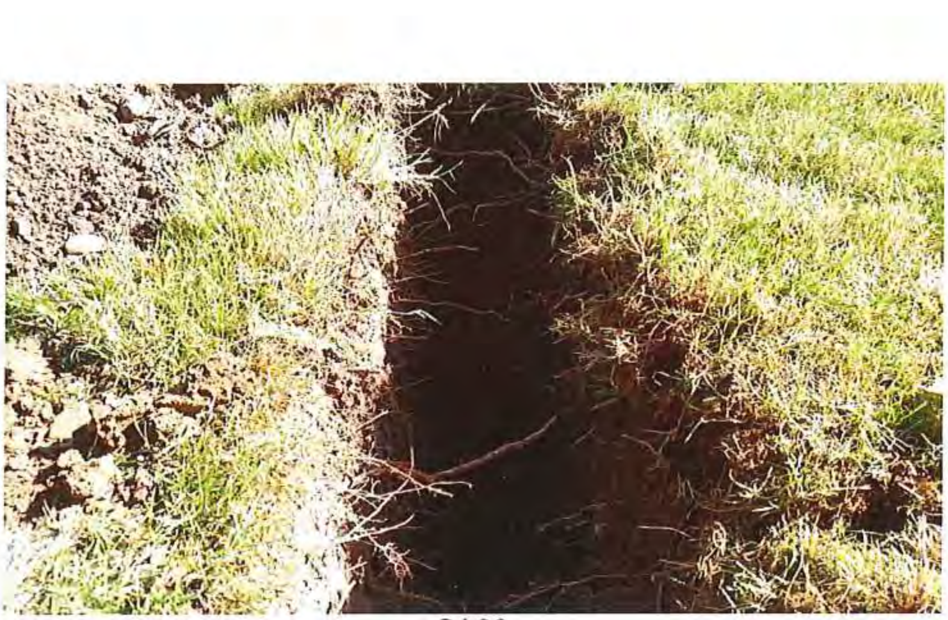
SA05

SA05

SA05

SA05



SA06

SA06

SA06

SA06

SA07

SA07

SA07

SA07

APPENDIX 3 – Cable Percussion Borehole Records

Ground Investigations Ireland Ltd www.gii.ie			Site: Dalguise, Monkstown	Borehole Number: BH01
Machine : Dando 2000 Method : Cable Percussion	Casing Diameter	Ground Level (mOD)	Client: Benchmark Properties	Job Number: 8005-08-18
	Location	Dates: 30/08/2018	Engineer	Sheet: 1/1

Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water	Instr
						(0.20) 0.20	TOPSOIL			
0.50	B						Soft to firm brown slightly sandy gravelly CLAY with occasional sub-angular cobbles			
						(1.20)				
1.00-1.45 1.00	SPT(C) N=8 B			1,1/2,2,2,2						
						1.40	Soft brown slightly sandy gravelly CLAY with many angular cobbles			
1.50	B									
						(0.80)				
2.00-2.45 2.00	SPT(C) N=5 B			2,2/2,1,1,1					▼1	
						2.20	Soft to firm brown slightly sandy gravelly silty CLAY with many angular cobbles and rare boulders		∇1	
				Water strike(1) at 2.40m, rose to 2.10m in 20 mins.		(0.60)				
						2.80	OBSTRUCTION: Presumed rock or boulder			
2.90-3.09 2.90	SPT(C) 50/40 B			25/50		2.90	Complete at 2.90m			

Remarks
Slotted pipe installed from 2.90-1.00mBGL with gravel surround. Plain pipe installed from 1.00mBGL to ground level with bentonite seal.
Chiselling from 2.80m to 2.90m for 1 hour.

Scale (approx)	Logged By
1:50	S. Connolly

Figure No. 8005-08-18.BH01

Ground Investigations Ireland Ltd www.gii.ie			Site: Dalguise, Monkstown	Borehole Number: **BH02**
Machine : Dando 2000 Method : Cable Percussion	Casing Diameter	Ground Level (mOD)	Client: Benchmark Properties	Job Number: 8005-08-18
	Location	Dates: 30/08/2018	Engineer	Sheet: 1/1

Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
						(0.20) 0.20	TOPSOIL		
0.50	B						Stiff brown slightly sandy gravelly CLAY with occasional sub-angular cobbles		
1.00-1.45 1.00	SPT(C) N=22 B			2,2/4,5,5,8					
1.50	B					(2.60)			
2.00-2.45 2.00	SPT(C) N=22 B			2,4/4,4,7,7					▼1
3.00-3.45 3.00	SPT(C) N=30 B			1,3/6,5,8,11		2.80 (0.90)	Stiff dark grey/black slightly sandy gravelly CLAY with many angular cobbles and rare boulders		∇1
				Water strike(1) at 3.70m, rose to 2.70m in 20 mins.		3.70 (0.30) 4.00	OBSTRUCTION: Presumed rock or boulder		
4.00-4.18	SPT(C) 50/30			25/50			Complete at 4.00m		

Remarks
Borehole backfilled upon completion
Chiselling from 3.70m to 4.00m for 1 hour.

Scale (approx)	Logged By
1:50	S. Connolly

Figure No. 8005-08-18.BH02

Ground Investigations Ireland Ltd www.gii.ie			Site: Dalguise, Monkstown	Borehole Number: BH03
Machine : Dando 2000 Method : Cable Percussion	Casing Diameter	Ground Level (mOD)	Client: Benchmark Properties	Job Number: 8005-08-18
	Location	Dates: 03/09/2018	Engineer	Sheet: 1/1

Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
						0.10	TARMACADAM		
						(0.20) 0.30	MADE GROUND: Grey angular Gravel Fill		
0.50	B						Stiff brown slightly sandy gravelly CLAY with occasional sub-angular cobbles		
1.00-1.45 1.00	SPT(C) N=27 B			2,4/5,5,6,11					
1.50	B					(2.90)			
2.00-2.45 2.00	SPT(C) N=40 B			1,5/8,8,10,14					
3.00-3.29 3.00	SPT(C) 50/140 B			3,7/18,32		3.20	Stiff dark brown/purple slightly sandy slightly gravelly silty CLAY		
4.00-4.20 4.00	SPT(C) 50/50 B			25/50		(2.80)			
5.00-5.19 5.00	SPT(C) 50/40 B			25/50					
						6.00	Complete at 6.00m		

Remarks
Borehole backfilled upon completion

Scale (approx)	Logged By
1:50	S. Connolly

Figure No.
8005-08-18.BH03

Ground Investigations Ireland Ltd
www.gii.ie

Machine : Dando 2000 **Method :** Cable Percussion	**Casing Diameter**	**Ground Level (mOD)**	**Site** Dalguise, Monkstown	**Borehole Number** **BH04**
			Client Benchmark Properties	**Job Number** 8005-08-18
	Location	**Dates** 03/09/2018	**Engineer**	**Sheet** 1/1

Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
						(0.20) 0.20	TOPSOIL		
0.50	B						Stiff brown slightly sandy gravelly CLAY with occasional sub-angular cobbles		
						(1.20)			
1.00-1.33 1.00	SPT(C) 50/180 B			4,7/9,15,26					
						1.40	Stiff dark brown/purple sandy slightly gravelly silty CLAY		
1.50	B								
						(0.70)			
2.00-2.20 2.00	SPT(C) 50/50 B			25/50		2.10 (0.20) 2.30	OBSTRUCTION: Presumed rock or boulder		
							Complete at 2.30m		

Remarks
Borehole backfilled upon completion
Chiselling from 2.10m to 2.30m for 1 hour.

Scale (approx)	**Logged By**
1:50	S. Connolly
Figure No. 8005-08-18.BH04	

2.0 Hydrocare Environmental Limited - Infiltration Rate Testing Report

INFILTRATION RATE TESTING

Per

BRE Digest 365 TEST METHOD

Applicant: Lulani Dalguise Limited

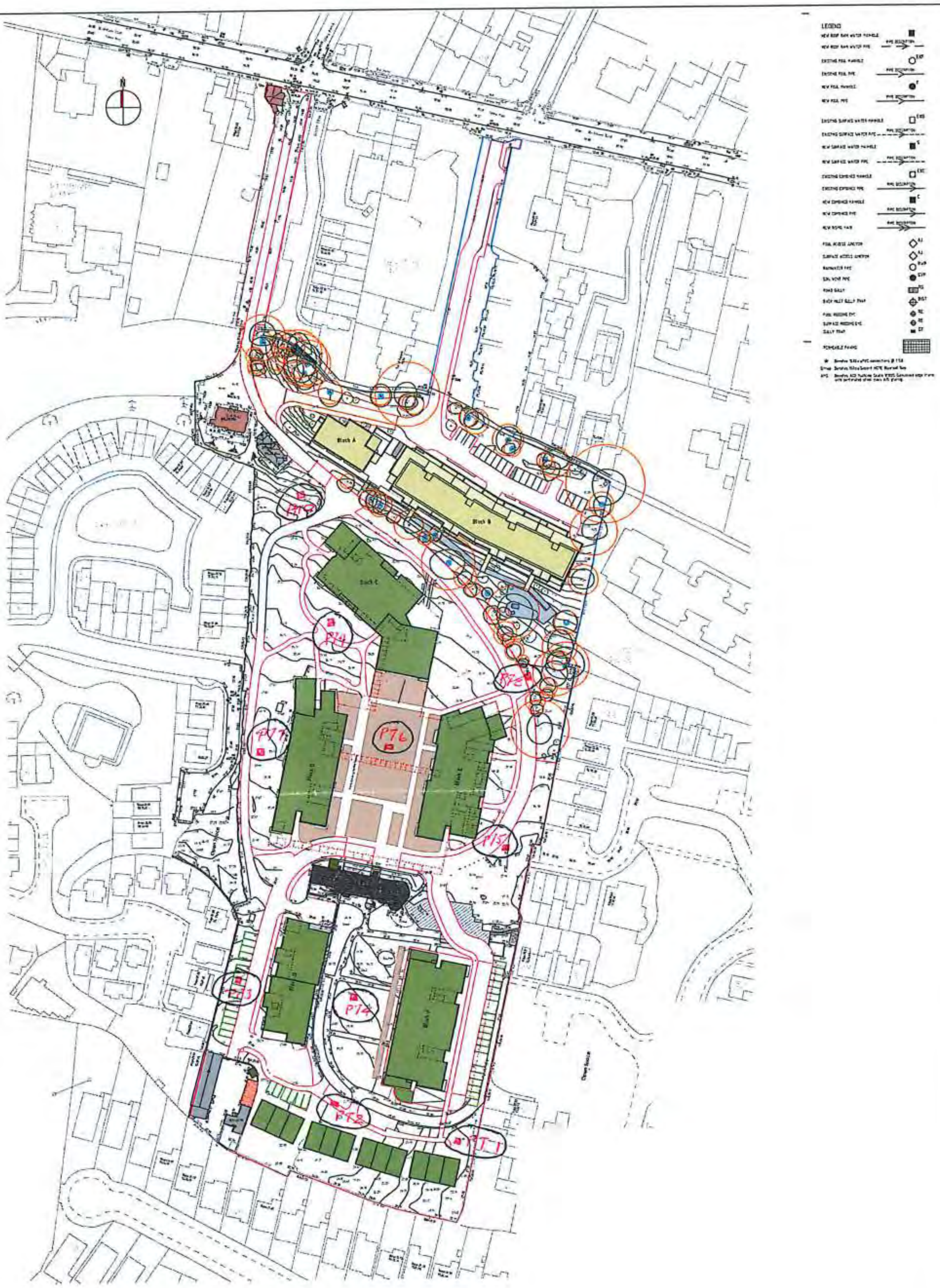
Site Location: 71 Monkstown Rd, Monkstown, Co. Dublin

DATE OF REPORT: 29th May 2019

Prepared by

HYDROCARE ENVIRONMENTAL LTD

DRAYTON CLOSE
SOUTHDENE
CHESHIRE HOME
ARUNDEL
Sheet 2 of 2 (A1)
NOTE:
Portion of Ordnance Survey Detail Shown Grey Digitally Reproduced under Ordnance Survey Ireland Licence No. SU 0001418 © Government of Ireland.
LAND SURVEYS
22 Mellifont Avenue, Dun Laoghaire, Co. Dublin.
Ph: 2805212 Fax: 2302535 info@landsurveys.ie
Site of: Dalguise and Burbeck, Monkstown Road.
Client: Glenveagh Properties
Scale: 1:500 (A1)
Contour: 0.5m Interval
Datum: OS Malin Head
Issued: 26.02.2018
Ref: 015776-F
TP9
TP6
TP8
TP7
TP3
TP4
TP2



Drawing issued for planning application

Lulani Dalguise Ltd

New Residential Development (Phase 2) at Dalguise House, Monkstown, Co.Dublin

benchmark PROPERTY

Proposed Site Surface Water Layout. Phase 2

Mar 2019 | 1:500 | Job No. 1009 | Dwg No. S04 | Rev. P

HYDROCARE
ENVIRONMENTAL LTD

Environmental Consultants
Cooperhill Rd., Beamore,
Drogheda, Co. Meath

Tel: 0419842378
Email: info@hydrocareenvironmental.ie

HCE Ref: 19-221

Brenchmark Property
2 Lansdowne Terrace
Shelbourne Road
Ballsbridge
Dublin 4

29th May 2019

FAO: Sean Drudy, Engineer

Applicant: Lulani Dalguise Limited
Site Location: 71 Monkstown Rd, Monkstown, Co. Dublin

Infiltration testing was carried out on 23rd May 2019 at the above location per BRE digest 365 method. Results of testing are summarised below for your information.

Test Hole No.	*Depth of Hole [mBGL]*	*Water Table Level [mBGL] (N/A if not encounterd)*	*Bedrock Level [mBGL] (N/A if not encounterd)*	*Infiltration Rate [m/s]*
1	1.50	n/a	n/a	9.53E-06
2	1.45	n/a	n/a	2.38E-06
3	1.50	n/a	n/a	6.36E-06
5	1.40	n/a	n/a	3.32E-06
7	1.50	n/a	n/a	2.72E-06
8	1.50	n/a	n/a	5.45E-06
9	1.50	n/a	n/a	3.18E-06
10	1.40	n/a	n/a	2.93E-06

Further information relating to specific test details are appended herewith for your information.

Yours sincerely,

Daniel Nolan

Daniel Nolan, BA BAI, Msc Environmental Engineering, FETAC Site Assessor, MIEI

Hydrocare Environmental Ltd. - BRE365 Design Calculations

CLIENT:	**Lulani Dalguise Limited**
LOCATION:	**71 Monkstown Rd, Monkstown, Co. Dublin**
TEST HOLE NO.:	**1**

Infiltration Rate

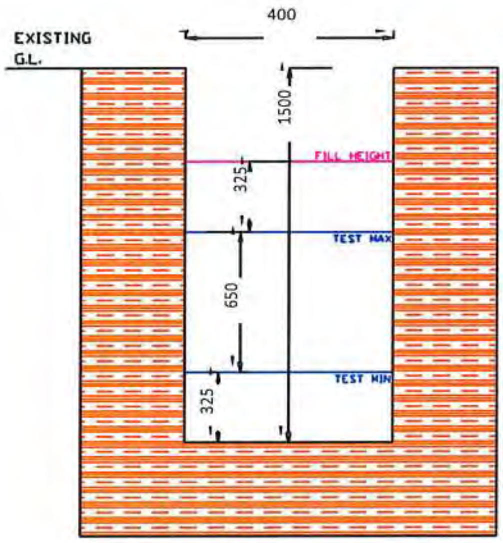
Test Hole Information:	
Length [m]	1.00
Width [m]	0.40
Depth of hole [m]	1.50
Water filled to [mBGL]	0.20
Water Table [mBGL]	n/a
Base of Test [mBGL]	1.50
Bedrock [mBGL]	n/a
Drop Time [min]	205

$V_{p75\text{-}25} = 1 \times 0.4 \times (0.975 - 0.325) = 0.26\ m^3$

$A_{p50} = (1 \times 0.65 \times 2) + (0.4 \times 0.65 \times 2) + (1 \times 0.4) = 2.22\ m^2$

$$f = \frac{0.26}{2.22 \times 204.724409448819 \times 60} = 9.53\text{E-}06\ \ m/s$$

Note: Base of test is bottom of test hole unless water table is encountered



BRE 365 TEST HOLE

Date:	23rd May 2019
Client:	Lulani Dalguise Limited
Location:	71 Monkstown Rd, Monkstown, Co. Dublin

Hydrocare Environmental Ltd. - BRE365 Design Calculations

CLIENT:	**Lulani Dalguise Limited**
LOCATION:	**71 Monkstown Rd, Monkstown, Co. Dublin**
TEST HOLE NO.:	**2**

Infiltration Rate

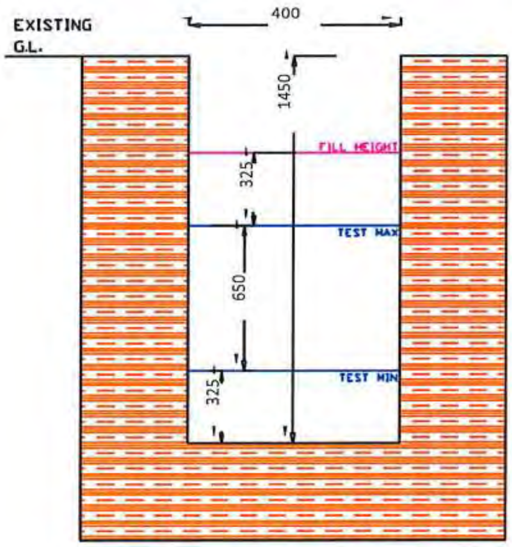
Test Hole Information:	
Length [m]	1.00
Width [m]	0.40
Depth of hole [m]	1.45
Water filled to [mBGL]	0.15
Water Table [mBGL]	n/a
Base of Test [mBGL]	1.45
Bedrock [mBGL]	n/a
Drop Time [min]	819

$V_{p75-25} = 1 \times 0.4 \times (0.975 - 0.325) = 0.26\ m^3$

$A_{p50} = (1 \times 0.65 \times 2) + (0.4 \times 0.65 \times 2) + (1 \times 0.4) = 2.22\ m^2$

$$f = \frac{0.26}{2.22 \times 818.897637795276 \times 60} = 2.38E\text{-}06 \ m/s$$

Note: Base of test is bottom of test hole unless water table is encountered



BRE 365 TEST HOLE

Date:	23rd May 2019
Client:	Lulani Dalguise Limited
Location:	71 Monkstown Rd, Monkstown, Co. Dublin

Hydrocare Environmental Ltd. - BRE365 Design Calculations

CLIENT:	**Lulani Dalguise Limited**
LOCATION:	**71 Monkstown Rd, Monkstown, Co. Dublin**
TEST HOLE NO.:	**3**

Infiltration Rate

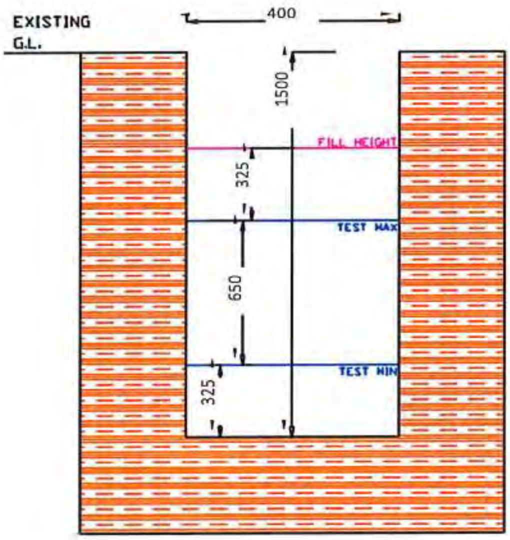
Test Hole Information:	
Length [m]	1.00
Width [m]	0.40
Depth of hole [m]	1.50
Water filled to [mBGL]	0.20
Water Table [mBGL]	n/a
Base of Test [mBGL]	1.50
Bedrock [mBGL]	n/a
Drop Time [min]	307

$$V_{p75\text{-}25} = 1 \times 0.4 \times (0.975 - 0.325) = 0.26 \ m^3$$

$$A_{p50} = (1 \times 0.65 \times 2) + (0.4 \times 0.65 \times 2) + (1 \times 0.4) = 2.22 \ m^2$$

$$f = \frac{0.26}{2.22 \times 307.086614173228 \times 60} = 6.36E\text{-}06 \ m/s$$

Note: Base of test is bottom of test hole unless water table is encountered



BRE 365 TEST HOLE

Date:	23rd May 2019
Client:	Lulani Dalguise Limited
Location:	71 Monkstown Rd, Monkstown, Co. Dublin

Hydrocare Environmental Ltd. - BRE365 Design Calculations

CLIENT:	**Lulani Dalguise Limited**
LOCATION:	**71 Monkstown Rd, Monkstown, Co. Dublin**
TEST HOLE NO.:	**5**

Infiltration Rate

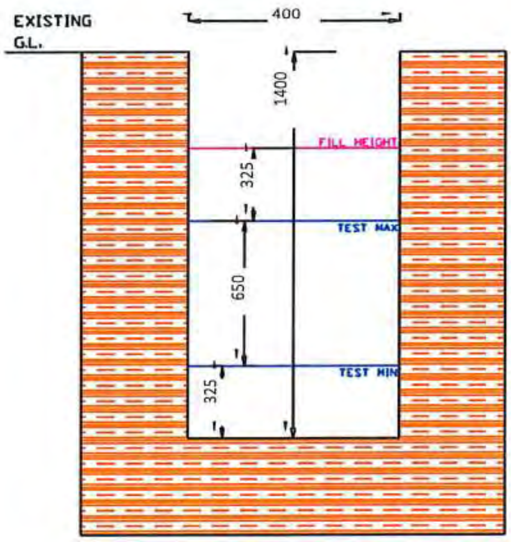
Test Hole Information:	
Length [m]	1.00
Width [m]	0.40
Depth of hole [m]	1.40
Water filled to [mBGL]	0.10
Water Table [mBGL]	n/a
Base of Test [mBGL]	1.40
Bedrock [mBGL]	n/a
Drop Time [min]	589

$V_{p75\text{-}25}$ = 1 x 0.4 x (0.975 - 0.325) = 0.26 m^3

A_{p50} = (1 x 0.65 x 2) + (0.4 x 0.65 x 2) + (1 x 0.4) = 2.22 m^2

$$f = \frac{0.26}{2.22 \times 588.582677165354 \times 60} = 3.32E\text{-}06 \text{ m/s}$$

Note: Base of test is bottom of test hole unless water table is encountered



BRE 365 TEST HOLE

Date: 23rd May 2019
Client: Lulani Dalguise Limited
Location: 71 Monkstown Rd, Monkstown, Co. Dublin

Hydrocare Environmental Ltd. - BRE365 Design Calculations

CLIENT:	**Lulani Dalguise Limited**
LOCATION:	**71 Monkstown Rd, Monkstown, Co. Dublin**
TEST HOLE NO.:	**7**

Infiltration Rate

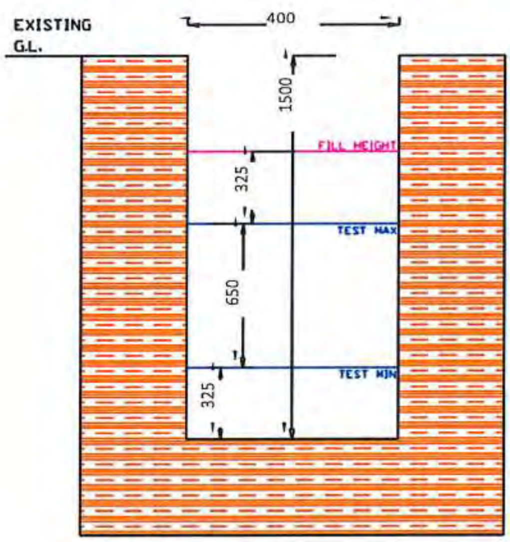
Test Hole Information:	
Length [m]	1.00
Width [m]	0.40
Depth of hole [m]	1.50
Water filled to [mBGL]	0.20
Water Table [mBGL]	n/a
Base of Test [mBGL]	1.50
Bedrock [mBGL]	n/a
Drop Time [min]	717

$$V_{p75\text{-}25} = 1 \times 0.4 \times (0.975 - 0.325) = 0.26 \text{ m}^3$$

$$A_{p50} = (1 \times 0.65 \times 2) + (0.4 \times 0.65 \times 2) + (1 \times 0.4) = 2.22 \text{ m}^2$$

$$f = \frac{0.26}{2.22 \times 716.535433070866 \times 60} = 2.72\text{E-}06 \text{ m/s}$$

Note: Base of test is bottom of test hole unless water table is encountered



BRE 365 TEST HOLE

Date:	23rd May 2019
Client:	Lulani Dalguise Limited
Location:	71 Monkstown Rd, Monkstown, Co. Dublin

Hydrocare Environmental Ltd. - BRE365 Design Calculations

CLIENT:	**Lulani Dalguise Limited**
LOCATION:	**71 Monkstown Rd, Monkstown, Co. Dublin**
TEST HOLE NO.:	**8**

Infiltration Rate

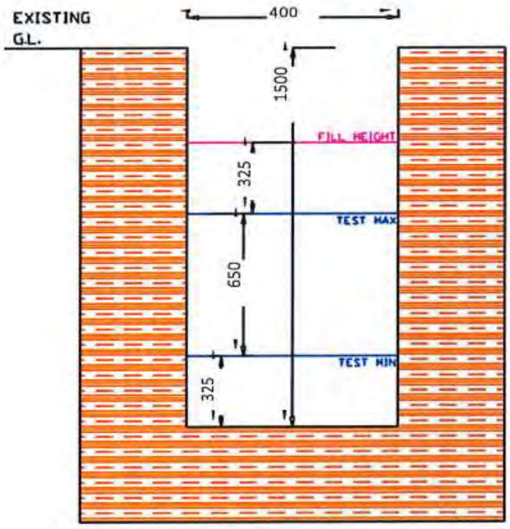
Test Hole Information:	
Length [m]	1.00
Width [m]	0.40
Depth of hole [m]	1.50
Water filled to [mBGL]	0.20
Water Table [mBGL]	n/a
Base of Test [mBGL]	1.50
Bedrock [mBGL]	n/a
Drop Time [min]	358

$$V_{p75-25} = 1 \times 0.4 \times (0.975 - 0.325) = 0.26 \text{ m}^3$$

$$A_{p50} = (1 \times 0.65 \times 2) + (0.4 \times 0.65 \times 2) + (1 \times 0.4) = 2.22 \text{ m}^2$$

$$f = \frac{0.26}{2.22 \times 358.267716535433 \times 60} = 5.45E\text{-}06 \text{ m/s}$$

Note: Base of test is bottom of test hole unless water table is encountered



BRE 365 TEST HOLE

Date:	23rd May 2019
Client:	Lulani Dalguise Limited
Location:	71 Monkstown Rd, Monkstown, Co. Dublin

Hydrocare Environmental Ltd. - BRE365 Design Calculations

CLIENT:	**Lulani Dalguise Limited**
LOCATION:	**71 Monkstown Rd, Monkstown, Co. Dublin**
TEST HOLE NO.:	**9**

Infiltration Rate

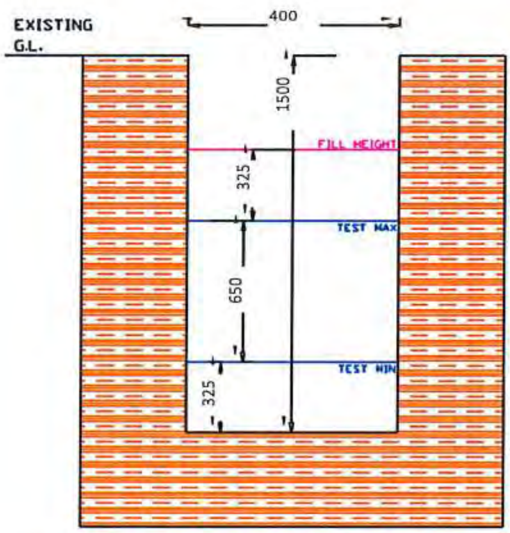
Test Hole Information:	
Length [m]	1.00
Width [m]	0.40
Depth of hole [m]	1.50
Water filled to [mBGL]	0.20
Water Table [mBGL]	n/a
Base of Test [mBGL]	1.50
Bedrock [mBGL]	n/a
Drop Time [min]	614

$V_{p75\text{-}25}$ = 1 x 0.4 x (0.975 - 0.325) = 0.26 m^3

A_{p50} = (1 x 0.65 x 2) + (0.4 x 0.65 x 2) + (1 x 0.4) = 2.22 m^2

$$f = \frac{0.26}{2.22 \times 614.173228346457 \times 60} = 3.18E\text{-}06 \text{ m/s}$$

Note: Base of test is bottom of test hole unless water table is encountered



BRE 365 TEST HOLE

Date: 23rd May 2019
Client: Lulani Dalguise Limited
Location: 71 Monkstown Rd, Monkstown, Co. Dublin

Hydrocare Environmental Ltd. - BRE365 Design Calculations

CLIENT:	**Lulani Dalguise Limited**
LOCATION:	**71 Monkstown Rd, Monkstown, Co. Dublin**
TEST HOLE NO.:	**10**

Infiltration Rate

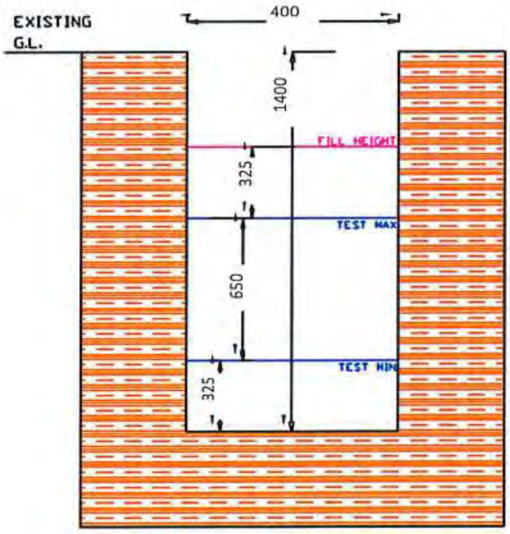
Test Hole Information:	
Length [m]	1.00
Width [m]	0.40
Depth of hole [m]	1.40
Water filled to [mBGL]	0.10
Water Table [mBGL]	n/a
Base of Test [mBGL]	1.40
Bedrock [mBGL]	n/a
Drop Time [min]	665

V_{p75-25} = 1 x 0.4 x (0.975 - 0.325) = 0.26 m^3

A_{p50} = (1 x 0.65 x 2) + (0.4 x 0.65 x 2) + (1 x 0.4) = 2.22 m^2

$$f = \frac{0.26}{2.22 \times 665.354330708661 \times 60} = 2.93E-06 \text{ m/s}$$

Note: Base of test is bottom of test hole unless water table is encountered



BRE 365 TEST HOLE

Date:	23rd May 2019
Client:	Lulani Dalguise Limited
Location:	71 Monkstown Rd, Monkstown, Co. Dublin

Benchmark Property
2 Lansdowne Terrace
Shelbourne Road
Ballsbridge
Dublin 4

T +353 (0)1 234 9600
W benchmarkproperty.ie
E info@benchmarkproperty.ie

APPENDIX 9.2

GROUND INVESTIGATION REPORT

IGSL Limited

David Rehill Consulting

Dalguise Residential Development
Monkstown,
Co. Dublin

Ground Investigation Report

Report No. 23927

May 2022

Report

M7 Business Park
Naas
Co. Kildare
Ireland

T: +353 (45) 846176
E: info @igsl.ie
W: www.igsl.ie

Project: Dalguise, Monkstown

Project No. 23927

Revision	**Date**	**Title**		
Rev 0	25/05/2022	Ground Investigation Report		
	Copies	Document Format	Prepared By	Reviewed By
		PDF	Brian Green Chartered Engineer	David Green Chartered Engineer
	To	David Rehill Consulting		
Revision	**Date**	**Title**		
Rev 0				
	Copies	Document Format	Prepared By	Reviewed By
	To			
Revision	**Date**	**Title**		
	Copies	Document Format	Prepared By	Reviewed By
	To			
Revision	**Date**	**Title**		
	Copies	Document Format	Prepared By	Reviewed By
	To			

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Appendix 5	Plate Bearing Test Results
Appendix 6	Foundation Inspection Pits
Appendix 7	Infiltration Test Results
Appendix 8	Geotechnical Laboratory Testing
Appendix 9	Chemical and Environmental Laboratory Testing
Appendix 10	Site Plan

Separate Cover

Waste Characterisation Assessment (O’Callaghan Moran)

FOREWORD

The following conditions and notes on the geotechnical site investigation procedures should be read in conjunction with this report.

Standards

The ground investigation works for this project (Dalguise Residential) have been carried out by IGSL in accordance with Eurocode 7 - Part 2: Ground Investigation & Testing (EN 1997-2:2007). This has been used together with complementary documents such as BS 5930 (1999), BS 1377 (Parts 1 to 9) and Engineers Ireland Specification & Related Documents for Ground Investigation in Ireland (2006). A new National Annex for use in the Republic of Ireland is currently in circulation for comment and will be adopted in the near future. In the mean time, the following Irish (IS) and European Standards or Norms are referenced:

- IS EN 1997-2 Eurocode 7: 2007 – Geotechnical Design – Part 2: Ground Investigation & Testing
- IS EN ISO 22475-1:2006 Geotechnical Investigation and Sampling – Sampling Methods & Groundwater Measurements
- IS EN ISO 14688-1:2002 Geotechnical Investigation and Testing – Identification and Classification of Soil, Part 1: Identification and Description
- IS EN ISO 14688-2:2004 Geotechnical Investigation and Testing – Identification and Classification of Soil, Part 2: Classification Principles
- IS EN ISO 14689-1:2004 Geotechnical Investigation and Testing - Identification & Classification of Rock, Part 1: Identification & Description

Reporting

Recommendations made and opinions expressed in this report are based on the strata observed in the exploratory holes, together with the results of in-situ and laboratory tests. No responsibility can be held by IGSL Ltd for ground conditions between exploratory hole locations.

The engineering logs provide ground profiles and configuration of strata relevant to the investigation depths achieved and caution should be taken when extrapolating between exploratory points. No liability is accepted for ground conditions extraneous to the investigation points.

This report has been prepared for David Rehill Consulting and the information should not be used without prior written permission. The recommendations developed in this report specifically relate to the proposed development. IGSL Ltd accepts no responsibility or liability for this document being used other than for the purposes for which it was intended.

Boring Procedures

Unless otherwise stated, 'shell and auger' or cable percussive boring technique has been employed as defined by Section 6.3 of IS EN ISO 22475-1:2006. The boring operations, sampling and in-situ testing complies with the recommendations of IS EN 1997-2:2007 and BS 1377:1990 and EN ISO 22476-3:2005. The shell and auger boring technique allows for continuous sampling in clay and silt above the water table and sand and gravel below the water table (Table 2 of IS EN ISO 22475-1:2006).

It is highlighted that some disturbance and variations is unavoidable in particular ground (e.g. blowing sands, gravel / cobble dominant glacial deposits etc). Attention is drawn to this condition, whenever it is suspected. Where cobbles and boulders are recorded, no conclusion should be drawn concerning the size, presence, lithological nature, or numbers per unit volume of ground.

Rotary Drilling Procedures
Rotary drilling methods have been used to recover bedrock samples in line with Section 3.5 of IS EN 1997-2:2007 and IS EN ISO 22475-1. Where cable percussive boreholes terminated prematurely on an obstruction within overburden, open hole drilling methods (odex or symmetrix) were utilized to advance the drillholes through the superficial deposits with coring in bedrock. The key objectives of the rock sampling were to obtain high core recovery (TCR), minimize sample disturbance and facilitate accurate identification of strength, weathering and discontinuity characteristics.

In-Situ Testing
Standard penetration tests were conducted strictly in accordance with Section 4.6 of IS EN 1997-2:2007. The SPT equipment (hammer energy test) has been calibrated in accordance with EN ISO 22476-3:2005 and the Energy Ratio (E_r). A calibration certificate is available upon request. The E_r is defined as the ratio of the actual energy E_{meas} (measured energy during calibration) delivered to the drive weight assembly into the drive rod below the anvil, to the theoretical energy (E_{theor}) as calculated from the drive weight assembly. The measured number of blows (N) reported on the engineering logs are uncorrected. In sands, the energy losses due to rod length and the effect of the overburden pressure should be taken into account (see IS EN ISO 22476-3:2005).

Groundwater
The depth of entry of any influx of groundwater is recorded during the course of boring operations. However, the normal rate of boring does not usually permit the recording of an equilibrium level for any one water strike. Where possible drilling is suspended for a period of twenty minutes to monitor the subsequent rise in water level. Groundwater conditions observed in the borings or pits are those appertaining to the period of investigation. It should be noted however, that groundwater levels are subject to diurnal, seasonal and climatic variations and can also be affected by drainage conditions, tidal variations etc.

Engineering Logging
Soil and rock identification has been based on the examination of the samples recovered and conforms with IS EN ISO 14688-1:2002 and IS EN ISO 14689-1:2004. Rock weathering classification conforms to IS EN ISO 14689-1:2003 while discontinuities (bedding planes, joints, cleavages, faults etc) are classified in accordance with 4.3.3 of IS EN ISO 14689-1:2003. Rock mechanical indices (TCR, SCR, RQD) are defined in accordance with IS EN ISO 22475-1:2006.

Retention of Samples
Samples shall be retained for a period of 60 days following approval of the final factual report, as detailed in the Scope of Works.

1.0 Introduction and Objectives

IGSL Limited were appointed by David Rehill Consulting to conduct a ground investigation at the site of a proposed residential development in the lands of Dalguise House, Monkstown, Co. Dublin. It is understood that the development will comprise apartments constructed over basements.

The approximate area of investigation is shown on Figure 1.

Figure 1 – Site Location

The objectives of the investigation were as follows:

- Ascertain the ground conditions at the site
- Identify suitable bearing strata for structural foundations
- Ascertain soil parameters for use in the design of roads and paved areas
- Determine the geometry of existing boundary wall foundations in selected locations
- Investigate for the presence of subsoil contamination with respect to landfill disposal of soils arising from future basement excavations
- Investigate the potential for sulphate attack on buried concrete

This report presents the findings of the ground investigation and discusses these findings with respect to future development of this site. The environmental elements of the investigation were interpreted by O'Callaghan Moran and discussed in their Waste Characterisation Assessment, which is presented under separate cover.

2.0 Scope of Works

The fieldworks entailed the following elements.

- 6 no. cable percussive boreholes
- Rotary coreholes at selected borehole locations (RC02, RC03, RC04. RC05, RC06), and at additional locations RC07, RC08, RC09.
- Trial pits were excavated in six locations, numbered TP21 to TP26 (continuing the nomenclature from trial pits of a previous phase of investigation)
- Window sampling techniques were used in five locations to obtain relatively undisturbed samples for environmental testing purposes.
- Plate Bearing Tests were performed in three locations to provide equivalent CBR values for road pavement design purposes.
- Foundation inspection pits were excavated along the existing perimeter wall in locations shown on the site plan as FP01 to FP05, FP08, FP09, FP12 and FP13.
- Infiltration tests were performed in six locations to assess the suitability of the sub-soils for soakaway purposes.

2.1 Cable Percussive Boreholes

Boreholes were constructed in 6 locations (BH01 to BH06) using a Dando 2000 rig equipped with 200 mm casing. A hand dug inspection pit was excavated at each location prior to commencing drilling works and the locations were scanned for services using a CAT detection tool.

During the course of boring, in-situ Standard Penetration Tests (SPT) were undertaken at regular intervals. Samples were also recovered to assist in the visual assessment of recovered soils and to provide specimens for laboratory testing.

Instances of groundwater ingress were also recorded and monitored for a further 20 minutes to permit the water to rise.

Borehole records are presented in Appendix 1 of this report.

2.2 Rotary Coreholes

Rotary techniques were employed to ascertain the presence, composition and condition of bedrock to the scheduled depths. Symmetrix open hole techniques were used to advance through the overburden deposits, reverting to rotary coring where core recovery was possible.

Standard Penetration Tests (SPTs) were undertaken within overburden to obtain an indication of soil strength.

Rotary coring was carried out using an air/mist flush to maximise recovery. Cores of 78 mm diameter were recovered and placed securely in wooden storage boxes.

The recovered core was inspected by a qualified engineering geologist and logged in detail at IGSL's laboratory. Records detailing the Total Core Recovery (TCR), Solid Core Recovery (SCR) and Rock Quality Designation (RQD) were produced.

All cores were labelled and photographed for inclusion in the report. Photographs are presented digitally for ease of browsing and to permit close examination at high resolution. Corehole records and photographs are included in Appendix 2 of this report.

2.3 Trial Pits

Trial pitting was performed using a 16T tracked excavator. The trial pits were logged and sampled by an IGSL geotechnical engineer in accordance with BS 5930 (2015).

Pit sidewalls were assessed in terms of their short-term stability and any instances of groundwater ingress were recorded. Soil samples were also recovered to provide specimens for laboratory testing.

The samples were placed in heavy duty polyethene bags and sealed before being transported to Naas for laboratory testing. Environmental sub-samples were placed in appropriate containers (amber glass jars and vials).

The trial pits were backfilled with the as-dug arisings and reinstated to the satisfaction of IGSL's site geotechnical engineer. The trial pit logs in Appendix 3 include descriptions of the soils encountered, groundwater conditions and stability of the pit sidewalls.

2.4 Window Samples

Window samples WS01 and WS02 were undertaken at each corehole and trial pit location. The prime purpose of the window samples was to recover undisturbed samples of the overburden soils from which environmental test specimens could be extracted.

Window samples are advanced by driving a steel sampling tube under constant percussive effort. The soils enter the tube within a protective plastic liner, which is withdrawn after every metre of progress. The liners are then placed in wooden channel boxes and transported to the IGSL offices where they are logged and sub-sampled as required.

Environmental sub-samples were extracted from the window sample recovery and placed in appropriate containers (amber glass jars and vials).

The window sample records are presented in Appendix 4 of this report.

2.5 Plate Bearing Tests.

Plate bearing tests were performed in three locations to obtain a measure of the CBR values. A 450 mm diameter plate was used, and tests were performed at a depth of 0.45 metres below existing ground level. Tests were performed in accordance with BS 1377 Part 9: 1990. "In-situ Tests". The incremental loading test (4.1.6.4.2) was used.

The maximum applied load was estimated on the basis of obtaining an accumulative displacement of at least 1.25 mm. The load was then applied in five approximately equal increments to the design load. To measure recovery the load was removed in three increments. A second phase of loading and unloading was performed to assess the benefits of further compaction.

The settlement under each increment was measured against time until movement had effectively ceased and the results are presented as graphs of applied pressure against settlement. Calculation of Modulus of Sub-grade Reaction (k) and CBR values are in accordance with NRA HD25-26/10 Volume7: Pavement Design and Maintenance.

The test records from the initial and reload stages are enclosed in Appendix 5, while the calculated CBR values are shown in Table 1.

Location	Depth (m bgl)	CBR%	
		Cycle 1	Cycle 2
CBR01	0.45	1.1	2.7
CBR02	0.45	2.9	4.3
CBR03	0.45	4.8	7.1

Table 1

2.6 Foundation Inspection Pits

Nine hand-excavated pits were undertaken adjacent to existing perimeter wall. These pits were undertaken primarily to determine the geometry of the wall foundations and to ascertain the composition of the founding strata. For this reason, the pits were extended below the depths of the encountered foundations.

The foundation inspection pit records contain photographs of the exposed foundations and dimensioned sketches. Also shown are any instances of water ingress and a geological description of the soils encountered.

The inspection pit records are included in Appendix 6 of this report.

2.7 Infiltration Tests

The infiltration tests were performed in accordance with BRE Digest 365 'Soakaway Design'.

To obtain a measure of the infiltration rate of the sub-soils, water is poured into the test pit, and records taken of the fall in water level against time. This procedure is repeated twice more to ensure saturation of the sub-soils. Normally the results for the final stage of testing, following the saturation periods, are used for soakaway design purposes. The infiltration rate is the volume of water dispersed per unit exposed area per unit of time, and is generally expressed as metres/minute or metres/second.

The infiltration test results are presented in Appendix 7. With the exception of SA06 there was no measurable fall in water level over the test periods. SA06 recorded a very low infiltration rate.

3.0 Ground Conditions

3.1 Cable Percussive Boreholes

The boreholes revealed soft to firm dark brown sandy clay (subsoil) extending to depths ranging from 0.7 metres to 2.9 metres. This material was underlain by stiff (high strength) light brown sandy clay which was generally underlain by very stiff (very high strength) dark grey/brown sandy gravelly clay containing cobbles and boulders.

At BH06, large roots were observed within the high strength clay soils at approximately 1.3 m BGL, most likely originating from the adjacent mature trees.

All of the boreholes were terminated on obstructions, at depths ranging from 5.2 metres to 9.8 metres. The borehole findings are summarised in Table 2.

Location	Made Ground	Soft/Firm dark brown sandy clay	Stiff light brown sandy clay	Stiff to very stiff dark grey/brown sandy clay	Very stiff dark grey/brown sandy gravelly clay
BH01	1.60	1.60 to 2.90			2.90 to 5.30
BH02/2A	0.40	0.40 to 1.30	1.30 to 3.80	3.80 to 6.50	6.50 to 9.80
BH03		0.00 to 2.30	2.30 to 3.60		3.60 to 6.50
BH04		0.00 to 0.90	0.90 to 2.10		2.10 to 6.30
BH05		0.00 to 0.70	0.70 to 3.90		3.90 to 5.20
BH06		0.00 to 0.90	0.90 to 1.30	1.30 to 2.60	2.60 to 5.50

Table 2

No groundwater ingress was observed to the bored depths.

3.2 Rotary Coreholes

Coreholes were advanced below the depths achieved in the boreholes using Symmetrix "open hole" techniques. Where possible, rotary coring was undertaken to recover high quality cores of the overburden soils.

Examination of flush returns indicate that the soils below the borehole refusal depths are composed largely of gravelly clay, while the results of in-situ Standard Penetration Tests reflect a stiff to very stiff condition.

The rock was identified as medium strong to strong fine to medium grained Granite, fresh to moderately weathered. Standpipes were installed in RC03, RC05, RC07, and RC09 to facilitate long term monitoring of water levels

The rotary findings are summarised in Table 3. The levels to "intact" rock mostly range between 11 and 13 mOD, dipping to 9.5 m OD at the most northern point of the investigation (RC09).

Location	Ground Level mOD	Weathered rock (Symmetrix) m bgl	Intact Rock (Cored) m bgl	Cored Depth m bgl	Rock Level (intact) m OD
RC02	22.76	10.50	11.70	15.00	11.06
RC03	27.94	15.40	16.00	17.00	11.94
RC04	27.23		15.00	16.00	12.23
RC05	25.92		13.75	15.00	12.17
RC06	24.05		11.00	12.00	13.05
RC07	22.38		11.20	12.30	11.18
RC08	18.36	5.30	6.00	9.00	12.36
RC09	14.00	4.20	4.50	7.50	9.50

Table 3

Photo 1 shows recovery of the upper bedrock (10.5 – 14.0 m BGL) at RC02. The zone of moderately highly weathered Granite between 10.5 and 11.7 m BGL is clearly evident.

Photo 1 – Core recovery at RC02 (10.5 – 14.0 m BGL)

Photo 2 shows the core recovery at RC07. In this location, recovery of the overburden was possible between 7.5 and 10.5 m BGL. In comparison to RC02, the upper Granite bedrock was significantly fresher (less fractured).

Photo 2 – Core recovery at RC07 (7.5 – 12.5 m BGL)

3.3 Trial Pits

The trial pits revealed brown sandy clay in a soft to firm condition, underlain by firm to stiff deposits, becoming very stiff with depth. In three locations the pits were terminated in very stiff black gravelly clay.

Groundwater ingress was limited to a small seepage at a depth of 3.0 m BGL in TP22.

All trial pits remained stable during the period of excavation and logging (typically 45 minutes).

The ground conditions are summarised in Table 4

Location	Made ground	Soft/firm sandy clay with gravel	Firm/stiff grey /brown sandy clay with gravel	Stiff/very stiff brown gravelly clay	Very stiff black gravelly clay	Excavated Depth (m bgl)
TP21	0.00 to 0.20	0.0 to 0.4	0.40 to 0.90	0.90 - 2.70	2.70 to 3.40	3.40
TP22	0.0 to 0.20	02.0 to 0.80	0.80 to 1.20	1.20 to 3.30		3.30
TP23	0.00 to 1.40		1.40 to 2.20	2.20 to 2.80	2.80 to 3.50	3.50
TP24	0.00 to 0.25		0.25 to 0.90	0.90 to 3.00	3.00 to 3.10	3.10
TP25	0.00 to 0.20	0.00 to 0.50	0.50 to 1.20	1.20 to 3.00		3.00
TP26	0.00 to 0.20	0.20 to 1.00	1.00 to 2.70			2.70

Table 4

3.4 Foundation Inspection Pits

The inspection pits indicate that the rising walls have generally been placed at shallow depth on the sub-soil which has been described as brown sandy gravelly clay. Only at FP12 and FP13 did the foundation project beyond the face of the rising wall. The pit records are enclosed in Appendix 6, while the findings are summarised in Table 4.

Inspection Pit	Founding Depth (m bgl)	Projection (m)	Remarks	Founding medium
FP01	0.95	None	Direct Construction	Gravelly clay
FP02	0.80	None	Direct Construction	Gravelly clay
FP03	0.80	None	Direct Construction	Gravelly clay
FP04	0.50	None	Direct Construction	Gravelly clay
FP05	1.35	None	Direct Construction	Made ground
FP08	0.80	None	Direct Construction	Gravelly clay
FP09	0.00	None	Direct Construction	Gravelly clay
FP12	0.16	0.20		Gravelly clay
FP13	undetermined	0.25	Tree roots	

Table 5

3.5 Groundwater

While no water ingress was observed in the boreholes and trial pits, water was present in the coreholes at the end of drilling. While this was mostly at depths greater than 10 m BGL, RC08 and RC09 recorded standing water at depths of 3.1 and 3.2 m BGL respectively at the end of drilling.

Since the period of drilling is insufficient to determine the true groundwater level at the site, standpipes were installed in selected coreholes in order to permit long term groundwater monitoring.

4.0 Laboratory Testing

Laboratory testing was undertaken on selected samples in order to assist in the classification of the subsoils encountered. The results of geotechnical testing are included in Appendix 8, while the chemical and environmental test results are presented in Appendix 9.

4.1 Soil Classification

The results of Atterberg Limits tests classified the fine-grained Glacial Till as clay of low and intermediate plasticity (CL and CI). Moisture contents were mostly in the range 12 to 16%. Notable exceptions were the clay samples from BH02A, which were significantly “wetter” at 23 and 27%.

Particle Size Distribution (PSD) graphs show that the sub-soils are generally well graded, demonstrating “straight-line” grading curves that are typical of glacial till soils. The fines (SILT/CLAY) contents typically ranged between 23 and 47%. Notably, a ample from the aforementioned BH02A was more finely graded, demonstrating a fines content of 68%.

4.2 Sulphate and pH

Determination of pH values and Sulphate content were conducted by a nominated accredited environmental laboratory (Eurofins). Results are presented in reports prepared by the laboratory.

The results of water-soluble (water/soil extract) Sulphate and pH analyses of soils revealed very low SO_4 levels (<0.02 g/l) and near-neutral pH levels of 8.5 to 8.6.

4.3 Point Load and Uniaxial Compressive Strength Tests (Rock Core Samples)

Point Load Index tests were undertaken on selected rock core samples.

The Point Load Index Test provides a rapid strength assessment from rock fragments or cores. The test specimen is compressed between two cones loaded from a hydraulic hand pump. The core fails due to the tensile forces over the diametral area between the points. The strength at failure is expressed as the point load index Is.

For purposes of comparison the Is values are corrected to give the equivalent strength for a 50 mm diameter specimen. The compressive strength of the rock (qc) can be established using a correlation suggested by Goodman where UCS ≈ 18 to 24 x Is50.

The results of rock strength testing showed Is50 values mostly in the range 1 to 5 MPa, with an average of 3 MPa. These values correlated to equivalent UCS values in the range 20 to 100 MPa.

In accordance with Table 5 of EN ISO 14869-1, these strengths would confirm the rock to be predominately Medium Strong to Strong.

4.4 Environmental Laboratory Testing

Environmental testing was scheduled on selected soil samples. Samples underwent a Waste Acceptance Criteria (WAC) analyses in accordance with the RILTA Suite, which can be used to fully assess the waste disposal requirements of soils destined for landfill.

Included in the test suite are Heavy Metals, Speciated TPH, Mineral Oil, BTEX, PCB and Total Organic Carbon (TOC) carried out on dry soil samples. Also included are leachate analyses, whereby leachate is generated in accordance with CEN 10:1 specification and this is tested for the presence of recognised contaminants including Heavy Metals, Dissolved Organic Carbon (DOC) and Total Dissolved Solids (TDS). An Asbestos screen is also included in the RILTA suite.

The testing was undertaken by Eurofins Laboratory and the results are included in Appendix 9.

5.0 Discussion

5.1 General

The site lies within the grounds of Dalguise House and is largely grassed. Notably the topography varies considerably, commencing at approximately 37 mOD near the south-eastern boundary and falling to 23 mOD at the south-western corner of the site. The levels rise to between 24 and 28 m OD within the central portion of the site, before falling dramatically within the northern portion from approximately 22 to 14 mOD.

The pits and boreholes revealed layers of brown and grey sandy clay with varying proportions of gravel and cobbles. The upper layers are in a soft to firm condition, becoming stiff to very stiff with depth.

Symmetrix "open hole" drilling indicates that the deeper gravelly clay is in a very stiff condition, extending to the bedrock, which was identified as medium strong to strong, fine to medium grained, slightly weathered Granite.

The high and very high strength gravelly clay sub-soils are Glacial Till (known locally as Dublin Boulder Clay), which is the product of glacial deposition. The various colorations and reduced strength of the upper tills are related to weathering. The presence of roots within this material in one location (BH06) has been attributed to root spread of the adjacent mature trees.

Groundwater was observed in one trial pit, and this occurred as seepage at a depth of 3 m BGL. Standing water was recorded at similar depth in two coreholes at the end of drilling.

5.2 Structural Foundations

It is understood that basements will feature within the proposed development. However, if shallow foundations are being considered, these should be placed below the soft to firm upper deposits.

The boreholes and trial pits indicate that excavations of the order of 1 metre should be sufficient in most locations to reach stiff (high strength) soils. Assuming an undrained shear strength (Cu) of the order of 75 to 100 kPa, a bearing pressure of approximately 125 to 150 kPa should be achievable. However, since soft / firm upper soils have been shown to persist to depths of up to 2.9 m BGL in places (BH01), it will be important to monitor the foundation excavations to ensure that the underlying stiff soils have been reached. It must also be ensured that any organics or roots (such as those observed at BH06) are removed from the base of foundation pits.

For single-level basement construction, and assuming a typical excavation depth of c.4m, this would imply that foundations could be constructed directly on stiff to very stiff (high and very high strength) glacial till soils.

The results of SPT's in conjunction with visual assessment of the recovered samples indicate that allowable bearing pressures of the order of 275 to 300 kPa may be readily assumed for the glacial till soils at typical basement dig level. Due to their state of over-consolidation, settlements under these pressures would be expected to be low (c.5 to 10mm).

5.3 Groundwater

Groundwater was observed at a shallowest depth of c. 3m BGL in one trial pit and at similar depth at the end of drilling in two coreholes. However, these observations were made during the fieldwork period and should be regarded as representative of the "temporary condition" with the potential to rise further over time. It is not uncommon for the groundwater levels to rise significantly post-fieldwork, particularly when the overburden soils comprise low permeability cohesive glacial till.

Future monitoring of standpipes will therefore be critical in order to better understand the true groundwater levels and their response to factors such as seasonal variation and prolonged periods of heavy rainfall. Periodic monitoring should ideally continue up to the construction period. Continuous monitoring of water levels can be achieved using data loggers if required.

If encountered, groundwater flow through the firm/stiff and very stiff gravelly clay soils would be expected to be very slow, and most likely in the form of seepage. However, groundwater flow through granular (gravel) zones, if present within the glacial till, could be rapid. Evidence of this was observed at RC08, where the drill returns were distinctly granular below 3.0 m BGL. Where weathered and fractured bedrock is exposed in deeper excavations, water flow through this medium could also be rapid.

It is strongly recommended that monitoring of standpipes is undertaken at regular intervals until construction commences. Readings should also be taken after periods of heavy rainfall to determine the effect of prolonged precipitation on the groundwater table.

A key consideration if adopting trench / fill techniques for pad foundations will be the stability of open excavations. Since the trial pits remained stable during excavation, it would be expected that temporary excavations within the glacial till soils will also remain stable in the short term. However, no short-term stability should be presumed of Made Ground soils, which are typically in an uncompact state and prone to collapse.

Where excavations are left open for extended periods (e.g. drainage trenches), instability may occur as the sidewalls relax, in which case trench control measures will be required. Care will also be required where sand or gravel lenses are encountered within glacial till soils, as these are likely to become unstable after short periods of time.

The long-term effects of groundwater on constructed basements should also be considered. Since the groundwater table is expected to be above the proposed basement level, this will result in the generation of upward pressures due to buoyancy. The magnitude of the long-term uplift pressure can be calculated once the shallowest groundwater levels have been established by future monitoring of standpipes.

While multi-storey structure will counteract the hydrostatic uplift of foundations in the long term, uplift of other elements such as the basement slab should be considered. If it is deemed that the basement slab will be subject to a net uplift in the permanent condition, preventative measures such as ground anchors may be required. In some instances, it may be sufficient to thicken the basement slab in order to increase the dead weight resistance.

5.4 Ground Retention

Basement construction will require temporary ground retention measures. Due to presence of adjacent properties, it is envisaged that an embedded retaining wall will be utilised.

Typically, an embedded retaining wall would consist of a contiguous, secant or king post wall. While all systems could be designed to retain the anticipated active earth pressures, it should be noted that only the secant piled wall will provide a water-tight solution. It is also noted that a king post wall uses a “top down” construction sequence, whereby the supporting panels are installed as the excavation progresses. This provides an opportunity for groundwater ingress (and soil destabilisation) to occur during construction of the wall itself.

Pending future monitoring of standpipes, reference is made to the shallowest observed water level of 3 m BGL during the fieldwork period. Since this is above the expected dig depth for a single-level basement, groundwater retention should be seen as a critical factor when selecting the wall type. It is therefore envisaged that a secant piled retaining wall will be the preferred solution.

It is noted that the depth to bedrock was greater than 10 metres in most coreholes, implying that the retaining wall could achieve fixity within very high strength glacial till. However, within the northern portion of the site, rock was encountered at a much shallower depth of 4.5 m BGL (RC09), implying that a rock socket will be necessary. It is expected that heavy duty “Odex” drilling will required in order to advance through the strong and very strong intact Granite.

The advice of a specialist piling contractor should be sought with regard to the appropriate combination of pile diameter and length. If tolerances on lateral deflection are both stringent and critical, propping or anchoring may be required.

5.5 Pavements and Hard Standings

The results of in-situ plate bearing tests indicated variable CBR values for the initial load cycles, ranging between 1.1 and 4.8%. However, when the plate was reloaded (Cycle 2), significant improvements in CBR values were recorded, with Cycle 2 CBR values ranging between 2.7 and 7.1%. The results therefore indicate that the subgrade soils, once stripped to formation level, would benefit from proof rolling.

Where the subgrade has been subjected to proof rolling in a bid to increase CBR values, additional plate bearing tests should then be conducted on the prepared formation in order to verify the design CBR value.

Where proof rolling fails to increase the CBR values to acceptable levels (i.e. > 2.5%), the capping thicknesses should be designed in accordance with NRA HD 25-26/10 with reference to Section 3.23 (“Soft Subgrades”).

In accordance with the aforementioned design manual, soft subgrades can either be improved (e.g. using lime) or removed and replaced with a more suitable material such as 6F capping or starter layer material (Class 6A / 6B). The thickness removed will typically be between 0.5 and 1.0 m. Although the new material may be of good quality, the new subgrade should be assumed to be equivalent to one of a CBR of 2.5%.

A geotextile separator at subgrade level and geogrid reinforcement within the capping layer would be recommended to accommodate any variabilities within the subgrade.

Made Ground (where present) should be treated with caution, particularly reworked clay fill, such as that encountered at BH01. Where practical, the Made Ground should be removed to create a natural subgrade on which to construct the capping layer.

It is important that argillaceous sedimentary rocks (i.e. muddy limestone, calcareous mudstone, shale, etc.) are not used in sub-base, capping or as a starter layer. These have high potential to give rise to degradation (i.e. poor durability and soundness) and slaking and therefore would not be suitable. All granular fills (particularly Series 600 and 800 material) should be thoroughly examined, tested and approved in advance of being used in the pavement construction.

5.6 Chemical Attack on Buried Concrete

The results of Sulphate and pH testing showed very low water-soluble sulphate (WSS) levels in the range <0.01 to 0.02 g/l SO_4.with associated pH levels in the range 8.5 to 8.6.

With reference to Table C1 of BRE Special Digest 1: 2005, the levels of Sulphate suggest a design Sulphate Class of DS-1.

Assuming a static groundwater table, an ACEC (Aggressive Chemical Environment for Concrete) Classification of AC-1s is applicable, since the pH levels are greater than 2.5.

5.7 Soakaway Construction

The infiltration tests recorded little or no fall in water level, which is not unexpected given the predominately fine-grained composition of the subsoils. The sub-soils are, therefore, considered unsuitable for soakaway purposes, which is unsurprising since conventional soakaway systems typically do not function within “boulder clay”.

It is therefore expected that storm water will be discharged to an existing surface water system, using attenuation techniques to regulate the flow.

5.8 Landfill Disposal of Excavated Soils

The environmental results have been assessed by environmental specialists O’Callaghan Moran and their Waste Characterisation Assessment Report is presented under separate cover.

6.0 References

1. BS 5930:1999 +A2:2010 Code of Practice for Site Investigations; British Standards Institute

2. Manual of Contract Documents for Highway Works, Volume 5, Section 3, Ground Investigation, Part 4: Specification

3. BRE Special Digest 1: 2005 – Concrete in aggressive ground

4. EN 1997-3; Eurocode 7: Geotechnical Design – Part 3: Design assisted by field testing; 1997

5. BS1377; British Standard Methods of Test for Soils for Civil Engineering Purposes; British Standards Institute;1990.

6. BRE Digest 365, September 1991, British Research Establishment

7. Manual of Contract Documents for Road Works, Volume 1: Specification for Road Works (March 2007)

8. Manual of Soil Laboratory Testing, Volume 3; K.H. Head

9. ISRM – Suggested Methods for Determining Point Load Strength

10. ISRM – Suggested Methods for Determining the Uniaxial Compressive Strength and Deformability of Rock Materials

11. TRL Report 447- Sulphate specification for structural backfills

Appendix 1

Cable Percussive Boreholes

GEOTECHNICAL BORING RECORD

REPORT NUMBER 23927

CONTRACT	Dalguise House Development , Monkstown , Co.Dublin	**BOREHOLE NO.**	**BH01**
		SHEET	Sheet 1 of 1
CO-ORDINATES	722,813.23 E 728,293.00 N	**RIG TYPE**	Dando 2000
		BOREHOLE DIAMETER (mm)	200
GROUND LEVEL (m AOD)	37.30	**BOREHOLE DEPTH (m)**	5.30
		DATE COMMENCED	05/03/2022
		DATE COMPLETED	05/03/2022
CLIENT	Greystar Ltd	**SPT HAMMER REF. NO.**	
ENGINEER	David Rehill Consulting	**ENERGY RATIO (%)**	
		BORED BY	W.Cahill
		PROCESSED BY	F.C

Depth (m)	Description	Legend	Elevation	Depth (m)	Samples: Ref. Number	Sample Type	Depth (m)	Recovery	Field Test Results	Standpipe Details
0	MADE GROUND (Comprised of dark brown sandy SILT/CLAY with metal pieces)		35.70	1.60	AA165493	B	1.00		N = 11 (2, 2, 3, 3, 2, 3)	
	Firm dark brown sandy SILT/CLAY with occasional gravel		34.40	2.90	AA165494	B	2.00		N = 11 (3, 3, 3, 2, 3, 3)	
	Very stiff dark brown sandy silty gravelly CLAY		32.00	5.30	AA165495	B	3.00		N = 27 (10, 10, 7, 7, 6, 7)	
					AA165496	B	4.00		N = 37 (8, 5, 9, 9, 8, 11)	
					AA165497	B	5.00		N = 41 (9, 7, 10, 12, 10, 9)	
	Obstruction End of Borehole at 5.30 m									

HARD STRATA BORING/CHISELLING

From (m)	To (m)	Time (h)	Comments
3.3	3.4	0.75	
5.2	5.4	2	

WATER STRIKE DETAILS

Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
					No water strike

INSTALLATION DETAILS

Date	Tip Depth	RZ Top	RZ Base	Type

GROUNDWATER PROGRESS

Date	Hole Depth	Casing Depth	Depth to Water	Comments

REMARKS 1hr Erecting Covid 19 Safe Working Area . CAT scanned location and hand dug inspection pit carried out

Sample Legend
D - Small Disturbed (tub)
B - Bulk Disturbed
LB - Large Bulk Disturbed
Env - Environmental Sample (Jar + Vial + Tub)
UT - Undisturbed 100mm Diameter Sample
P - Undisturbed Piston Sample
W - Water Sample

GEOTECHNICAL BORING RECORD

REPORT NUMBER 23927

CONTRACT	Dalguise House Development , Monkstown , Co.Dublin	**BOREHOLE NO.**	**BH02**
		SHEET	Sheet 1 of 1
CO-ORDINATES	722,743.01 E 728,335.36 N	**RIG TYPE**	Dando 2000
GROUND LEVEL (m AOD)	22.76	**BOREHOLE DIAMETER (mm)**	200
		BOREHOLE DEPTH (m)	0.30
		DATE COMMENCED	05/03/2022
		DATE COMPLETED	05/03/2022
CLIENT	Greystar Ltd	**SPT HAMMER REF. NO.**	
ENGINEER	David Rehill Consulting	**ENERGY RATIO (%)**	
BORED BY	W.Cahill	**PROCESSED BY**	F.C

Depth (m)	Description	Legend	Elevation	Depth (m)	Samples: Ref. Number	Sample Type	Depth (m)	Recovery	Field Test Results	Standpipe Details
0	MADE GROUND (Comprised of fine gravel)		22.46	0.30						
	Obstruction - Steel plate noted End of Borehole at 0.30 m									

Depth scale: 0, 1, 2, 3, 4, 5, 6, 7, 8, 9

HARD STRATA BORING/CHISELLING

From (m)	To (m)	Time (h)	Comments
0.3		1	

WATER STRIKE DETAILS

Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
					No water strike

INSTALLATION DETAILS

Date	Tip Depth	RZ Top	RZ Base	Type

GROUNDWATER PROGRESS

Date	Hole Depth	Casing Depth	Depth to Water	Comments

REMARKS 1hr standing due to noise restrictions .1hr Erecting Covid 19 Safe Working Area . CAT scanned location and hand dug inspection pit carried out . Obstruction ecountered. Relocated 1m to BH02A and attempted rebore.

Sample Legend
D - Small Disturbed (tub)
B - Bulk Disturbed
LB - Large Bulk Disturbed
Env - Environmental Sample (Jar + Vial + Tub)
UT - Undisturbed 100mm Diameter Sample
P - Undisturbed Piston Sample
W - Water Sample

IGSL BH LOG 23927.GPJ IGSL.GDT 25/5/22

GEOTECHNICAL BORING RECORD

REPORT NUMBER 23927

CONTRACT	Dalguise House Development , Monkstown , Co.Dublin	**BOREHOLE NO.**	BH02A
		SHEET	Sheet 1 of 1
CO-ORDINATES	722,743.01 E 728,335.36 N	**RIG TYPE**	Dando 2000
GROUND LEVEL (m AOD)	22.76	**BOREHOLE DIAMETER (mm)**	200
		BOREHOLE DEPTH (m)	9.80
		DATE COMMENCED	05/03/2022
		DATE COMPLETED	06/03/2022
CLIENT	Greystar Ltd	**SPT HAMMER REF. NO.**	
ENGINEER	David Rehill Consulting	**ENERGY RATIO (%)**	
BORED BY	W.Cahill	**PROCESSED BY**	F.C

Description	Elevation	Depth (m)	Ref. Number	Sample Type	Depth (m)	Recovery	Field Test Results	Standpipe Details
MADE GROUND (Comprised of fine gravel)	22.36	0.40						
Firm dark brown sandy SILT/CLAY with occasional gravel	21.46	1.30	AA161951	B	1.00		N = 11 (2, 3, 3, 2, 3, 3)	
Stiff light brown sandy SILT/CLAY	18.96	3.80	AA161952	B	2.00		N = 27 (4, 5, 5, 6, 8, 8)	
			AA161953	B	3.00		N = 28 (5, 6, 6, 7, 7, 8)	
Stiff dark grey sandy SILT/CLAY	16.26	6.50	AA161954	B	4.00		N = 28 (4, 6, 6, 7, 7, 8)	
			AA161955	B	5.00		N = 28 (5, 5, 6, 7, 7, 8)	
			AA161956	B	6.00		N = 29 (6, 6, 7, 7, 8, 7)	
Very stiff dark grey sandy gravelly SILT/CLAY	12.96	9.80	AA161957	B	7.00		N = 30 (6, 7, 7, 8, 8, 7)	
			AA161958	B	8.00		N = 33 (7, 8, 8, 8, 9, 8)	
			AA161959	B	9.00		N = 40 (8, 8, 9, 10, 10, 11)	
End of Borehole at 9.80 m							N = 50/75 mm (7, 21, 50)	

HARD STRATA BORING/CHISELLING

From (m)	To (m)	Time (h)	Comments
9.5	9.8	1.5	

WATER STRIKE DETAILS

Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
					No water strike

INSTALLATION DETAILS

Date	Tip Depth	RZ Top	RZ Base	Type

GROUNDWATER PROGRESS

Date	Hole Depth	Casing Depth	Depth to Water	Comments

REMARKS 1hr Erecting Covid 19 Safe Working Area . CAT scanned location and hand dug inspection pit carried out

Sample Legend
D - Small Disturbed (tub)
B - Bulk Disturbed
LB - Large Bulk Disturbed
Env - Environmental Sample (Jar + Vial + Tub)
UT - Undisturbed 100mm Diameter Sample
P - Undisturbed Piston Sample
W - Water Sample

GEOTECHNICAL BORING RECORD

REPORT NUMBER 23927

CONTRACT	Dalguise House Development , Monkstown , Co.Dublin	**BOREHOLE NO.**	**BH03**
		SHEET	Sheet 1 of 1
CO-ORDINATES	722,777.52 E 728,417.94 N	**RIG TYPE**	Dando 2000
GROUND LEVEL (m AOD)	27.94	**BOREHOLE DIAMETER (mm)**	200
		BOREHOLE DEPTH (m)	6.50
DATE COMMENCED	03/03/2022	**DATE COMPLETED**	03/03/2022
CLIENT	Greystar Ltd	**SPT HAMMER REF. NO.**	
ENGINEER	David Rehill Consulting	**ENERGY RATIO (%)**	
BORED BY	W.Cahill	**PROCESSED BY**	F.C

Depth (m)	Description	Legend	Elevation	Depth (m)	Samples: Ref. Number	Sample Type	Depth (m)	Recovery	Field Test Results	Standpipe Details
0	Soft to firm dark brown sandy SILT/CLAY with occasional gravel									
1					AA161709	B	1.00		N = 9 (2, 3, 2, 2, 3, 2)	
2			25.64	2.30	AA161710	B	2.00		N = 14 (2, 3, 3, 4, 3, 4)	
	Stiff light brown sandy SILT/CLAY with some gravel and occasional cobbles									
3			24.34	3.60	AA161711	B	3.00		N = 18 (3, 4, 4, 4, 5, 5)	
	Very stiff dark grey sandy silty gravelly CLAY with some cobbles and occasional boulders									
4					AA161712	B	4.00		N = 34 (6, 6, 7, 9, 9, 9)	
5					AA161713	B	5.00		N = 48 (7, 8, 10, 10, 13, 15)	
6			21.44	6.50	AA161714	B	6.00			
	Obstruction End of Borehole at 6.50 m								N = 50/150 mm (18, 12, 15, 35)	
7										
8										
9										

HARD STRATA BORING/CHISELLING

From (m)	To (m)	Time (h)	Comments
5.2	5.5	1.5	

WATER STRIKE DETAILS

Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
					No water strike

INSTALLATION DETAILS

Date	Tip Depth	RZ Top	RZ Base	Type

GROUNDWATER PROGRESS

Date	Hole Depth	Casing Depth	Depth to Water	Comments

REMARKS 1hr Erecting Covid 19 Safe Working Area . CAT scanned location and hand dug inspection pit carried out

Sample Legend
D - Small Disturbed (tub)
B - Bulk Disturbed
LB - Large Bulk Disturbed
Env - Environmental Sample (Jar + Vial + Tub)
UT - Undisturbed 100mm Diameter Sample
P - Undisturbed Piston Sample
W - Water Sample

GEOTECHNICAL BORING RECORD

REPORT NUMBER 23927

CONTRACT	Dalguise House Development , Monkstown , Co.Dublin	**BOREHOLE NO.**	**BH04**
		SHEET	Sheet 1 of 1
CO-ORDINATES	722,808.39 E 728,430.96 N	**RIG TYPE**	Dando 2000
GROUND LEVEL (m AOD)	27.23	**BOREHOLE DIAMETER (mm)**	200
		BOREHOLE DEPTH (m)	6.30
DATE COMMENCED	03/03/2022	**DATE COMPLETED**	03/03/2022
CLIENT	Greystar Ltd	**SPT HAMMER REF. NO.**	
ENGINEER	David Rehill Consulting	**ENERGY RATIO (%)**	
BORED BY	W.Cahill	**PROCESSED BY**	F.C

Depth (m)	Description	Legend	Elevation	Depth (m)	Samples: Ref. Number	Sample Type	Depth (m)	Recovery	Field Test Results	Standpipe Details
0	Dark brown sandy SILT/CLAY with occasional gravel		26.33	0.90						
1	Stiff light brown sandy SILT/CLAY with some gravel				AA161715	B	1.00		N = 23 (4, 4, 5, 5, 6, 7)	
2			25.13	2.10	AA161716	B	2.00		N = 40 (6, 7, 7, 8, 10, 15)	
	Very stiff brown gravelly CLAY with some cobbles									
3					AA165493	B	3.00		N = 32 (5, 7, 9, 9, 7, 7)	
4					AA161717	B	4.00		N = 34 (6, 9, 8, 10, 7, 9)	
5					AA161718	B	5.00		N = 37 (4, 5, 8, 9, 12, 8)	
6			20.93	6.30	AA161719	B	6.00		N = 50/85 mm (10, 15, 36, 14)	
	Obstruction End of Borehole at 6.30 m									
7										
8										
9										

HARD STRATA BORING/CHISELLING

From (m)	To (m)	Time (h)	Comments
2.2	2.5	0.75	
6.1	6.3	1.5	

WATER STRIKE DETAILS

Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
					No water strike

INSTALLATION DETAILS

Date	Tip Depth	RZ Top	RZ Base	Type

GROUNDWATER PROGRESS

Date	Hole Depth	Casing Depth	Depth to Water	Comments

REMARKS 1hr Erecting Covid 19 Safe Working Area . CAT scanned location and hand dug inspection pit carried out

Sample Legend
D - Small Disturbed (tub)
B - Bulk Disturbed
LB - Large Bulk Disturbed
Env - Environmental Sample (Jar + Vial + Tub)
UT - Undisturbed 100mm Diameter Sample
P - Undisturbed Piston Sample
W - Water Sample

GEOTECHNICAL BORING RECORD

REPORT NUMBER 23927

CONTRACT	Dalguise House Development , Monkstown , Co.Dublin	**BOREHOLE NO.**	**BH05**
		SHEET	Sheet 1 of 1
CO-ORDINATES	722,793.25 E 728,488.29 N	**RIG TYPE**	Dando 2000
GROUND LEVEL (m AOD)	25.92	**BOREHOLE DIAMETER (mm)**	200
		BOREHOLE DEPTH (m)	5.20
		DATE COMMENCED	07/03/2022
		DATE COMPLETED	07/03/2022
CLIENT	Greystar Ltd	**SPT HAMMER REF. NO.**	
ENGINEER	David Rehill Consulting	**ENERGY RATIO (%)**	
BORED BY	W.Cahill	**PROCESSED BY**	F.C

Depth (m)	Description	Elevation	Depth (m)	Ref. Number	Sample Type	Depth (m)	Recovery	Field Test Results	Standpipe Details
0	Dark brown sandy SILT/CLAY with occasional gravel	25.22	0.70						
1	Firm light brown sandy SILT/CLAY with some gravel and occasional cobbles	24.42	1.50	AA162661	B	1.00		N = 12 (3, 3, 2, 3, 3, 4)	
2	Stiff light brown sandy SILT/CLAY with some gravel and occasional cobbles			AA162662	B	2.00		N = 20 (3, 4, 4, 5, 5, 6)	
3		22.02	3.90	AA162663	B	3.00		N = 24 (4, 4, 5, 6, 6, 7)	
4	Very stiff brown sandy gravelly silty CLAY with occasional cobbles			AA162664	B	4.00		N = 50/150 mm (16, 9, 33, 17)	
5		20.72	5.20	AA162665	B	5.00		N = 50/75 mm (25, 50)	
	Obstruction End of Borehole at 5.20 m								

HARD STRATA BORING/CHISELLING

From (m)	To (m)	Time (h)	Comments
2.6	2.9	1	
4	4.2	0.75	
5.1	5.2	1.5	

WATER STRIKE DETAILS

Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
					No water strike

GROUNDWATER PROGRESS

Date	Hole Depth	Casing Depth	Depth to Water	Comments

INSTALLATION DETAILS

Date	Tip Depth	RZ Top	RZ Base	Type

REMARKS 1hr Erecting Covid 19 Safe Working Area . CAT scanned location and hand dug inspection pit carried out

Sample Legend
D - Small Disturbed (tub)
B - Bulk Disturbed
LB - Large Bulk Disturbed
Env - Environmental Sample (Jar + Vial + Tub)
UT - Undisturbed 100mm Diameter Sample
P - Undisturbed Piston Sample
W - Water Sample

GEOTECHNICAL BORING RECORD

REPORT NUMBER 23927

CONTRACT	Dalguise House Development , Monkstown , Co.Dublin	**BOREHOLE NO.**	**BH06**
		SHEET	Sheet 1 of 1
CO-ORDINATES	722,787.53 E 728,517.56 N	**RIG TYPE**	Dando 2000
GROUND LEVEL (m AOD)	24.05	**BOREHOLE DIAMETER (mm)**	200
		BOREHOLE DEPTH (m)	5.50
		DATE COMMENCED	08/03/2022
		DATE COMPLETED	08/03/2022
CLIENT	Greystar Ltd	**SPT HAMMER REF. NO.**	
ENGINEER	David Rehill Consulting	**ENERGY RATIO (%)**	
BORED BY	W.Cahill	**PROCESSED BY**	F.C

Depth (m)	Description	Legend	Elevation	Depth (m)	Samples: Ref. Number	Sample Type	Depth (m)	Recovery	Field Test Results	Standpipe Details
0	Stiff dark brown sandy SILT/CLAY with occasional gravel		23.15	0.90						
1	Stiff light brown sandy gravelly CLAY with cobbles		22.75	1.30	AA165498	B	1.00		N = 25 (3, 3, 4, 6, 6, 9)	
2	Stiff becoming very stiff mottled light brown sandy SILT/CLAY with some gravel and large roots		21.45	2.60	AA165499	B	2.00		N = 27 (4, 4, 5, 6, 6, 10)	
3	Very stiff dark brown / grey sandy gravelly CLAY with occasional cobbles				AA165500	B	3.00		N = 36 (6, 7, 8, 9, 10, 9)	
4					AA165501	B	4.00		N = 43 (9, 8, 11, 11, 11, 10)	
5			18.55	5.50	AA165502	B	5.00		N = 50/225 mm (18, 16, 10, 14, 26)	
	Obstruction		18.55	5.50						
	End of Borehole at 5.50 m									
6										
7										
8										
9										

HARD STRATA BORING/CHISELLING

From (m)	To (m)	Time (h)	Comments
2.4	2.7	1.5	

WATER STRIKE DETAILS

Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
					No water strike

INSTALLATION DETAILS

Date	Tip Depth	RZ Top	RZ Base	Type

GROUNDWATER PROGRESS

Date	Hole Depth	Casing Depth	Depth to Water	Comments

REMARKS 1hr Erecting Covid 19 Safe Working Area . CAT scanned location and hand dug inspection pit carried out

Sample Legend
D - Small Disturbed (tub)
B - Bulk Disturbed
LB - Large Bulk Disturbed
Env - Environmental Sample (Jar + Vial + Tub)
UT - Undisturbed 100mm Diameter Sample
P - Undisturbed Piston Sample
W - Water Sample

Appendix 2

Rotary Corehole Records

GEOTECHNICAL CORE LOG RECORD

REPORT NUMBER	23927
CONTRACT	Dalguise House Development , Monkstown , Co.Dublin
DRILLHOLE NO	RC02
SHEET	Sheet 1 of 2
CO-ORDINATES	722,743.01 E 728,335.36 N
GROUND LEVEL (mOD)	22.76
RIG TYPE	BT-44
FLUSH	Air/Mist
INCLINATION (deg)	-90
CORE DIAMETER (mm)	78
DATE DRILLED	08/03/2022
DATE LOGGED	09/03/2022
CLIENT	Greystar Ltd
ENGINEER	David Rehill Consulting
DRILLED BY	IGSL - JK
LOGGED BY	D.O'Shea

Downhole Depth (m)	Core Run Depth (m)	T.C.R.%	S.C.R.%	R.Q.D.%	Fracture Spacing Log (mm) 0 250 500	Non-intact Zone	Legend	Description	Depth (m)	Elevation	Standpipe Details	SPT (N Value)
0								SYMMETRIX DRILLING: No recovery, observed by driller as returns of brown CLAY				
1												
2												
3												
4												
5												
6												
7												
8												
9												

REMARKS

Hole cased 0.00-9.00m. Erect Covid-19 Safe Zone - 1hr.

WATER STRIKE DETAILS

Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
					No water strike recorded

INSTALLATION DETAILS

Date	Tip Depth	RZ Top	RZ Base	Type

GROUNDWATER DETAILS

Date	Hole Depth	Casing Depth	Depth to Water	Comments
09-03-22	15.00	9.00	11.20	Water level recorded 5 mins after end of drilling.

GEOTECHNICAL CORE LOG RECORD

REPORT NUMBER 23927

CONTRACT	Dalguise House Development , Monkstown , Co.Dublin	**DRILLHOLE NO**	**RC02**
		SHEET	Sheet 2 of 2
CO-ORDINATES	722,743.01 E 728,335.36 N	**DATE DRILLED**	08/03/2022
GROUND LEVEL (mOD)	22.76	**DATE LOGGED**	09/03/2022
RIG TYPE	BT-44	**DRILLED BY**	IGSL - JK
FLUSH	Air/Mist	**LOGGED BY**	D.O'Shea
INCLINATION (deg)	-90		
CORE DIAMETER (mm)	78		
CLIENT	Greystar Ltd		
ENGINEER	David Rehill Consulting		

Core Run Depth (m)	T.C.R.%	S.C.R.%	R.Q.D.%	Description	Depth (m)	Elevation
10.50					10.30	12.46
				SYMMETRIX DRILLING: No recovery, observed by driller as returns of ROCK	10.50	12.26
11.70	67	0	0	Probable highly weathered GRANITE - recovered as fine to coarse SAND	11.70	11.06
13.20	100	48	15	Medium strong, medium to thinly flowbanded, white/black/grey mottled, fine to medium grained, GRANITE, fresh to slightly weathered. Discontinuities are medium to closely spaced, smooth to locally rough, planar to undulose to stepped. Apertures are tight to locally moderately open, locally clay-smeared, local slight iron oxide staining. Dips are 30-40° & locally 70° & irregular.		
14.00	100	82	65			
15.00	100	49	19		15.00	7.76
				End of Borehole at 15.00 m		

Fracture Spacing Log (mm): 0, 250, 500

REMARKS

Hole cased 0.00-9.00m. Erect Covid-19 Safe Zone - 1hr.

WATER STRIKE DETAILS

Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
					No water strike recorded

INSTALLATION DETAILS

Date	Tip Depth	RZ Top	RZ Base	Type

GROUNDWATER DETAILS

Date	Hole Depth	Casing Depth	Depth to Water	Comments
09-03-22	15.00	9.00	11.20	Water level recorded 5 mins after end of drilling.

IGSL RC FI 10M 23927.GPJ IGSL.GDT 25/5/22

GEOTECHNICAL CORE LOG RECORD

REPORT NUMBER 23927

CONTRACT	Dalguise House Development , Monkstown , Co.Dublin	**DRILLHOLE NO**	**RC03**
		SHEET	Sheet 1 of 2
CO-ORDINATES	722,777.52 E 728,417.94 N	**DATE DRILLED**	11/03/2022
GROUND LEVEL (mOD)	27.94	**DATE LOGGED**	11/03/2022
RIG TYPE	BT-44		
FLUSH	Air/Mist		
CLIENT	Greystar Ltd	**DRILLED BY**	IGSL - JK
ENGINEER	David Rehill Consulting	**LOGGED BY**	D.O'Shea
INCLINATION (deg)	-90		
CORE DIAMETER (mm)	78		

Core Run Depth (m)	T.C.R.%	S.C.R.%	R.Q.D.%	Fracture Spacing Log (mm) 0 250 500	Non-intact Zone	Legend	Description	Depth (m)	Elevation	Standpipe Details	SPT (N Value)
							SYMMETRIX DRILLING: No recovery, observed by driller as returns of brown CLAY	4.80	23.14		
5.00							SYMMETRIX DRILLING: No recovery, observed by driller as returns of brown gravelly CLAY	5.00	22.94		
5.00–5.60	100	0	0				COBBLE of granite	5.30	22.64		
5.60–6.30	57	0	0				Returns of dark brown slightly sandy gravelly CLAY with occasional cobbles	6.30	21.64		
							SYMMETRIX DRILLING: No recovery, observed by driller as returns of brown gravelly CLAY	7.50	20.44		N = 39 (9, 8, 7, 11, 11, 10)
							SYMMETRIX DRILLING: No recovery, observed by driller as returns of brown CLAY				N = 35 (3, 4, 6, 7, 10, 12)

Downhole Depth (m): 0 1 2 3 4 5 6 7 8 9

REMARKS

Hole cased 0.00-15.00m. Erect Covid-19 Safe Zone - 1hr.

WATER STRIKE DETAILS

Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
					No water strike recorded

INSTALLATION DETAILS

Date	Tip Depth	RZ Top	RZ Base	Type
11-03-22	14.50	1.50	14.50	50mm SP

GROUNDWATER DETAILS

Date	Hole Depth	Casing Depth	Depth to Water	Comments
10-03-22	17.00	15.00	12.40	Water level recorded 5 mins after end of drilling.

GEOTECHNICAL CORE LOG RECORD

REPORT NUMBER: 23927

CONTRACT	Dalguise House Development , Monkstown , Co.Dublin	**DRILLHOLE NO**	**RC03**
		SHEET	Sheet 2 of 2
CO-ORDINATES	722,777.52 E 728,417.94 N	**DATE DRILLED**	11/03/2022
GROUND LEVEL (mOD)	27.94	**DATE LOGGED**	11/03/2022
RIG TYPE	BT-44	**FLUSH**	Air/Mist
INCLINATION (deg)	-90	**CORE DIAMETER (mm)**	78
CLIENT	Greystar Ltd	**DRILLED BY**	IGSL - JK
ENGINEER	David Rehill Consulting	**LOGGED BY**	D.O'Shea

Downhole Depth (m)	Core Run Depth (m)	T.C.R.%	S.C.R.%	R.Q.D.%	Description	Depth (m)	Elevation	SPT (N Value)
10					SYMMETRIX DRILLING: No recovery, observed by driller as returns of brown CLAY *(continued)*			N = 42 (5, 7, 8, 10, 11, 13)
11		0	0	0				
12								N = 40 (4, 7, 7, 9, 13, 11)
13								N = 46 (2, 9, 9, 12, 10, 15)
14						15.00	12.94	
15					SYMMETRIX DRILLING: No recovery, observed by driller as returns of brown gravelly CLAY	15.40	12.54	N = 46 (7, 11, 7, 12, 13, 14)
	16.00				SYMMETRIX DRILLING: No recovery, observed by driller as returns of ROCK	16.00	11.94	
16	17.00	100	80	61	Medium strong to strong, medium to thinly flowbanded, white/black/grey mottled, fine to medium grained, GRANITE, fresh to slightly weathered. Discontinuities are medium to closely spaced, smooth, planar to undulose. Apertures are tight to locally moderately open, locally clay-smeared, local slight iron oxide staining. Dips are subhorizontal to 20-30°.	17.00	10.94	
17					End of Borehole at 17.00 m			
18								
19								

Fracture Spacing Log (mm): 0, 250, 500

REMARKS

Hole cased 0.00-15.00m. Erect Covid-19 Safe Zone - 1hr.

WATER STRIKE DETAILS

Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
					No water strike recorded

INSTALLATION DETAILS

Date	Tip Depth	RZ Top	RZ Base	Type
11-03-22	14.50	1.50	14.50	50mm SP

GROUNDWATER DETAILS

Date	Hole Depth	Casing Depth	Depth to Water	Comments
10-03-22	17.00	15.00	12.40	Water level recorded 5 mins after end of drilling.

GEOTECHNICAL CORE LOG RECORD

IGSL

REPORT NUMBER	23927

CONTRACT	Dalguise House Development , Monkstown , Co.Dublin	**DRILLHOLE NO**	**RC04**
		SHEET	Sheet 1 of 2
CO-ORDINATES	722,808.39 E 728,430.96 N	**DATE DRILLED**	14/03/2022
GROUND LEVEL (mOD)	27.23	**DATE LOGGED**	15/03/2022
RIG TYPE	BT-44		
FLUSH	Air/Mist		
CLIENT	Greystar Ltd	**DRILLED BY**	IGSL - JK
ENGINEER	David Rehill Consulting	**LOGGED BY**	D.O'Shea
INCLINATION (deg)	-90		
CORE DIAMETER (mm)	78		

Downhole Depth (m)	Core Run Depth (m)	T.C.R.%	S.C.R.%	R.Q.D.%	Fracture Spacing Log (mm) 0 250 500	Non-intact Zone	Legend	Description	Depth (m)	Elevation	Standpipe Details	SPT (N Value)
0								SYMMETRIX DRILLING: No recovery, observed by driller as returns of brown CLAY	1.50	25.73		
1.50								SYMMETRIX DRILLING: No recovery, observed by driller as returns of brown gravelly CLAY				
4.5												N = 37 (2, 7, 7, 9, 9, 12)
6												N = 44 (3, 5, 9, 11, 11, 13)
7.5												N = 45 (3, 3, 11, 10, 9, 15)
9												N = 49 (15, 7, 9, 12, 13, 15)

REMARKS

Hole cased 0.00-15.00m. Erect Covid-19 Safe Zone - 1hr.

WATER STRIKE DETAILS

Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
					No water strike recorded

INSTALLATION DETAILS

Date	Tip Depth	RZ Top	RZ Base	Type

GROUNDWATER DETAILS

Date	Hole Depth	Casing Depth	Depth to Water	Comments
15-03-22	16.00	15.00	13.20	Water level recorded 5 mins after end of drilling.

GEOTECHNICAL CORE LOG RECORD

REPORT NUMBER 23927

CONTRACT	Dalguise House Development , Monkstown , Co.Dublin	**DRILLHOLE NO**	**RC04**
		SHEET	Sheet 2 of 2
CO-ORDINATES	722,808.39 E 728,430.96 N	**DATE DRILLED**	14/03/2022
GROUND LEVEL (mOD)	27.23	**DATE LOGGED**	15/03/2022
CLIENT	Greystar Ltd	**DRILLED BY**	IGSL - JK
ENGINEER	David Rehill Consulting	**LOGGED BY**	D.O'Shea
RIG TYPE	BT-44		
FLUSH	Air/Mist		
INCLINATION (deg)	-90		
CORE DIAMETER (mm)	78		

Downhole Depth (m)	Core Run Depth (m)	T.C.R.%	S.C.R.%	R.Q.D.%	Fracture Spacing Log (mm) 0 250 500	Non-intact Zone	Legend	Description	Depth (m)	Elevation	Standpipe Details	SPT (N Value)
10–15								SYMMETRIX DRILLING: No recovery, observed by driller as returns of brown gravelly CLAY *(continued)*				N = 44/225 mm (12, 10, 11, 17, 16) N = 46 (5, 7, 9, 12, 11, 14) N = 54 (7, 15, 10, 17, 16, 11)
15–16	15.00–16.00	100	93	87		529.99999999999		Medium strong to strong, thickly to thinly flowbanded, white/black/grey mottled, fine to medium grained, GRANITE, fresh to slightly weathered. Discontinuities are widely to closely spaced, smooth, planar. Apertures are tight to locally moderately open, locally clay-smeared, local slight iron oxide staining. Dips are subhorizontal & 20-30°.	15.00	12.23		N = 50/27 mm (25, 50)
								End of Borehole at 16.00 m	16.00	11.23		

REMARKS

Hole cased 0.00-15.00m. Erect Covid-19 Safe Zone - 1hr.

WATER STRIKE DETAILS

Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
					No water strike recorded

INSTALLATION DETAILS

Date	Tip Depth	RZ Top	RZ Base	Type

GROUNDWATER DETAILS

Date	Hole Depth	Casing Depth	Depth to Water	Comments
15-03-22	16.00	15.00	13.20	Water level recorded 5 mins after end of drilling.

GEOTECHNICAL CORE LOG RECORD

REPORT NUMBER 23927

CONTRACT	Dalguise House Development , Monkstown , Co.Dublin	**DRILLHOLE NO**	**RC05**
		SHEET	Sheet 1 of 2
CO-ORDINATES	722,793.25 E 728,488.29 N	**DATE DRILLED**	21/03/2022
GROUND LEVEL (mOD)	25.92	**DATE LOGGED**	22/03/2022
RIG TYPE	BT-44		
FLUSH	Air/Mist		
CLIENT	Greystar Ltd	**DRILLED BY**	IGSL - JK
ENGINEER	David Rehill Consulting	**LOGGED BY**	D.O'Shea
INCLINATION (deg)	-90		
CORE DIAMETER (mm)	78		

Downhole Depth (m)	Core Run Depth (m)	T.C.R.%	S.C.R.%	R.Q.D.%	Fracture Spacing Log (mm) 0 250 500	Non-intact Zone	Legend	Description	Depth (m)	Elevation	Standpipe Details	SPT (N Value)
0								SYMMETRIX DRILLING: No recovery, observed by driller as returns of brown CLAY	1.50	24.42		
1.50								SYMMETRIX DRILLING: No recovery, observed by driller as returns of brown sandy gravelly CLAY	7.50	18.42		N = 56 (6, 11, 10, 18, 13, 15) at 4.5 m N = 55 (7, 10, 10, 15, 14, 16) at 6.0 m
7.50								SYMMETRIX DRILLING: No recovery, observed by driller as returns of brown clayey sandy GRAVEL				N = 58/225 mm (9, 15, 17, 17, 24) at 7.5 m N = 55/225 mm (7, 11, 13, 17, 25) at 9.0 m

REMARKS

Hole cased 0.00-12.00m. Erect Covid-19 Safe Zone - 1hr.

WATER STRIKE DETAILS

Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
					No water strike recorded

INSTALLATION DETAILS

Date	Tip Depth	RZ Top	RZ Base	Type
22-03-22	11.00	1.00	11.00	50mm SP

GROUNDWATER DETAILS

Date	Hole Depth	Casing Depth	Depth to Water	Comments
22-03-22	15.00	12.00	11.20	Water level recorded 5 mins after end of drilling.

GEOTECHNICAL CORE LOG RECORD

REPORT NUMBER 23927

CONTRACT	Dalguise House Development , Monkstown , Co.Dublin	**DRILLHOLE NO**	**RC05**
		SHEET	Sheet 2 of 2
CO-ORDINATES	722,793.25 E 728,488.29 N	**DATE DRILLED**	21/03/2022
GROUND LEVEL (mOD)	25.92	**DATE LOGGED**	22/03/2022
RIG TYPE	BT-44		
FLUSH	Air/Mist		
CLIENT	Greystar Ltd	**DRILLED BY**	IGSL - JK
ENGINEER	David Rehill Consulting	**LOGGED BY**	D.O'Shea
INCLINATION (deg)	-90		
CORE DIAMETER (mm)	78		

Core Run Depth (m)	T.C.R.%	S.C.R.%	R.Q.D.%	Description	Depth (m)	Elevation	SPT (N Value)
				SYMMETRIX DRILLING: No recovery, observed by driller as returns of brown clayey sandy GRAVEL *(continued)*	10.50	15.42	N = 45 (4, 7, 7, 11, 12, 15)
12.00				SYMMETRIX DRILLING: No recovery, observed by driller as returns of brown CLAY	12.00	13.92	
13.50	60	0	0	Stiff dark brown CLAY with silt laminations	13.75	12.17	N = 64/225 mm (11, 17, 19, 19, 26)
15.00	100	43	36	Weak to strong, medium to thinly flowbanded, white/black/grey mottled, fine to medium grained, GRANITE, fresh to slightly weathered. Discontinuities are medium to closely spaced, smooth, planar. Apertures are tight to locally moderately open, locally clay-smeared, commonly slight iron oxide staining. Dips are subvertical & subhorizontal.	15.00	10.92	

End of Borehole at 15.00 m

REMARKS

Hole cased 0.00-12.00m. Erect Covid-19 Safe Zone - 1hr.

WATER STRIKE DETAILS

Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
					No water strike recorded

INSTALLATION DETAILS

Date	Tip Depth	RZ Top	RZ Base	Type
22-03-22	11.00	1.00	11.00	50mm SP

GROUNDWATER DETAILS

Date	Hole Depth	Casing Depth	Depth to Water	Comments
22-03-22	15.00	12.00	11.20	Water level recorded 5 mins after end of drilling.

GEOTECHNICAL CORE LOG RECORD

REPORT NUMBER 23927

CONTRACT	Dalguise House Development , Monkstown , Co.Dublin	**DRILLHOLE NO**	**RC06**
		SHEET	Sheet 1 of 2
CO-ORDINATES	722,787.53 E 728,517.56 N	**DATE DRILLED**	15/03/2022
GROUND LEVEL (mOD)	24.05	**DATE LOGGED**	21/03/2022
CLIENT	Greystar Ltd	**DRILLED BY**	IGSL - JK
ENGINEER	David Rehill Consulting	**LOGGED BY**	D.O'Shea

RIG TYPE	BT-44
FLUSH	Air/Mist
INCLINATION (deg)	-90
CORE DIAMETER (mm)	78

Downhole Depth (m)	Core Run Depth (m)	T.C.R.%	S.C.R.%	R.Q.D.%	Fracture Spacing Log (mm) 0 250 500	Non-intact Zone	Legend	Description	Depth (m)	Elevation	Standpipe Details	SPT (N Value)
0								SYMMETRIX DRILLING: No recovery, observed by driller as returns of brown CLAY	1.50	22.55		
1												
2								SYMMETRIX DRILLING: No recovery, observed by driller as returns of brown gravelly CLAY	4.50	19.55		
3												
4												
5								SYMMETRIX DRILLING: No recovery, observed by driller as returns of brown clayey GRAVEL	7.50	16.55		N = 52 (6, 9, 11, 12, 13, 16)
6												N = 51 (7, 9, 11, 12, 13, 15)
7												
8								SYMMETRIX DRILLING: No recovery, observed by driller as returns of brown CLAY	9.00	15.05		N = 50/225 mm (3, 8, 10, 12, 28)
9								SYMMETRIX DRILLING: No recovery, observed by driller as returns of brown gravelly CLAY				N = 43 (5, 7, 8, 10, 12, 13)

REMARKS

Hole cased 0.00-10.50m. Erect Covid-19 Safe Zone - 1hr.

WATER STRIKE DETAILS

Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
					No water strike recorded

INSTALLATION DETAILS

Date	Tip Depth	RZ Top	RZ Base	Type

GROUNDWATER DETAILS

Date	Hole Depth	Casing Depth	Depth to Water	Comments
21-03-22	12.00	10.50	10.20	Water level recorded 5 mins after end of drilling.

GEOTECHNICAL CORE LOG RECORD

REPORT NUMBER 23927

CONTRACT	Dalguise House Development , Monkstown , Co.Dublin	**DRILLHOLE NO**	**RC06**
		SHEET	Sheet 2 of 2
CO-ORDINATES	722,787.53 E 728,517.56 N	**DATE DRILLED**	15/03/2022
GROUND LEVEL (mOD)	24.05	**DATE LOGGED**	21/03/2022
RIG TYPE	BT-44		
FLUSH	Air/Mist		
CLIENT	Greystar Ltd	**DRILLED BY**	IGSL - JK
ENGINEER	David Rehill Consulting	**LOGGED BY**	D.O'Shea
INCLINATION (deg)	-90		
CORE DIAMETER (mm)	78		

Downhole Depth (m)	Core Run Depth (m)	T.C.R.%	S.C.R.%	R.Q.D.%	Fracture Spacing Log (mm) 0 250 500	Non-intact Zone	Legend	Description	Depth (m)	Elevation	Standpipe Details	SPT (N Value)
10	10.50							SYMMETRIX DRILLING: No recovery, observed by driller as returns of brown gravelly CLAY *(continued)*	10.50	13.55		
								Returns of subangular to subrounded fine to coarse GRAVEL of limestone	11.00	13.05		N = 48/225 mm (12, 10, 13, 17, 18)
11	12.00	80	63	61	740			Medium strong to strong, thickly to thinly flowbanded, white/black/grey mottled, fine to medium grained, GRANITE, fresh to slightly weathered. Discontinuities are widely to closely spaced, smooth, planar. Apertures are tight to locally moderately open, locally clay-smeared, local slight iron oxide staining. Dips are subhorizontal & 20-30°.	12.00	12.05		
12								End of Borehole at 12.00 m				
13												
14												
15												
16												
17												
18												
19												

REMARKS

Hole cased 0.00-10.50m. Erect Covid-19 Safe Zone - 1hr.

WATER STRIKE DETAILS

Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
					No water strike recorded

INSTALLATION DETAILS

Date	Tip Depth	RZ Top	RZ Base	Type

GROUNDWATER DETAILS

Date	Hole Depth	Casing Depth	Depth to Water	Comments
21-03-22	12.00	10.50	10.20	Water level recorded 5 mins after end of drilling.

GEOTECHNICAL CORE LOG RECORD

REPORT NUMBER 23927

CONTRACT Dalguise House Development , Monkstown , Co.Dublin

DRILLHOLE NO RC07
SHEET Sheet 1 of 2

CO-ORDINATES 722,851.49 E
728,507.00 N
GROUND LEVEL (mOD) 22.38

RIG TYPE BT-44
FLUSH Air/Mist
INCLINATION (deg) -90
CORE DIAMETER (mm) 78

DATE DRILLED 22/03/2022
DATE LOGGED 23/03/2022

CLIENT Greystar Ltd
ENGINEER David Rehill Consulting

DRILLED BY IGSL - JK
LOGGED BY D.O'Shea

Core Run Depth (m)	T.C.R.%	S.C.R.%	R.Q.D.%	Description	Depth (m)	Elevation	SPT (N Value)
				SYMMETRIX DRILLING: No recovery, observed by driller as returns of brown CLAY	3.00	19.38	N = 24 (3, 4, 6, 5, 6, 7)
				SYMMETRIX DRILLING: No recovery, observed by driller as returns of brown gravelly CLAY	6.00	16.38	N = 39 (5, 7, 7, 9, 11, 12); N = 41 (6, 7, 9, 11, 11, 10)
7.50				SYMMETRIX DRILLING: No recovery, observed by driller as returns of brown CLAY	7.50	14.88	N = 37 (4, 7, 7, 9, 10, 11)
9.00	80	0	0	Stiff dark brown CLAY with silt laminations (very occasional coarse gravel)			N = 47 (7, 8, 9, 15, 11, 12)
	33	0	0				

REMARKS
Hole cased 0.00-11.00m. Erect Covid-19 Safe Zone - 1hr.

WATER STRIKE DETAILS

Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
					No water strike recorded

INSTALLATION DETAILS

Date	Tip Depth	RZ Top	RZ Base	Type
24-03-22	12.30	2.00	12.30	50mm SP

GROUNDWATER DETAILS

Date	Hole Depth	Casing Depth	Depth to Water	Comments
24-03-22	12.30	11.00	11.70	Water level recorded 5 mins after end of drilling.

GEOTECHNICAL CORE LOG RECORD

REPORT NUMBER 23927

CONTRACT Dalguise House Development , Monkstown , Co.Dublin

DRILLHOLE NO RC07
SHEET Sheet 2 of 2

CO-ORDINATES 722,851.49 E 728,507.00 N
GROUND LEVEL (mOD) 22.38

RIG TYPE BT-44
FLUSH Air/Mist
INCLINATION (deg) -90
CORE DIAMETER (mm) 78

DATE DRILLED 22/03/2022
DATE LOGGED 23/03/2022

CLIENT Greystar Ltd
ENGINEER David Rehill Consulting

DRILLED BY IGSL - JK
LOGGED BY D.O'Shea

Downhole Depth (m)	Core Run Depth (m)	T.C.R.%	S.C.R.%	R.Q.D.%	Description	Depth (m)	Elevation
10	10.50				Stiff dark brown CLAY with silt laminations (very occasional coarse gravel) *(continued)*		
		43	0	0		11.00	11.38
11	11.20				COBBLE of limestone	11.20	11.18
		100	68	38	Weak to strong, medium to thinly flowbanded, white/black/grey mottled, fine to medium grained, GRANITE, fresh to slightly weathered. Discontinuities are medium to closely spaced, smooth, planar. Apertures are tight to locally moderately open, locally clay-smeared, commonly slight iron oxide staining. Dips are subvertical & subhorizontal.		
12	12.30					12.30	10.08
					End of Borehole at 12.30 m		
13							
14							
15							
16							
17							
18							
19							

Fracture Spacing Log (mm): 0 250 500

REMARKS
Hole cased 0.00-11.00m. Erect Covid-19 Safe Zone - 1hr.

WATER STRIKE DETAILS

Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
					No water strike recorded

INSTALLATION DETAILS

Date	Tip Depth	RZ Top	RZ Base	Type
24-03-22	12.30	2.00	12.30	50mm SP

GROUNDWATER DETAILS

Date	Hole Depth	Casing Depth	Depth to Water	Comments
24-03-22	12.30	11.00	11.70	Water level recorded 5 mins after end of drilling.

GEOTECHNICAL CORE LOG RECORD

REPORT NUMBER 23927

CONTRACT	Dalguise House Development , Monkstown , Co.Dublin	**DRILLHOLE NO**	**RC08**
		SHEET	Sheet 1 of 1
CO-ORDINATES	722,842.58 E 728,528.63 N	**DATE DRILLED**	25/03/2022
GROUND LEVEL (mOD)	18.36	**DATE LOGGED**	28/03/2022
RIG TYPE	BT-44	**FLUSH**	Air/Mist
INCLINATION (deg)	-90	**CORE DIAMETER (mm)**	78
CLIENT	Greystar Ltd	**DRILLED BY**	IGSL - JK
ENGINEER	David Rehill Consulting	**LOGGED BY**	D.O'Shea

Core Run Depth (m)	T.C.R.%	S.C.R.%	R.Q.D.%	Fracture Spacing Log (mm)	Description	Depth (m)	Elevation	SPT (N Value)
					SYMMETRIX DRILLING: No recovery, observed by driller as returns of brown CLAY	1.50	16.86	
					SYMMETRIX DRILLING: No recovery, observed by driller as returns of brown gravelly CLAY	3.00	15.36	N = 31 (2, 5, 6, 8, 8, 9)
					SYMMETRIX DRILLING: No recovery, observed by driller as returns of brown clayey sandy GRAVEL	5.30	13.06	N = 39 (5, 5, 8, 9, 11, 11); N = 42 (4, 4, 7, 9, 11, 15)
6.00					SYMMETRIX DRILLING: No recovery, observed by driller as returns of ROCK	6.00	12.36	
7.50	100	88	54	590.0000000001; 569.9999999999	Strong to very strong, thickly to thinly flowbanded, white/black/grey mottled, fine to medium grained, GRANITE, fresh to slightly weathered. Discontinuities are widely to closely spaced, smooth, planar. Apertures are tight to locally moderately open, locally clay-smeared, local slight iron oxide staining, locally quartz-veined (up to 180mm thick). Dips are subhorizontal & 30-40°.			N = 50/67 mm (25, 50)
9.00	100	97	97	750		9.00	9.36	

End of Borehole at 9.00 m

REMARKS

Hole cased 0.00-6.00m. Erect Covid-19 Safe Zone - 1hr.

WATER STRIKE DETAILS

Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
					No water strike recorded

INSTALLATION DETAILS

Date	Tip Depth	RZ Top	RZ Base	Type

GROUNDWATER DETAILS

Date	Hole Depth	Casing Depth	Depth to Water	Comments
28-03-22	9.00	6.00	3.10	Water level recorded 5 mins after end of drilling.

GEOTECHNICAL CORE LOG RECORD

REPORT NUMBER 23927

CONTRACT	Dalguise House Development , Monkstown , Co.Dublin	**DRILLHOLE NO**	**RC09**
		SHEET	Sheet 1 of 1
CO-ORDINATES	722,806.91 E 728,552.64 N	**DATE DRILLED**	24/03/2022
GROUND LEVEL (mOD)	14.00	**DATE LOGGED**	25/03/2022
CLIENT	Greystar Ltd	**DRILLED BY**	IGSL - JK
ENGINEER	David Rehill Consulting	**LOGGED BY**	D.O'Shea

RIG TYPE	BT-44
FLUSH	Air/Mist
INCLINATION (deg)	-90
CORE DIAMETER (mm)	78

Downhole Depth (m)	Core Run Depth (m)	T.C.R.%	S.C.R.%	R.Q.D.%	Fracture Spacing Log (mm) 0 250 500	Non-intact Zone	Legend	Description	Depth (m)	Elevation	Standpipe Details	SPT (N Value)
0								SYMMETRIX DRILLING: No recovery, observed by driller as returns of brown CLAY				
1–2												N = 23 (2, 4, 5, 6, 6, 6)
3								SYMMETRIX DRILLING: No recovery, observed by driller as returns of brown gravelly CLAY	3.00	11.00		N = 31 (3, 7, 7, 6, 8, 10)
4	4.50							SYMMETRIX DRILLING: No recovery, observed by driller as returns of ROCK	4.20	9.80		
5	6.00	93	79	67	819.9999999999			Strong to very strong, thickly to thinly flowbanded, white/black/grey mottled, fine to medium grained, GRANITE, fresh to moderately weathered (to a sandy clay at 5.71-5.92m & 6.46-6.57m) Discontinuities are widely to closely spaced, smooth, planar. Apertures are tight to locally moderately open, locally clay-smeared, local slight iron oxide staining. Dips are subhorizontal & 30-40°.	4.50	9.50		N = 50/28 mm (25, 50)
6–7	7.50	100	86	75	530				7.50	6.50		
8								End of Borehole at 7.50 m				
9												

REMARKS

Hole cased 0.00-4.50m. Erect Covid-19 Safe Zone - 1hr.

WATER STRIKE DETAILS

Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
					No water strike recorded

INSTALLATION DETAILS

Date	Tip Depth	RZ Top	RZ Base	Type
25-03-22	7.50	1.00	7.50	50mm SP

GROUNDWATER DETAILS

Date	Hole Depth	Casing Depth	Depth to Water	Comments
25-03-22	7.50	4.50	3.20	Water level recorded 5 mins after end of drilling.

RC02 Box 1 of 2 – 10.50-14.00m

RC02 Box 2 of 2 – 14.00-15.00m

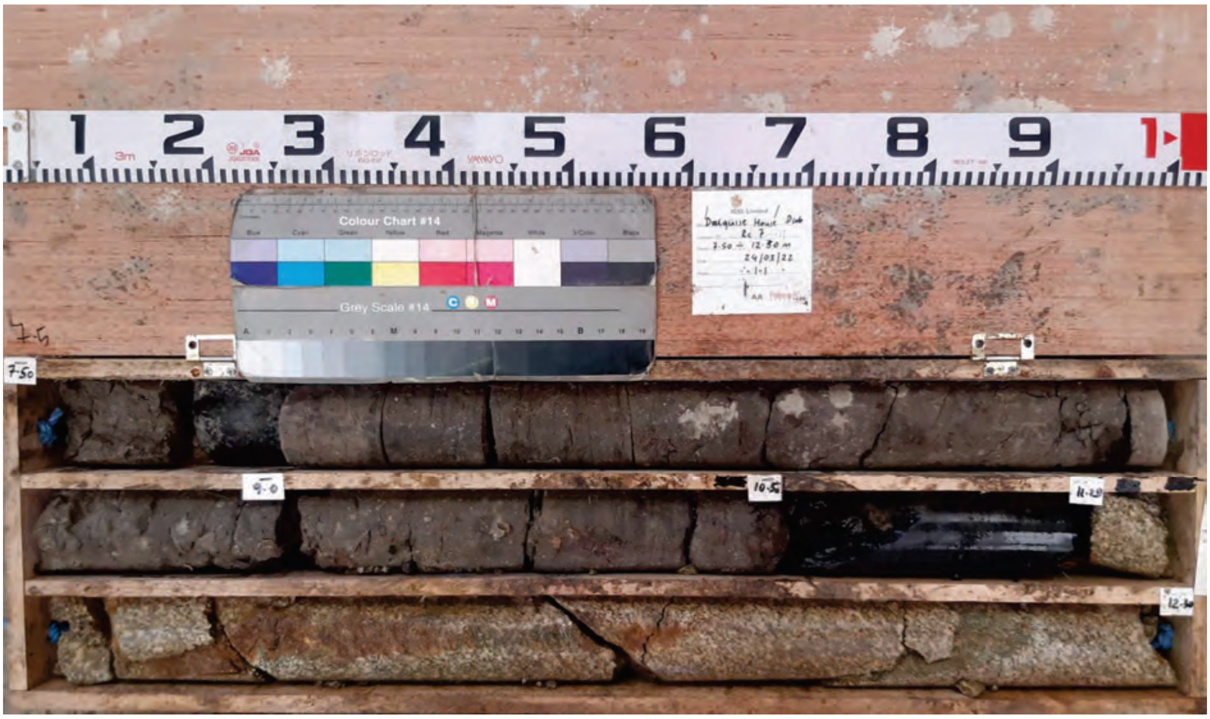
RC03 Box 1 of 1 – 5.00-17.00m

RC04 Box 1 of 1 – 15.00-16.00m

RC05 Box 1 of 1 – 12.00-15.00m

RC06 Box 1 of 1 – 10.50-12.00m

RC07 Box 1 of 1 – 7.50-12.50m



RC08 Box 1 of 1 – 6.00-9.00m

RC09 Box 1 of 1 – 4.50-7.50m

Appendix 3

Trial Pit Records

TRIAL PIT RECORD

REPORT NUMBER	23927
CONTRACT	Dalguise House Development , Monkstown , Co.Dublin
TRIAL PIT NO.	TP21
SHEET	Sheet 1 of 1
LOGGED BY	S.Hannon
CO-ORDINATES	722,790.09 E 728,426.07 N
GROUND LEVEL (m)	27.87
DATE STARTED	25/02/2022
DATE COMPLETED	25/02/2022
CLIENT	Greystar Ltd
ENGINEER	David Rehill Consulting
EXCAVATION METHOD	16T Tracked excavator

Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples: Sample Ref	Samples: Type	Samples: Depth	Vane Test (KPa)	Hand Penetrometer (KPa)
TOPSOIL		0.20	27.67						
Subsoil soft to firm brown slightly sandy gravelly CLAY.		0.40	27.47						
Firm to stiff greyish brown slightly sandy very gravelly CLAY with medium cobble content.		0.90	26.97		AA141843	B	0.75		
Stiff greyish brown slightly sandy very gravelly CLAY with medium cobble content and low boulder content.		2.00	25.87		AA141844	B	1.50		
Stiff to very stiff brown very gravelly CLAY with medium cobble content.		2.70	25.17						
Very stiff black gravelly CLAY with medium cobble content.		3.40	24.47		AA141845	B	3.00		
End of Trial Pit at 3.50m									

Groundwater Conditions
Dry

Stability
Stable

General Remarks
CAT Scanned location for services

IGSL TP LOG 23927.GPJ IGSL.GDT 25/5/22

TRIAL PIT RECORD

REPORT NUMBER	23927
CONTRACT	Dalguise House Development , Monkstown , Co.Dublin
TRIAL PIT NO.	TP22
SHEET	Sheet 1 of 1
LOGGED BY	S.Hannon
CO-ORDINATES	722,816.49 E 728,413.39 N
GROUND LEVEL (m)	27.47
DATE STARTED	25/02/2022
DATE COMPLETED	25/02/2022
CLIENT	Greystar Ltd
ENGINEER	David Rehill Consulting
EXCAVATION METHOD	16T Tracked excavator

Scale (m)	Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples: Sample Ref	Samples: Type	Samples: Depth	Vane Test (KPa)	Hand Penetrometer (KPa)
0.0	TOPSOIL									
	Soft to firm brown slightly sandy very gravelly CLAY.		0.20	27.27						
						AA141846	B	0.60		
	Firm grey slightly sandy very gravelly CLAY with low cobble content and low boulder content.		0.80	26.67						
1.0										
	Stiff greyish brown slightly sandy very gravelly CLAY with low cobble content and low boulder content.		1.20	26.27						
						AA141847	B	1.50-1.60		
2.0										
3.0										
	End of Trial Pit at 3.30m		3.30	24.17		AA141848	B	3.30		
4.0										

Groundwater Conditions
Seepage at 3 m.

Stability
Stable

General Remarks
CAT Scanned location for services

TRIAL PIT RECORD

REPORT NUMBER	23927
CONTRACT	Dalguise House Development , Monkstown , Co.Dublin
TRIAL PIT NO.	TP23
SHEET	Sheet 1 of 1
LOGGED BY	S.Hannon
CO-ORDINATES	722,843.55 E 728,455.72 N
GROUND LEVEL (m)	25.44
DATE STARTED	25/02/2022
DATE COMPLETED	25/02/2022
CLIENT	Greystar Ltd
ENGINEER	David Rehill Consulting
EXCAVATION METHOD	16T Tracked excavator

	Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples: Sample Ref	Samples: Type	Samples: Depth	Vane Test (KPa)	Hand Penetrometer (KPa)
0.0	TOPSOIL		0.20	25.24						
	MADE GROUND - Soft to firm slightly sandy gravelly CLAY with low cobble content and rare brick pieces.		0.70	24.74		AA141849	B	0.30		
1.0	MADE GROUND - Medium dense grey clayey gravelly sand with medium cobble content and old clay pipe and rare brick pieces.		1.40	24.04		AA141850	B	1.20		
2.0	Firm to stiff grey very sandy very gravelly CLAY with medium cobble content.		2.20	23.24						
	Stiff to very stiff pale brown gravelly CLAY.		2.80	22.64		AA146801	B	2.40		
3.0	Very stiff black gravelly CLAY with medium cobble content.		3.50	21.94		AA146802	B	3.30		
4.0	End of Trial Pit at 3.50m									

Groundwater Conditions
Dry

Stability
Stable

General Remarks
CAT Scanned location for services

TRIAL PIT RECORD

REPORT NUMBER	23927
CONTRACT	Dalguise House Development , Monkstown , Co.Dublin
TRIAL PIT NO.	TP24
SHEET	Sheet 1 of 1
LOGGED BY	S.Hannon
CO-ORDINATES	722,818.50 E 728,486.63 N
GROUND LEVEL (m)	25.12
DATE STARTED	01/02/2022
DATE COMPLETED	01/02/2022
CLIENT	Greystar Ltd
ENGINEER	David Rehill Consulting
EXCAVATION METHOD	16T Tracked excavator

Scale	Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples: Sample Ref	Samples: Type	Samples: Depth	Vane Test (KPa)	Hand Penetrometer (KPa)
0.0	TOPSOIL									
	Firm greyish brown slightly sandy very gravelly CLAY with medium cobble content and low boulder content.		0.25	24.87		AA146803	B	0.50-0.70		
1.0	Stiff pale brown gravelly CLAY.		0.90	24.22						
2.0	Stiff to very stiff pale brown very gravelly CLAY with medium cobble content and low boulder content.		1.80	23.32		AA146804	B	2.00		
3.0	Stiff to very stiff grey very gravelly CLAY with medium cobble content and low boulder content. Refusal on boulder in pit. Too little material recovered for a sample.		3.00	22.12						
	End of Trial Pit at 3.10m		3.10	22.02						
4.0										

Groundwater Conditions
Dry

Stability
Stable

General Remarks
CAT Scanned location for services

TRIAL PIT RECORD

REPORT NUMBER	23927
CONTRACT	Dalguise House Development , Monkstown , Co.Dublin
TRIAL PIT NO.	TP25
SHEET	Sheet 1 of 1
LOGGED BY	S.Hannon
CO-ORDINATES	722,818.50 E 728,486.63 N
GROUND LEVEL (m)	25.12
DATE STARTED	01/02/2022
DATE COMPLETED	01/02/2022
CLIENT	Greystar Ltd
ENGINEER	David Rehill Consulting
EXCAVATION METHOD	16T Tracked excavator

Scale (m)	Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples: Sample Ref	Samples: Type	Samples: Depth	Vane Test (KPa)	Hand Penetrometer (KPa)
0.0	TOPSOIL									
	Soft to firm brown slightly sandy very gravelly CLAY.		0.20	24.92						
	Firm to stiff brown slightly sandy gravelly CLAY with medium cobble content.		0.50	24.62		AA146807	B	0.60		
1.0										
	Stiff brown mottled grey slightly sandy gravelly CLAY with medium cobble content and low boulder content.		1.20	23.92		AA146808	B	1.50		
2.0										
	Medium dense moist brown sandy GRAVEL.		2.10	23.02						
	Stiff to very stiff brown very gravelly CLAY with medium cobble content.		2.20	22.92						
3.0	End of Trial Pit at 2.50m		3.00	22.12						
4.0										

Groundwater Conditions
Dry

Stability
Stable

General Remarks
CAT Scanned location for services

TRIAL PIT RECORD

REPORT NUMBER 23927

CONTRACT	Dalguise House Development , Monkstown , Co.Dublin	TRIAL PIT NO.	TP26
		SHEET	Sheet 1 of 1
LOGGED BY	S.Hannon	DATE STARTED	01/02/2022
CO-ORDINATES	722,771.54 E 728,485.55 N	DATE COMPLETED	01/02/2022
GROUND LEVEL (m)	26.26	EXCAVATION METHOD	16T Tracked excavator
CLIENT	Greystar Ltd		
ENGINEER	David Rehill Consulting		

Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples: Sample Ref	Samples: Type	Samples: Depth	Vane Test (KPa)	Hand Penetrometer (KPa)
TOPSOIL		0.20	26.06						
Firm brown slightly sandy gravelly CLAY.		1.00	25.26		AA146809	B	0.50		
Firm to stiff greyish brown slightly sandy very gravelly CLAY with medium cobble content and medium boulder content.		2.70	23.56		AA146810	B	1.60		
End of Trial Pit at 2.50m									

Depth scale: 0.0, 1.0, 2.0, 3.0, 4.0

Groundwater Conditions
Dry

Stability
Stable

General Remarks
CAT Scanned location for services

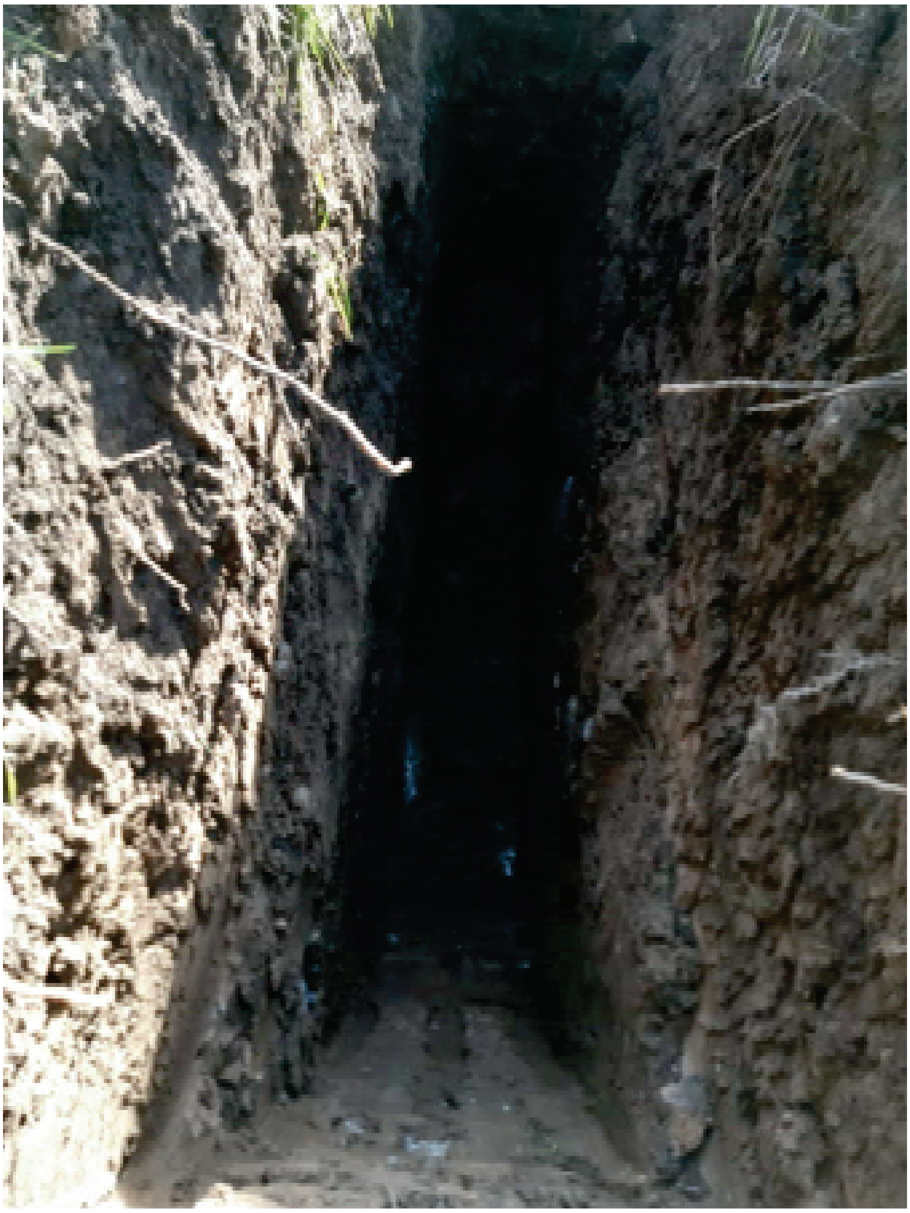
Dalguise House Development - Trial Pit Pictures.

TP21

TP22

TP23

TP24



TP25

TP26

Appendix 4

Window Sample Records

IGSL Limited	WINDOW SAMPLE RECORD	REPORT NUMBER 23927

CONTRACT Dalguise House Development , Monkstown , Co.Dublin		**BH NO.**	**WS01**
		SHEET	Sheet 1 of 1
CO-ORDINATES(_)	GROUND LEVEL (mOD)	**DATE DRILLED**	06/03/2022
		DATE LOGGED	06/03/2022
CLIENT Greystar Ltd		**DRILLED BY**	W. Cahill
ENGINEER David Rehill Consulting		**LOGGED BY**	C. Moynihan

Depth (m)	Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Depth of Sample Run (m)	Recovery (%)	Blowcount	Samples: Ref. Number	Samples: Sample Type	Samples: Depth (m)
0.0	Topsoil					0.00-1.00	90				
	Firm dark brown slightly gravelly sandy SILT		0.10							ENV	0.10-1.00
	Soft to firm brown slightly gravelly CLAY. Lens of soft black organic material at 0.70m, likely peat		0.30								
	No recovery, possible material fallout		0.90								
1.0	Firm brown slightly gravelly CLAY		1.00			1.00-2.00	50			ENV	1.00-2.00
	Firm greyish brown slightly sandy very gravelly CLAY. Gravels fine to coarse and sub-angular to sub-rounded		1.20								
	No recovery, possible material fallout		1.50								
2.0			2.00			2.00-3.00	0				
3.0	Final Depth 3.00m		3.00								

General Remarks

Installations

IGSL Limited

WINDOW SAMPLE RECORD

REPORT NUMBER 23927

CONTRACT	Dalguise House Development , Monkstown , Co.Dublin	**BH NO.**	**WS02**
		SHEET	Sheet 1 of 1
CO-ORDINATES(_)	GROUND LEVEL (mOD)	**DATE DRILLED**	06/03/2022
		DATE LOGGED	06/03/2022
CLIENT	Greystar Ltd	**DRILLED BY**	W. Cahill
ENGINEER	David Rehill Consulting	**LOGGED BY**	C. Moynihan

Depth (m)	Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Depth of Sample Run (m)	Recovery (%)	Blowcount	Samples: Ref. Number	Samples: Sample Type	Samples: Depth (m)
0.0	Topsoil					0.00-1.00	85				
	Firm brown slightly sandy gravelly CLAY. Gravels fine to coarse and sub-angular to sub-rounded		0.20							ENV	0.20-1.00
	No recovery, possible material fallout		0.85								
1.0	Firm brown slightly sandy slightly gravelly CLAY		1.00			1.00-2.00	60			ENV	1.00-2.00
	No recovery, cobble blocking liner		1.60								
2.0	Final Depth 2.00m		2.00								
3.0											

General Remarks

Installations

IGSL Limited

WINDOW SAMPLE RECORD

REPORT NUMBER 23927

CONTRACT Dalguise House Development , Monkstown , Co.Dublin

BH NO. WS03
SHEET Sheet 1 of 1

CO-ORDINATES(_)

GROUND LEVEL (mOD)

DATE DRILLED 06/03/2022
DATE LOGGED 06/03/2022

CLIENT Greystar Ltd
ENGINEER David Rehill Consulting

DRILLED BY W. Cahill
LOGGED BY C. Moynihan

Depth (m)	Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Depth of Sample Run (m)	Recovery (%)	Blowcount	Samples: Ref. Number	Samples: Sample Type	Samples: Depth (m)
0.0	MADE GROUND - Topsoil					0.00-1.00	100				
	MADE GROUND - Firm greyish brown slightly gravelly slightly sandy SILT		0.20							ENV	0.20-1.00
	MADE GROUND - Medium dense grey slightly clayey sandy GRAVEL. Gravels fine to coarse and sub-angular to sub-rounded		0.30								
	MADE GROUND - Firm greyish brown slightly sandy gravelly CLAY with rare wood pieces. Gravels fine to coarse and sub-angular to sub-rounded		0.40								
1.0	MADE GROUND - Firm greyish brown slightly sandy gravelly CLAY with rare wood pieces. Gravels fine to coarse and sub-angular to sub-rounded		1.00			1.00-2.00	90			ENV	1.00-2.00
	Soft to firm brownish grey slightly gravelly SAND with gravel lens at 1.60m. Gravel fine to coarse and sub-rounded to rounded. Large limestone cobble included at 1.30m		1.20								
	Stiff to very stiff brownish grey slightly gravelly sandy CLAY. Sand is fine		1.70								
	No recovery, possible material fallout		1.90								
2.0	Stiff to very stiff brownish grey gravelly sandy CLAY. Sand is fine. Gravely fine to coarse and sub-angular to sub-rounded		2.00			2.00-3.00	100			ENV	2.00-3.00
3.0	Final Depth 3.00m		3.00								

General Remarks

Installations

IGSL Limited

WINDOW SAMPLE RECORD

REPORT NUMBER 23927

CONTRACT	Dalguise House Development , Monkstown , Co.Dublin	**BH NO.**	**WS04**
		SHEET	Sheet 1 of 1
CO-ORDINATES(_)	GROUND LEVEL (mOD)	**DATE DRILLED**	06/03/2022
		DATE LOGGED	06/03/2022
CLIENT	Greystar Ltd	**DRILLED BY**	W. Cahill
ENGINEER	David Rehill Consulting	**LOGGED BY**	C. Moynihan

Depth (m)	Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Depth of Sample Run (m)	Recovery (%)	Blowcount	Samples Ref. Number	Samples Sample Type	Samples Depth (m)
0.0	Topsoil					0.00-1.00	100				
	Firm brown slightly gravelly slightly sandy SILT		0.30							ENV	0.30-1.00
	Firm brownish grey slightly gravelly sandy CLAY. Limestone cobble at 0.07m		0.70								
1.0	Firm brown slightly gravelly very sandy CLAY		1.00			1.00-2.00	100			ENV	1.00-2.00
	Medium dense greyish brown slightly clayey very sandy GRAVEL. Gravels fine to coarse and sub-angular to sub-rounded		1.10								
	Stiff greyish brown sandy gravelly CLAY. Gravels fine to coarse and sub-angular to rounded		1.30								
2.0	Stiff greyish brown sandy gravelly CLAY. Gravels fine to coarse and sub-angular to rounded. Limestone cobbles at 2.0m, 2.20m and 2.30m		2.00			2.00-3.00	30				
	No recovery, possible cobble blocking liner		2.30								
3.0	Final Depth 3.00m		3.00								

General Remarks

Installations

WS WITH DISCRETE SAMPLES 23927.GPJ IGSL.GDT 25/5/22

IGSL Limited

WINDOW SAMPLE RECORD

REPORT NUMBER 23927

CONTRACT	Dalguise House Development , Monkstown , Co.Dublin	**BH NO.**	**WS05**
		SHEET	Sheet 1 of 2
CO-ORDINATES(_)	GROUND LEVEL (mOD)	**DATE DRILLED**	06/03/2022
		DATE LOGGED	06/03/2022
CLIENT	Greystar Ltd	**DRILLED BY**	W. Cahill
ENGINEER	David Rehill Consulting	**LOGGED BY**	C. Moynihan

Depth (m)	Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Depth of Sample Run (m)	Recovery (%)	Blowcount	Samples Ref. Number	Samples Sample Type	Samples Depth (m)
0.0	Topsoil					0.00-1.00	100				
	Firm to stiff brown slightly gravelly SILT		0.30							ENV	0.30-1.00
	Firm greyish brown slightly gravelly sandy CLAY with sand lens at 0.80m and gravel lens at 0.90m. Sand is fine. Gravels are fine to coarse and sub-angular to sub-rounded		0.70								
1.0	Stiff brown slightly sandy gravelly CLAY. Gravels fine to coarse and angular to sub-rounded		1.00			1.00-2.00	100			ENV	1.00-2.00
2.0	Very stiff brown gravelly CLAY. Gravels fine to coarse and sub-angular to sub-rounded		1.95			2.00-3.00	100			ENV	2.00-3.00
	Stiff brown slightly gravelly slightly sandy CLAY		2.00								
	Stiff greyish brown sandy gravelly CLAY. Gravels fine to coarse and sub-angular to sub-rounded		2.40								
3.0	Stiff greyish brown slightly gravelly sandy CLAY with sand lens at 3.40m. Sand is orange brown and fine		3.00			3.00-4.00	95			ENV	3.00-4.00
	Stiff to very stiff dark grey sandy gravelly CLAY		3.80								
	No recovery, possible material fallout		3.90								
	Final Depth 4.00m										

General Remarks

Installations

IGSL Limited

WINDOW SAMPLE RECORD

REPORT NUMBER 23927

CONTRACT	Dalguise House Development , Monkstown , Co.Dublin	**BH NO.**	**WS05**
		SHEET	Sheet 2 of 2
CO-ORDINATES(_)	GROUND LEVEL (mOD)	**DATE DRILLED**	06/03/2022
		DATE LOGGED	06/03/2022
CLIENT	Greystar Ltd	**DRILLED BY**	W. Cahill
ENGINEER	David Rehill Consulting	**LOGGED BY**	C. Moynihan

Depth (m)	Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Depth of Sample Run (m)	Recovery (%)	Blowcount	Samples: Ref. Number	Samples: Sample Type	Samples: Depth (m)
4.0			4.00								
5.0											
6.0											
7.0											

General Remarks

Installations

Appendix 5

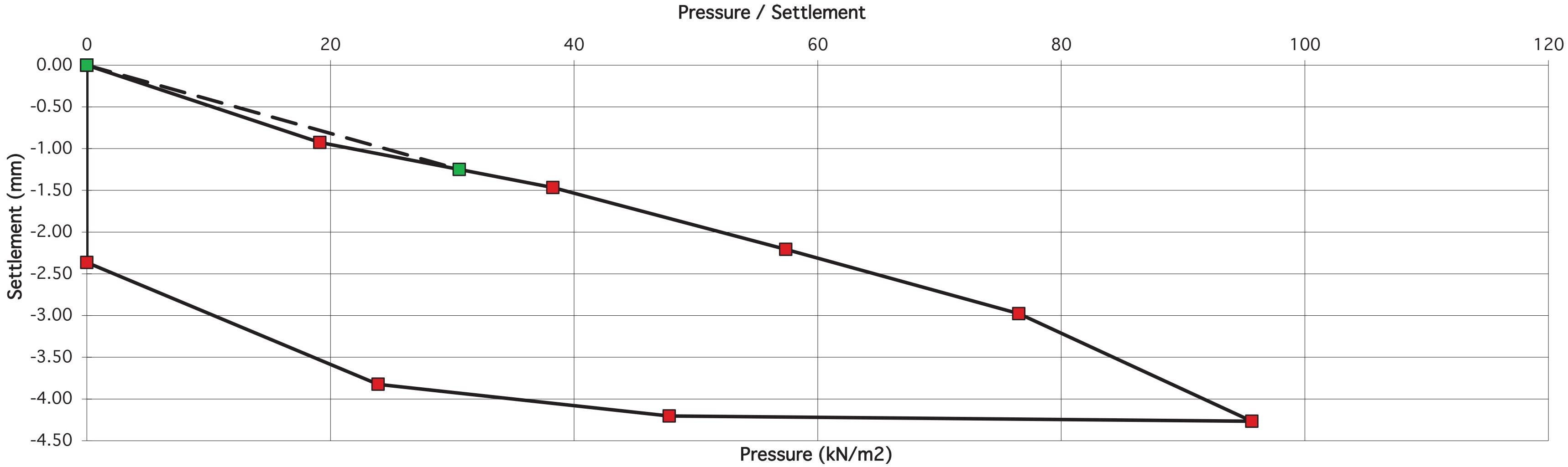
Plate Bearing Test Results

PLATE TEST REPORT SHEET (F3.1)	Applied Pressure/Settlement Curve

Reference No.	R132030
Contract	Dalguise House Monkstown Redevelopment
Test No.	CBR01 Load
Location	See site map
Depth	450 mm
Client	Greystar Ltd.
Plate Diameter:	450 mm
Test Method	BS 1377: Part 9: 1990 Test4 - Incremental Loading Test
Technician	S.Hannon
Authorised by	
Date	21/02/2022

Description of soil under test
(natural soil, placed fill, sub-base)
Brown gravelly CLAY

Sample Ref No.	N/A
Depth	0.00 m bgl



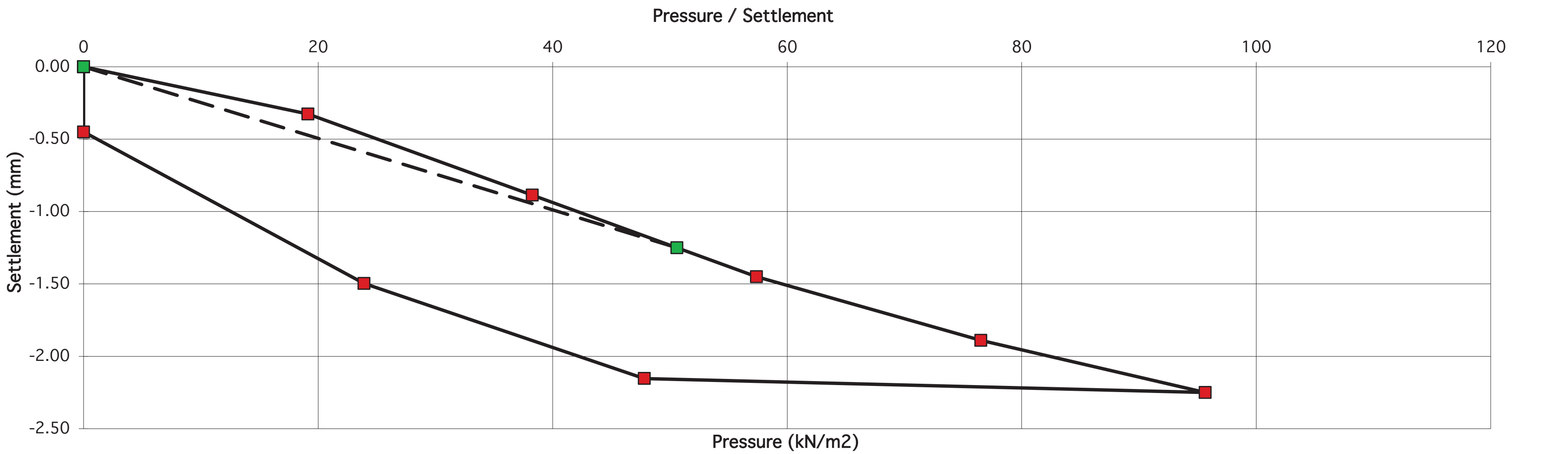
Gradient at 1.25 mm settlement intersection = 24
Modulus of subgrade reaction = 16 MPa/m
Correction factor applied = 0.64 as per HD 25-26/10

Equivalent CBR value in accordance with NRA HD25-26/10 1.1 %

PLATE TEST REPORT SHEET (F3.1)	Applied Pressure/Settlement Curve

Reference No.	R132030
Contract	Dalguise House Monkstown Redevelopment
Test No.	CBR01 Reload
Location	See site map
Depth	450 mm
Client	Greystar Ltd.
Plate Diameter:	450 mm
Test Method	BS 1377: Part 9: 1990 Test4 - Incremental Loading Test
Technician	S.Hannon
Authorised by	
Date	21/02/2022

Description of soil under test (natural soil, placed fill, sub-base)	Brown gravelly CLAY
Sample Ref No.	N/A
Depth	0.00 m bgl

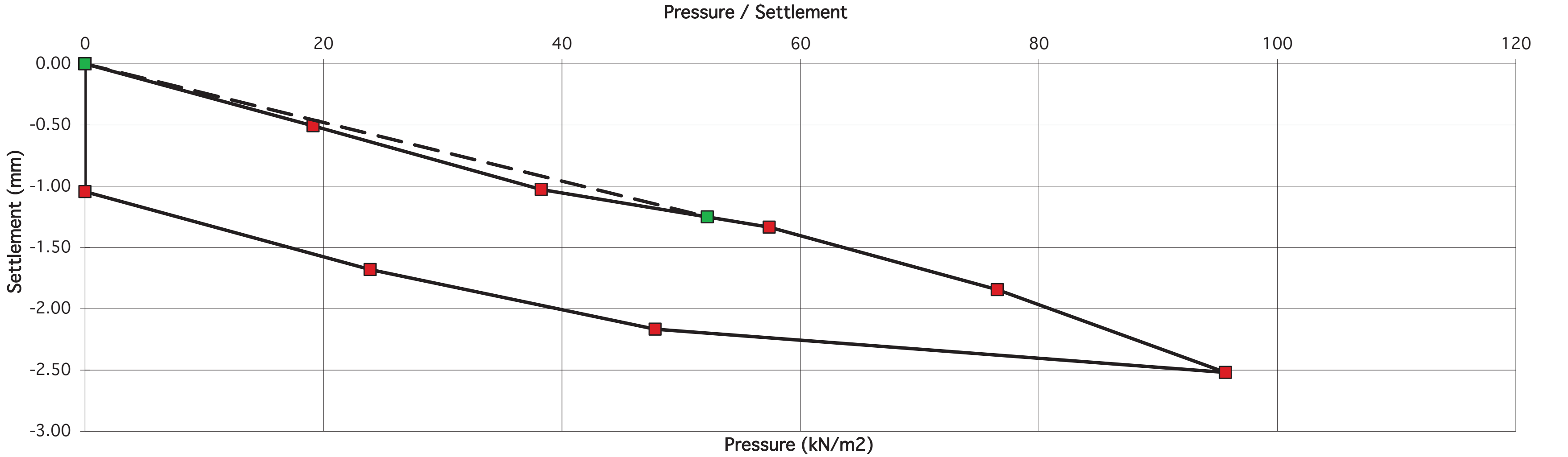


Gradient at 1.25 mm settlement intersection = 40
Modulus of subgrade reaction = 26 MPa/m
Correction factor applied = 0.64 as per HD 25-26/10

Equivalent CBR value in accordance with NRA HD25-26/10 2.7 %

PLATE TEST REPORT SHEET (F3.1)	Applied Pressure/Settlement Curve

Reference No.	R132031		
Contract	Dalguise House Monkstown Redevelopment	Description of soil under test (natural soil, placed fill, sub-base)	
Test No.	CBR02 Load		
Location	See site map	Brown gravelly CLAY	
Depth	450 mm		
Client	Greystar Ltd.		
Plate Diameter:	450 mm		
Test Method	BS 1377: Part 9: 1990 Test4 - Incremental Loading Test		
Technician	S.Hannon	Sample Ref No.	N/A
Authorised by		Depth	0.00 m bgl
Date	21/02/2022		

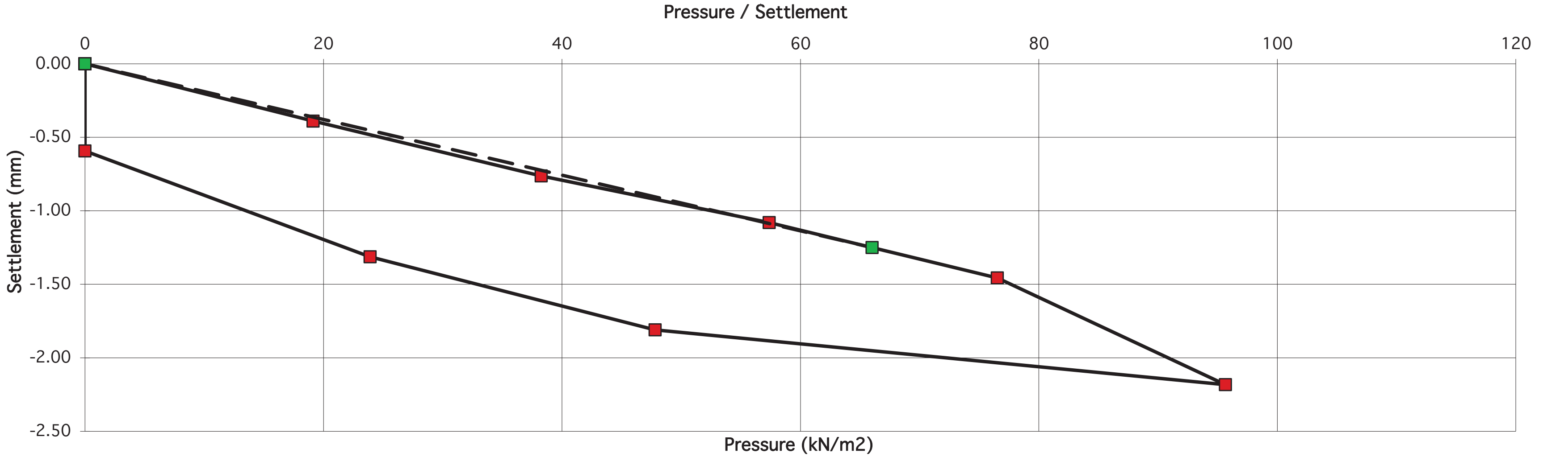


Gradient at 1.25 mm settlement intersection = 42
Modulus of subgrade reaction = 27 MPa/m
Correction factor applied = 0.64 as per HD 25-26/10

Equivalent CBR value in accordance with NRA HD25-26/10 2.9 %

PLATE TEST REPORT SHEET (F3.1)	Applied Pressure/Settlement Curve

Reference No.	R132031	Description of soil under test (natural soil, placed fill, sub-base)	
Contract	Dalguise House Monkstown Redevelopment	Brown gravelly CLAY	
Test No.	CBR02 Reload		
Location	See site map		
Depth	450 mm		
Client	Greystar Ltd.		
Plate Diameter:	450 mm		
Test Method	BS 1377: Part 9: 1990 Test4 - Incremental Loading Test		
Technician	S.Hannon	Sample Ref No.	N/A
Authorised by		Depth	0.00 m bgl
Date	21/02/2022		

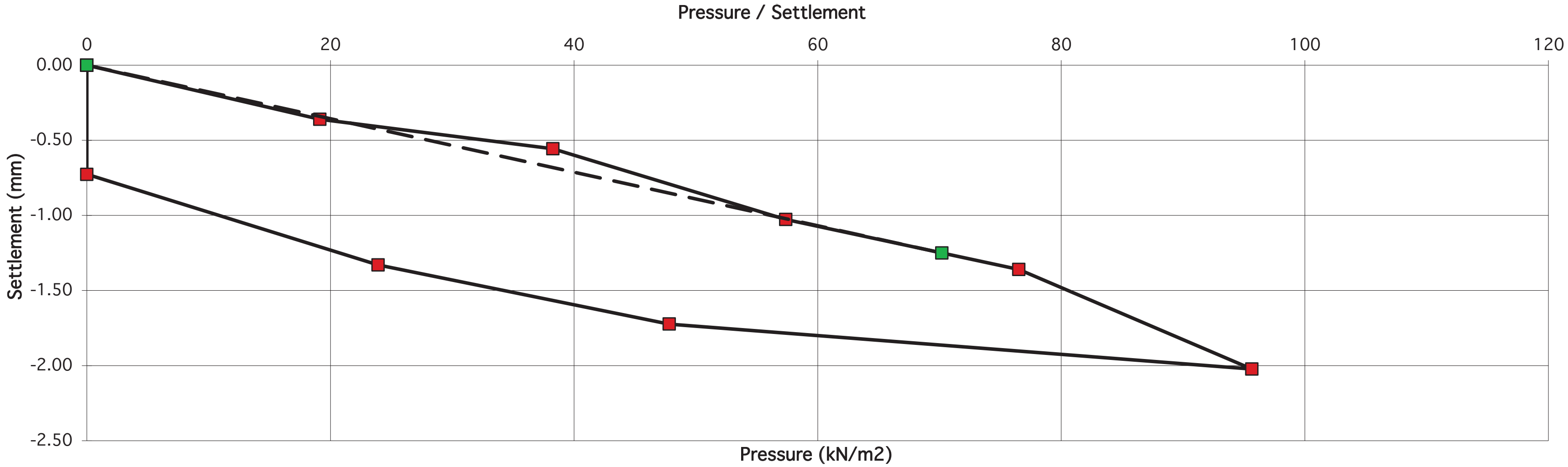


Gradient at 1.25 mm settlement intersection = 53
Modulus of subgrade reaction = 34 MPa/m
Correction factor applied = 0.64 as per HD 25-26/10

Equivalent CBR value in accordance with NRA HD25-26/10 4.3 %

PLATE TEST REPORT SHEET (F3.1)	Applied Pressure/Settlement Curve

Reference No.	R132032		
Contract	Dalguise House Monkstown Redevelopment	Description of soil under test (natural soil, placed fill, sub-base)	
Test No.	CBR03 Load	Brown gravelly CLAY	
Location	See site map		
Depth	450 mm		
Client	Greystar Ltd.		
Plate Diameter:	450 mm		
Test Method	BS 1377: Part 9: 1990 Test4 - Incremental Loading Test		
Technician	S.Hannon	Sample Ref No.	N/A
Authorised by		Depth	0.00 m bgl
Date	21/02/2022		



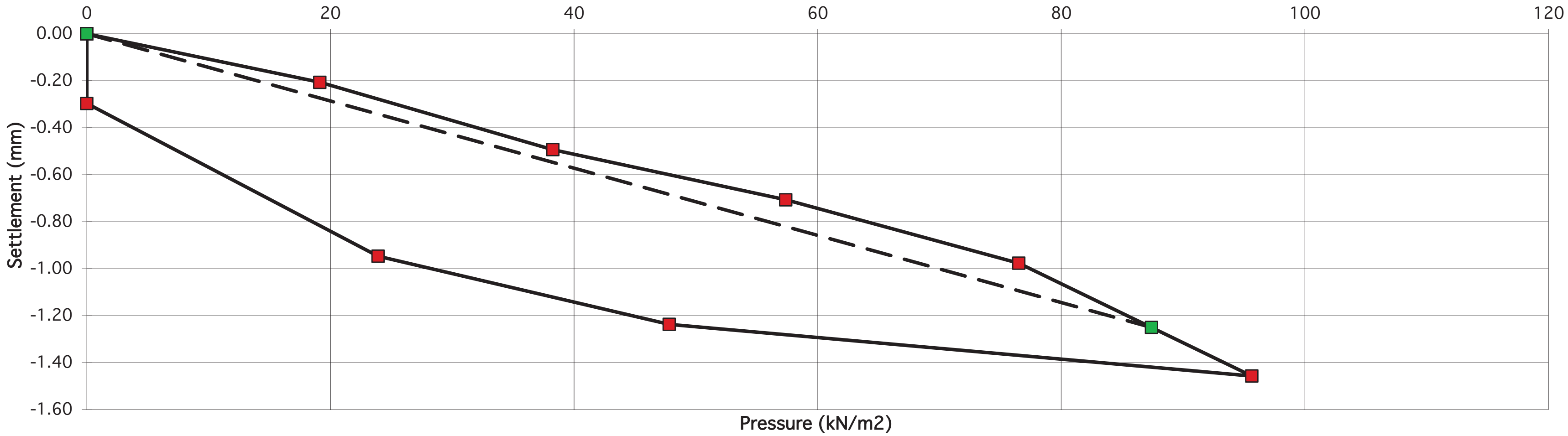
Gradient at 1.25 mm settlement intersection = 56
Modulus of subgrade reaction = 36 MPa/m
Correction factor applied = 0.64 as per HD 25-26/10

Equivalent CBR value in accordance with NRA HD25-26/10 4.8 %

PLATE TEST REPORT SHEET (F3.1)	Applied Pressure/Settlement Curve

Reference No.	R132032	Description of soil under test (natural soil, placed fill, sub-base)	
Contract	Dalguise House Monkstown Redevelopment	Brown gravelly CLAY	
Test No.	CBR03 Reload		
Location	See site map		
Depth	450 mm		
Client	Greystar Ltd.		
Plate Diameter:	450 mm		
Test Method	BS 1377: Part 9: 1990 Test4 - Incremental Loading Test		
Technician	S.Hannon	Sample Ref No.	N/A
Authorised by		Depth	0.00 m bgl
Date	21/02/2022		

Pressure / Settlement



Gradient at 1.25 mm settlement intersection = 70
Modulus of subgrade reaction = 45 MPa/m
Correction factor applied = 0.64 as per HD 25-26/10

Equivalent CBR value in accordance with NRA HD25-26/10 7.1 %

Appendix 6

Foundation Inspection Pits

IGSL Ltd.	**FOUNDATION INSPECTION PIT RECORD**	**Report Number: 23927**

Contract:	Dalguise House development
Location:	Monkstown
Engineer	Byrne Looby
Client:	Greystar Ltd
Logged by:	S.Hannon
Date:	24/02/2022

TRIAL PIT NO. **FP01**

PHOTOS

Summary of ground conditions

from	to	Description	Ground water
0.00	0.20	TOPSOIL	Dry
0.20	1.00	Firm brown sandy gravelly CLAY with abundant rootlets.	

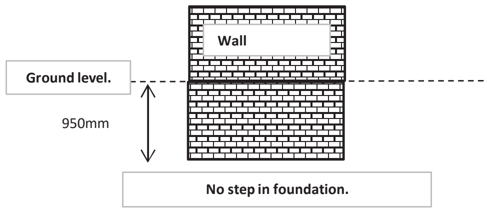
Foundation depth: 1 m. Sample at 0.6 m: AA141835.

Location:

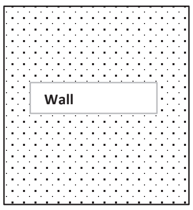
Detail:

Elevation

Ground Level



Plan



FOUNDATION INSPECTION PIT RECORD

Report Number: 23927

TRIAL PIT NO. **FP02**

Contract:	Dalguise House development
Location:	Monkstown
Engineer	Byrne Looby
Client:	Greystar Ltd.
Logged by:	S.Hannon
Date:	24/02/2022

PHOTOS

Summary of ground conditions

from	to	Description	Ground water
0.00	0.20	TOPSOIL	Dry
0.20	1.00	Firm brown slightly sandy very gravelly CLAY with high cobble content.	

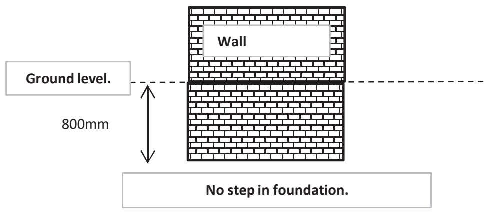
Foundation depth: 0.8 m. Sample at 0.5 -0.75 m: AA141835.

Location:

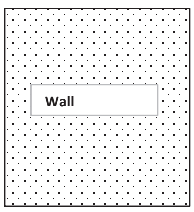
Detail:

Elevation

Ground Level



Plan



FOUNDATION INSPECTION PIT RECORD

Report Number: 23927

Contract:	Dalguise House development	**TRIAL PIT NO.**	**FP03**
Location:	Monkstown		
Engineer	Byrne Looby		
Client:	Greystar Ltd.		
Logged by:	S.Hannon		
Date:	24/02/2022		

PHOTOS

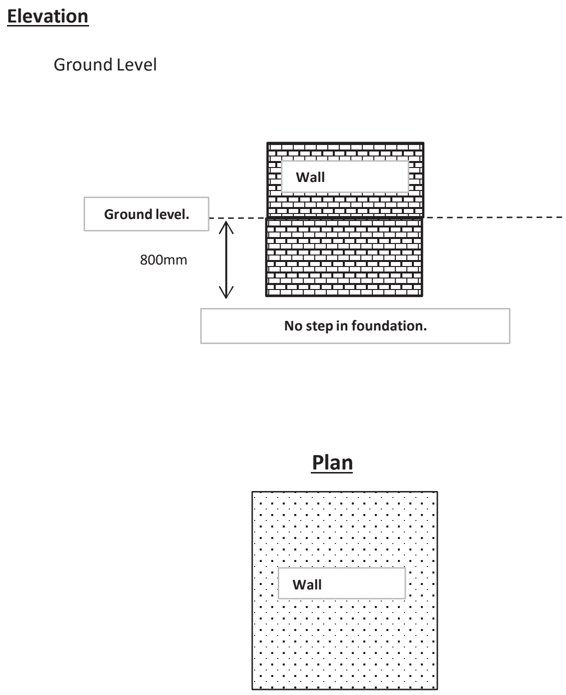
Summary of ground conditions

from	to	Description	Ground water
0.00	0.20	TOPSOIL	Dry
0.20	0.50	MADE GROUND soft to firm brown sandy gravelly clay with abundant glass and clay pipe pieces.	
0.50	1.00	Firm light brown sandy very gravelly CLAY with low cobble content.	

Foundation depth: 0.8 m. Sample at 0.4 and 0.8 m: AA141836/37

Location:

Detail:



IGSL Ltd.	**FOUNDATION INSPECTION PIT RECORD**	**Report Number: 23927**

Contract:	Dalguise House development	**TRIAL PIT NO.**	**FP04**
Location:	Monkstown		
Engineer	Byrne Looby		
Client:	Greystar Ltd.		
Logged by:	S.Hannon		
Date:	24/02/2022		

PHOTOS

Summary of ground conditions

from	to	Description	Ground water
0.00	0.20	TOPSOIL	Dry
0.20	0.40	MADE GROUND soft to firm dark brown sandy gravelly clay.	
0.40	0.80	Firm brown slightly gravelly CLAY.	

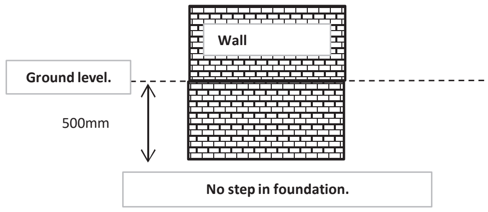
Foundation depth: 0.5 m. Sample at 0.5 m: AA141838

Location:

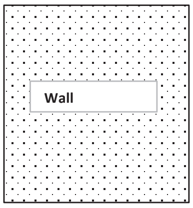
Detail:

Elevation

Ground Level



Plan



Report Number: 23927

FOUNDATION INSPECTION PIT RECORD

Contract:	Dalguise House development
Location:	Monkstown
Engineer	Byrne Looby
Client:	Greystar Ltd.
Logged by:	S.Hannon
Date:	24/02/2022

TRIAL PIT NO. **FP05**

PHOTOS

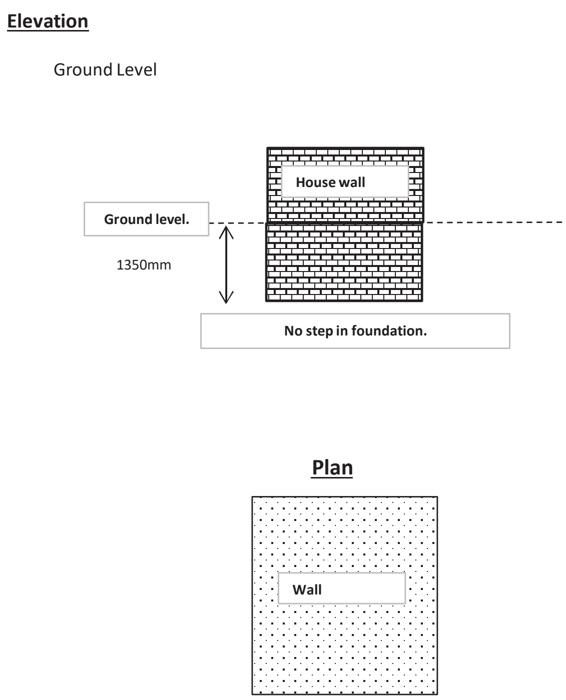
Summary of ground conditions

from	to	Description	Ground water
0.00	0.10	TOPSOIL	Dry
0.10	0.60	Soft to firm dark brown sandy gravelly CLAY	
0.60	1.50	MADE GROUND firm to stiff brown gravelly CLAY	

Foundation depth: 1.35 m. Sample at 0.5 m and 1.2 m: AA141839/40

Location:

Detail:



FOUNDATION INSPECTION PIT RECORD

Report Number: 23927

Contract:	Dalguise Lodge	
Location:	Monkstown	
Engineer	S.Hannon	
Client:		
Logged by:	S.Hannon	
Date:		24/02/2022

TRIAL PIT NO. **FP08**

PHOTOS

Summary of ground conditions

from	to	Description	Ground water
0.00	0.20	TOPSOIL	Dry
0.20	0.90	Firm brown slightly sandy gravelly CLAY.	

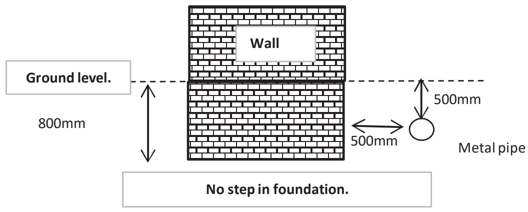
Foundation depth: 0.8 m. Sample at 0.5 m - 0.75 m: AA141841

Location:

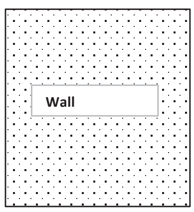
Detail:

Elevation

Ground Level



Plan



Report Number: 23927

FOUNDATION INSPECTION PIT RECORD

Contract:	Dalguise House development
Location:	Monkstown
Engineer	Byrne Looby
Client:	Greystar Ltd.
Logged by:	S.Hannon
Date:	24/02/2022

TRIAL PIT NO. FP09

PHOTOS

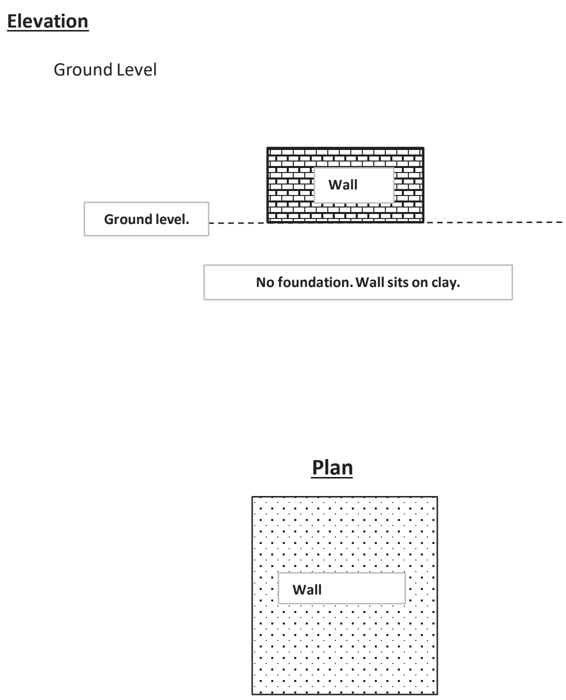
Summary of ground conditions

from	to	Description	Ground water
0.00	0.20	TOPSOIL	Dry
0.20	0.90	Firm brown slightly sandy gravelly CLAY.	

Foundation depth: None. Sample at 0.4 m: AA141842

Location:

Detail:



FOUNDATION INSPECTION PIT RECORD

Report Number: 23927

TRIAL PIT NO. FP12

Contract:	Dalguise House development
Location:	Monkstown
Engineer	Byrne Looby
Client:	Greystar Ltd.
Logged by:	S.Hannon
Date:	01/03/2022

PHOTOS

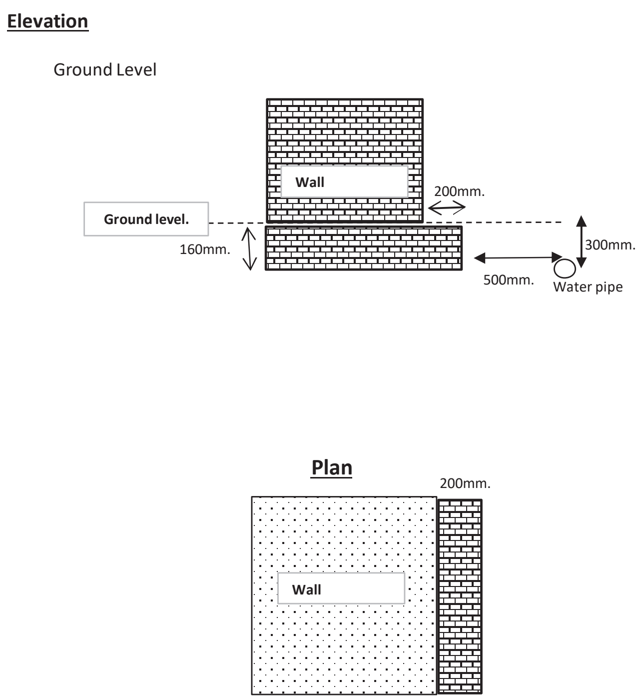
Summary of ground conditions

from	to	Description	Ground water
0.00	0.20	TOPSOIL	Dry
0.20	0.50	Firm brown slightly sandy gravelly CLAY.	

Foundation depth: 0.16m. Sample at 0.3 m AA146805.

Location:

Detail:



IGSL Ltd.	# FOUNDATION INSPECTION PIT RECORD	**Report Number: 23927**

Contract:	Dalguise House development	**TRIAL PIT NO.**	**FP13**
Location:	Monkstown		
Engineer	Byrne Looby		
Client:	Greystar Ltd.		
Logged by:	S.Hannon		
Date:	01/03/2022		

PHOTOS

Summary of ground conditions

from	to	Description	Ground water
0.00	0.20	TOPSOIL	Dry
0.20	0.60	Soft to firm brown slighty sandy gravelly clay with abundant rootlets and roots	

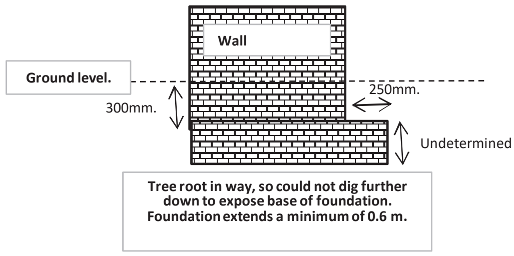
Foundation depth: Undetermined.

Location:

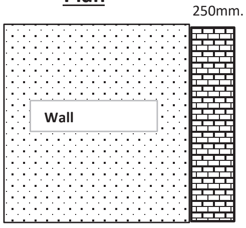
Detail:

Elevation

Ground Level



Plan



Report Number: 23927

FOUNDATION INSPECTION PIT RECORD

TRIAL PIT NO. **FP14**

Contract:	Dalguise House development
Location:	Monkstown
Engineer	Byrne Looby
Client:	Greystar Ltd.
Logged by:	S.Hannon
Date:	24/02/2022

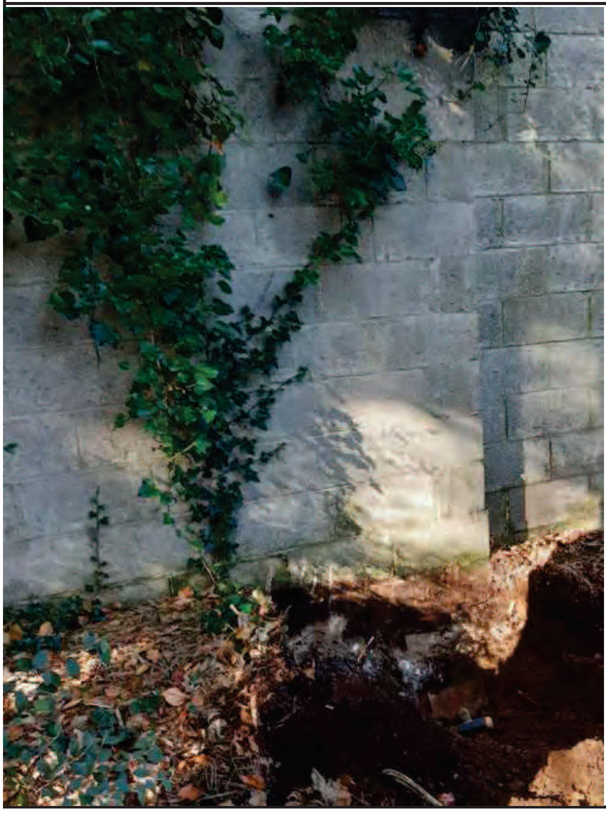
PHOTOS

Summary of ground conditions

from	to	Description	Ground water
0.00	0.10	TOPSOIL	Dry
0.10	0.60	Soft to firm dark brown sandy gravelly CLAY	
0.60	1.50	MADE GROUND firm to stiff brown gravelly CLAY	

Foundation depth: 0.4m. Sample at 0.5 m AA146806.

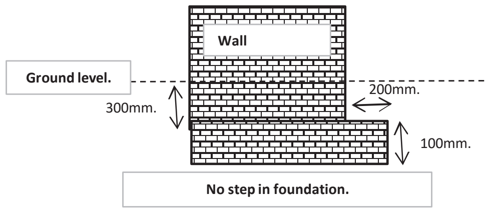
Location:



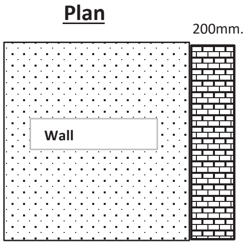
Detail:

Elevation

Ground Level



Plan



Appendix 7

Infiltration Test Results

Soakaway Design f -value from field tests (F2C) IGSL

Contract: Dalguise house Contract No. 23927
Test No. SA1
Client Greystar Ltd
Date: 03/03/2022

Summary of ground conditions

from	to	Description	Ground water
0.00	0.30	TOPSOIL	Mod flow at 2 m.
0.30	1.20	Firm light brown slightly gravelly sandy CLAY.	
1.20	1.60	Medium dense grey very sandy very clayey GRAVEL.	
1.60	2.00	Firm to stiff brownish grey slightly sandy gravelly CLAY with medium cobble content.	

Notes:

Field Data

Depth to Water (m)	Elapsed Time (min)
1.40	0.00
1.40	1.00
1.40	2.00
1.40	3.00
1.40	4.00
1.40	5.00
1.40	10.00
1.40	15.00
1.40	20.00
1.40	30.00
1.40	40.00
1.40	60.00
1.40	90.00
1.40	120.00

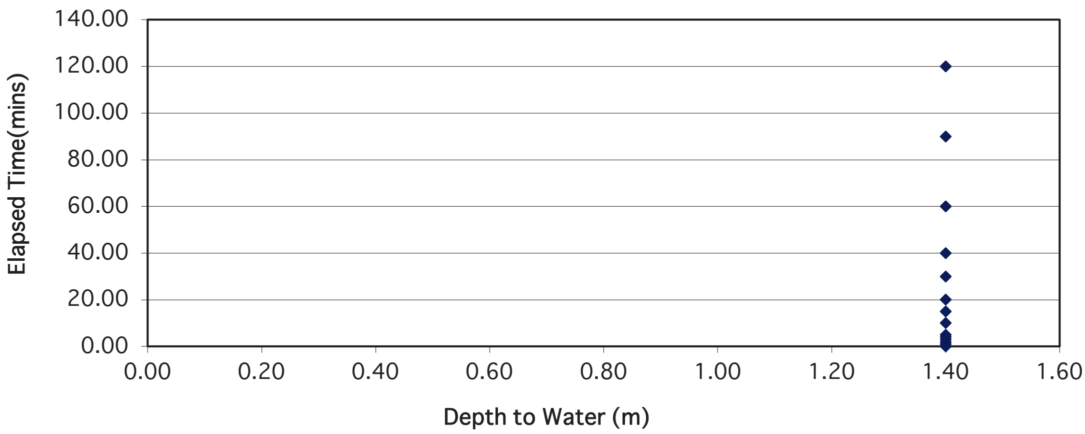
Field Test

Depth of Pit (D)	2.00	m
Width of Pit (B)	0.70	m
Length of Pit (L)	2.00	m
Initial depth to Water =	1.40	m
Final depth to water =	1.40	m
Elapsed time (mins)=	120.00	
Top of permeable soil		m
Base of permeable soil		m
Base area=	1.4	m2
*Av. side area of permeable stratum over test period=	3.24	m2
Total Exposed area =	4.64	m2

Infiltration rate (f) = Volume of water used/unit exposed area / unit time

f= 0 m/min or 0 m/sec

Depth of water vs Elapsed Time (mins)



Soakaway Design f -value from field tests

(F2C) IGSL

Contract: Dalguise house development — Contract No. 23927
Test No. SA2
Client Greystar Ltd.
Date: 03/03/2022

Summary of ground conditions

from	to	Description	Ground water
0.00	0.30	TOPSOIL	
0.30	0.90	Firm brown slightly sandy slightly gravelly CLAY.	Dry
0.90	2.00	Stiff brownish grey slightly sandy very gravelly CLAY with high cobble content and	
		medium boulder content.	

Notes:

Field Data

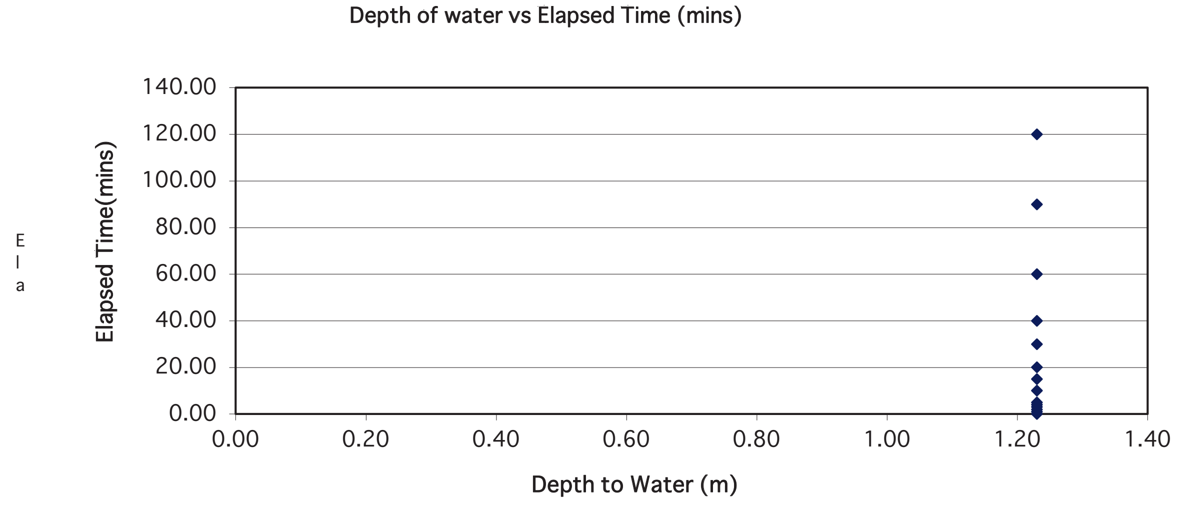
Depth to Water (m)	Elapsed Time (min)
1.23	0.00
1.23	1.00
1.23	2.00
1.23	3.00
1.23	4.00
1.23	5.00
1.23	10.00
1.23	15.00
1.23	20.00
1.23	30.00
1.23	40.00
1.23	60.00
1.23	90.00
1.23	120.00

Field Test

Depth of Pit (D)	2.00	m
Width of Pit (B)	0.70	m
Length of Pit (L)	2.00	m
Initial depth to Water =	1.23	m
Final depth to water =	1.23	m
Elapsed time (mins)=	120.00	
Top of permeable soil		m
Base of permeable soil		m
Base area=	1.4	m2
*Av. side area of permeable stratum over test period=	4.158	m2
Total Exposed area =	5.558	m2

Infiltration rate (f) = Volume of water used/unit exposed area / unit time

f= 0 m/min or 0 m/sec



Soakaway Design f -value from field tests (F2C) IGSL

Contract: Dalguise house Contract No. 23927
Test No. SA3
Client Greystar Ltd.
Date: 03/03/2022

Summary of ground conditions

from	to	Description	Ground water
0.00	0.20	TOPSOIL	
0.20	0.60	Firm light brown slightly sandy gravelly CLAY.	Dry
0.60	2.00	Stiff brownish grey slightly sandy very gravelly CLAY with medium cobble content.	

Notes:

Field Data

Depth to Water (m)	Elapsed Time (min)
1.12	0.00
1.12	1.00
1.12	2.00
1.12	3.00
1.12	4.00
1.12	5.00
1.12	10.00
1.12	15.00
1.12	20.00
1.12	30.00
1.12	40.00
1.12	60.00
1.11	90.00
1.10	120.00

Field Test

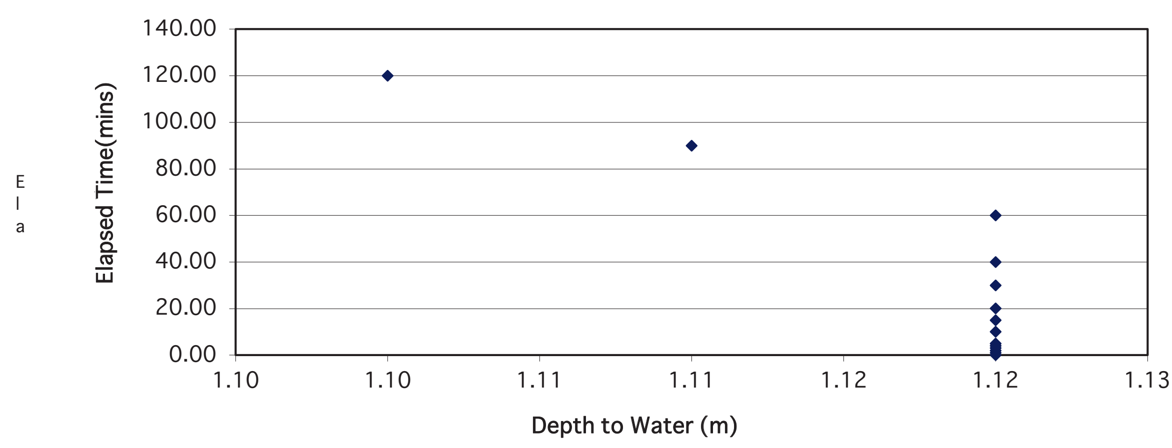
Depth of Pit (D)	2.00	m
Width of Pit (B)	0.70	m
Length of Pit (L)	2.00	m
Initial depth to Water =	1.12	m
Final depth to water =	1.10	m
Elapsed time (mins)=	120.00	
Top of permeable soil		m
Base of permeable soil		m
Base area=	1.4	m2
*Av. side area of permeable stratum over test period=	4.806	m2
Total Exposed area =	6.206	m2

Infiltration rate (f) = Volume of water used/unit exposed area / unit time

f= 0 m/min or 0 m/sec

Water rose during test

Depth of water vs Elapsed Time (mins)



Soakaway Design f -value from field tests (F2C) IGSL

Contract: Dalguise house development Contract No. 23927
Test No. SA4
Client Greystar Ltd
Date: 03/03/2022

Summary of ground conditions

from	to	Description	Ground water
0.00	0.20	TOPSOIL	Dry
0.20	0.90	Firm light brown slightly sandy gravelly CLAY.	
0.90	2.00	Stiff brownish grey slightly sandy very gravelly CLAY with medium cobble content.	

Notes:

Field Data

Depth to Water (m)	Elapsed Time (min)
1.45	0.00
1.45	1.00
1.45	2.00
1.45	3.00
1.45	4.00
1.45	5.00
1.45	10.00
1.45	15.00
1.45	20.00
1.45	30.00
1.45	40.00
1.45	60.00
1.45	90.00
1.45	120.00

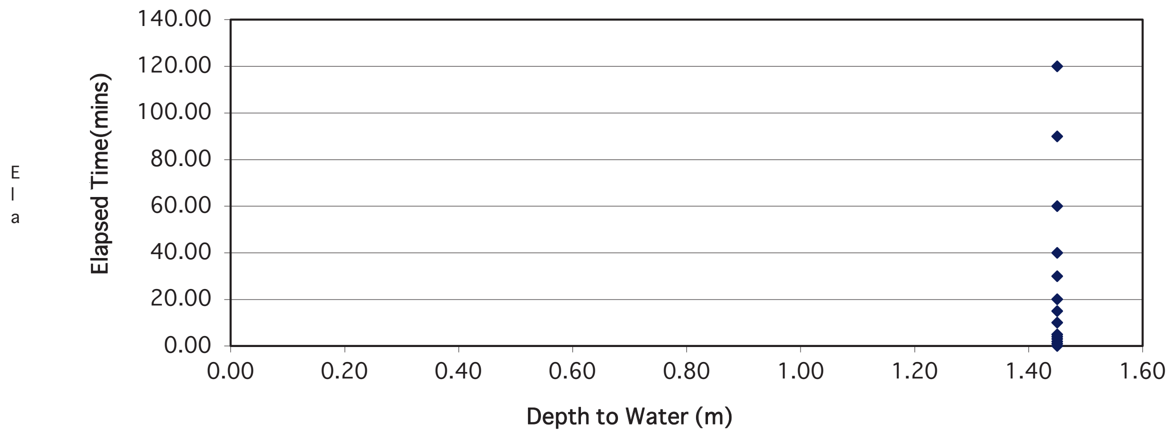
Field Test

Depth of Pit (D)	2.00	m
Width of Pit (B)	0.70	m
Length of Pit (L)	2.00	m
Initial depth to Water =	1.45	m
Final depth to water =	1.45	m
Elapsed time (mins)=	120.00	
Top of permeable soil		m
Base of permeable soil		m
Base area=	1.4	m2
*Av. side area of permeable stratum over test period=	2.97	m2
Total Exposed area =	4.37	m2

Infiltration rate (f) = Volume of water used/unit exposed area / unit time

f= 0 m/min or 0 m/sec

Depth of water vs Elapsed Time (mins)



Soakaway Design f -value from field tests (F2C) IGSL

Contract: Dalguise house development Contract No. 23927
Test No. SA5
Client Greystar Ltd.
Date: 03/03/2022

Summary of ground conditions

from	to	Description	Ground water
0.00	0.20	TOPSOIL	
0.20	0.90	Firm light brown slightly sandy gravelly CLAY.	Dry
0.90	2.00	Stiff brownish grey slightly sandy very gravelly CLAY with medium cobble content.	

Notes:

Field Data

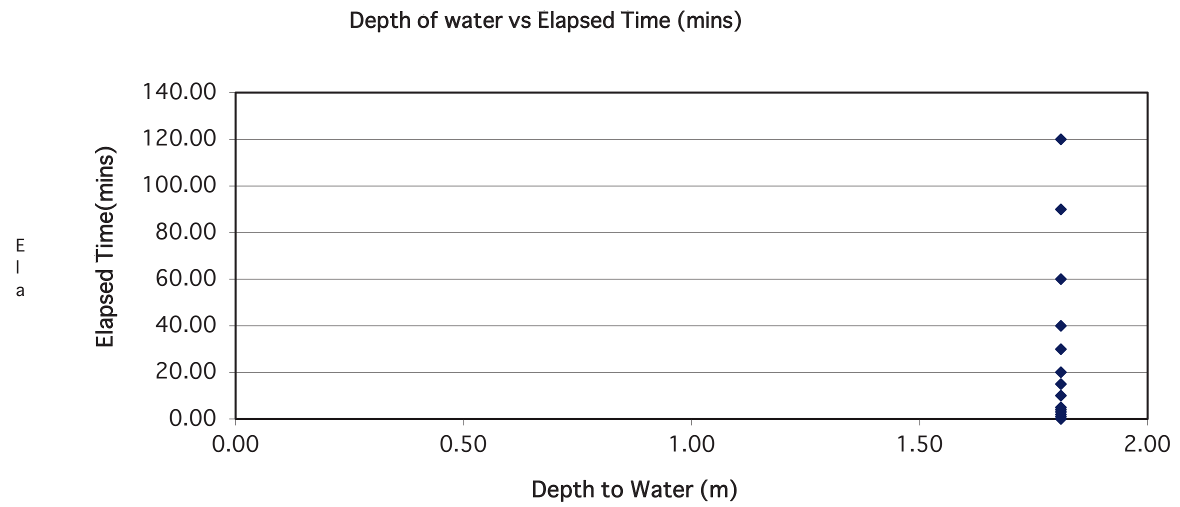
Depth to Water (m)	Elapsed Time (min)
1.81	0.00
1.81	1.00
1.81	2.00
1.81	3.00
1.81	4.00
1.81	5.00
1.81	10.00
1.81	15.00
1.81	20.00
1.81	30.00
1.81	40.00
1.81	60.00
1.81	90.00
1.81	120.00

Field Test

Depth of Pit (D)	2.00	m
Width of Pit (B)	0.70	m
Length of Pit (L)	2.00	m
Initial depth to Water =	1.81	m
Final depth to water =	1.81	m
Elapsed time (mins)=	120.00	
Top of permeable soil		m
Base of permeable soil		m
Base area=	1.4	m2
*Av. side area of permeable stratum over test period=	1.026	m2
Total Exposed area =	2.426	m2

Infiltration rate (f) = Volume of water used/unit exposed area / unit time

f= 0 m/min or 0 m/sec



Soakaway Design f -value from field tests (F2C) IGSL

Contract:	Dalguise house development		Contract No. 23927
Test No.	SA6		
Client	Greystar Ltd		
Date:	03/03/2022		

Summary of ground conditions

from	to	Description	Ground water
0.00	0.25	TOPSOIL	Dry
0.25	0.80	Firm yellowish brown slightly sandy gravelly CLAY.	
0.80	2.00	Firm to stiff pinkish brown mottled grey slightly sandy slightly gravelly CLAY.	

Notes:

Field Data

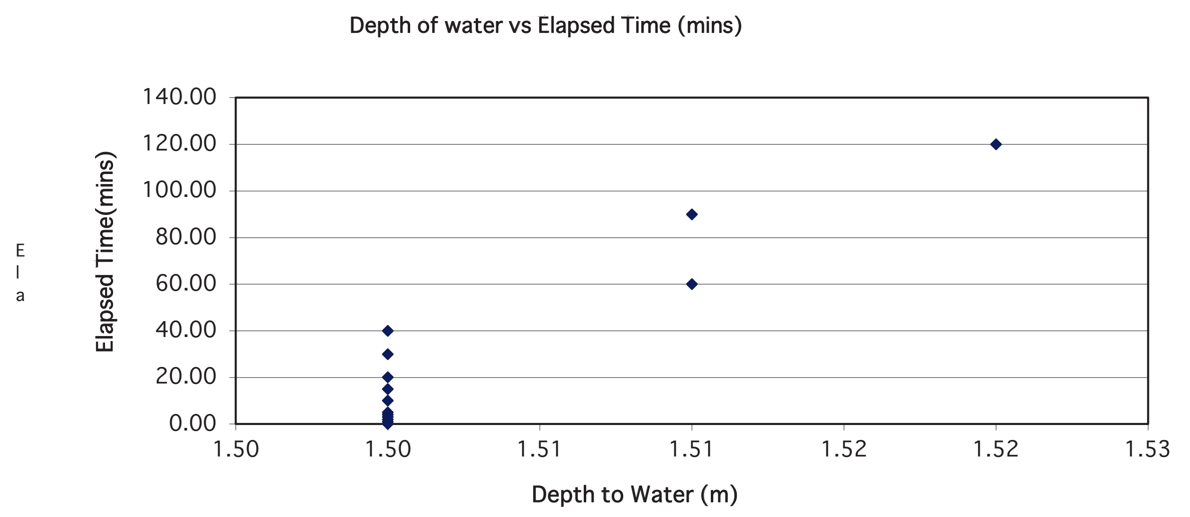
Depth to Water (m)	Elapsed Time (min)
1.50	0.00
1.50	1.00
1.50	2.00
1.50	3.00
1.50	4.00
1.50	5.00
1.50	10.00
1.50	15.00
1.50	20.00
1.50	30.00
1.50	40.00
1.51	60.00
1.51	90.00
1.52	120.00

Field Test

Depth of Pit (D)	2.00	m
Width of Pit (B)	0.70	m
Length of Pit (L)	2.00	m
Initial depth to Water =	1.50	m
Final depth to water =	1.52	m
Elapsed time (mins)=	120.00	
Top of permeable soil		m
Base of permeable soil		m
Base area=	1.4	m2
*Av. side area of permeable stratum over test period=	2.646	m2
Total Exposed area =	4.046	m2

Infiltration rate (f) = Volume of water used/unit exposed area / unit time

f= 5.8E-05 m/min or 9.61169E-07 m/sec



Appendix 8

Geotechnical Laboratory Testing

IGSL Ltd
Materials Laboratory
Unit J5, M7 Business Park
Newhall, Naas
Co. Kildare
045 846176

Test Report

Determination of Moisture Content, Liquid & Plastic Limits

Tested in accordance with BS1377:Part 2:1990, clauses 3.2, 4.3, 4.4 & 5.3**

Report No. **R133392** Contract No. 23927 Contract Name: Dalguise House , Monsktown , Dublin

Customer David Rehill C.E

Samples Received: 04/04/22 Date Tested: 04/04/22

BH/TP*	Sample No.	Depth* (m)	Lab. Ref	Sample Type*	Moisture Content %	Liquid Limit %	Plastic Limit %	Plasticity Index	% <425µm	Preparation	Liquid Limit Clause	Classification (BS5930)	Description
BH01	AA165496	4.0	A22/1714	B	13	27	14	13	50	WS	4.4	C L	Brown sandy gravelly CLAY
BH02A	AA161954	4.0	A22/1715	B	14	44	16	28	98	WS	4.4	C I	Brown sandy gravelly CLAY
BH02A	AA161956	6.0	A22/1716	B	23	39	15	24	98	WS	4.4	C I	Brown slightly sandy, slightly gravelly, CLAY
BH02A	AA161929	9.0	A22/1717	B	27	69	16	53	37	WS	4.4	C H	Brown sandy gravelly CLAY
BH03	AA161710	5.0	A22/1718	B	9.9	33	15	18	42	WS	4.4	C L	Brown slightly sandy, gravelly, CLAY
BH04	AA165494	4.0	A22/1719	B	19	34	16	18	56	WS	4.4	C L	Brown sandy gravelly CLAY
BH05	AA162664	4.0	A22/1720	B	16	23	NP	NP	48	WS	4.4		Brown slightly sandy, slightly gravelly, SILT
BH06	AA166502	5.0	A22/1721	B	14	36	15	21	69	WS	4.4	C I	Brown slightly sandy, slightly gravelly, CLAY
TP22	AA141847	1.5	A22/1722	B	12	31	15	16	46	WS	4.4	C L	Brown sandy gravelly CLAY
TP23	AA146802	3.3	A22/1723	B	7.1	28	12	16	55	WS	4.4	C L	Grey/brown slightly sandy, gravelly, CLAY with some cobbles
TP26	AA146810	1.6	A22/1724	B	14	34	16	18	58	WS	4.4	C L	Brown sandy gravelly CLAY

Preparation: WS - Wet sieved
AR - As received
NP - Non plastic

Liquid Limit Clause: 4.3 Cone Penetrometer definitive method
4.4 Cone Penetrometer one point method

Sample Type: B - Bulk Disturbed
U - Undisturbed

Remarks:
Results relate only to the specimen tested,in as received condition unless otherwise noted.
NOTE: **These clauses have been superceded by EN 17892-1 and EN17892-12.
Opinions and interpretations are outside the scope of accreditation. * denotes Customer supplied information.
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IGSL Ltd Materials Laboratory	Persons authorized to approve reports	Approved by	Date	Page
	H Byrne (Laboratory Manager)	H Byrne	04/05/22	1 of 1

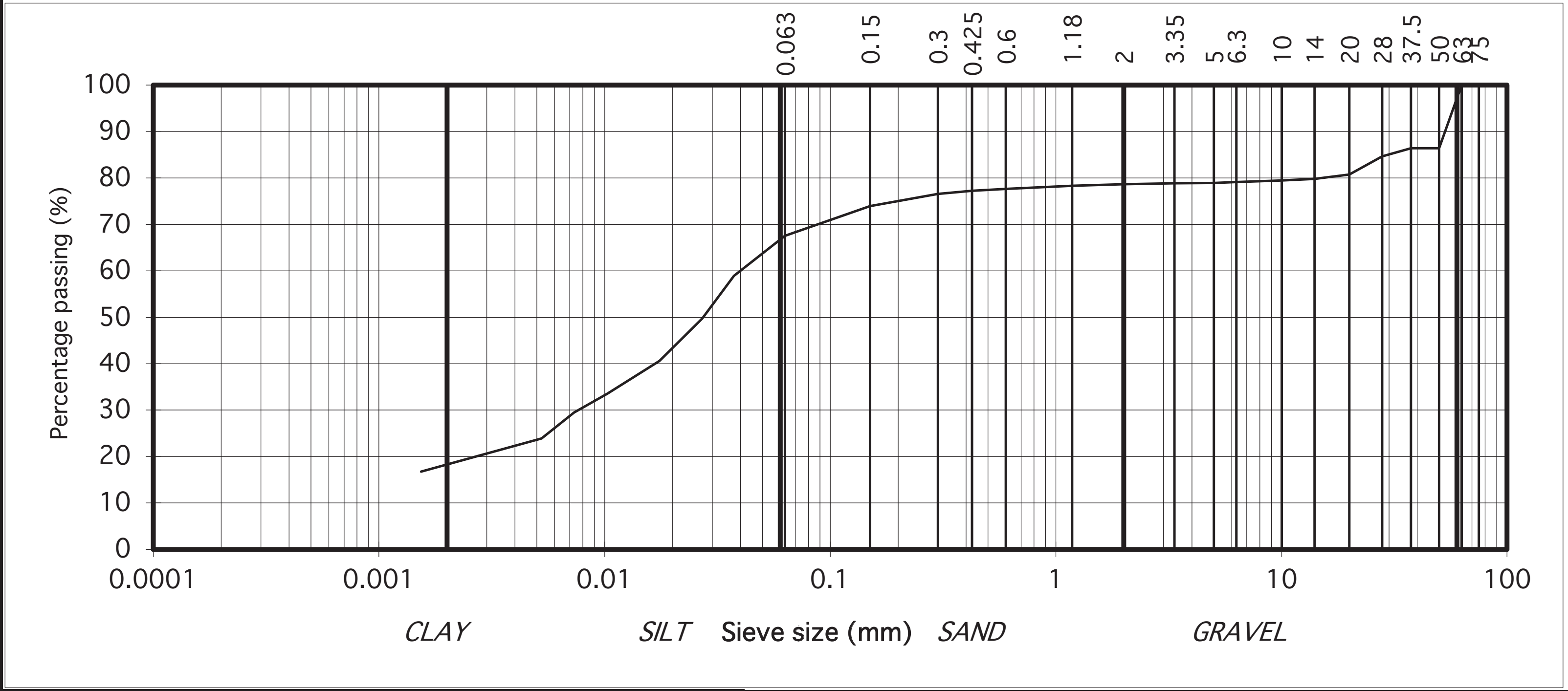
TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 INAB ACCREDITED TESTING DETAILED IN SCOPE REG NO.133T

Contract No.	23927 Report No. R133393
Contract Name :	Dalguise House , Monkstown , Dublin
BH/TP* :	BH02A
Sample No.*	AA161956 Lab. Sample No. A22/1716
Sample Type:	B
Depth* (m)	6.00 Customer: David Rehill C.E
Date Received	04/04/2022 Date Testing started 04/04/2022
Description:	Brown slightly sandy, slightly gravelly, CLAY
Remarks	Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4:2016 .

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation. This report shall not be reproduced except in full without the written approval of the Laboratory.

particle size	% passing	
75	100	COBBLES
63	100	COBBLES
50	86	GRAVEL
37.5	86	GRAVEL
28	85	GRAVEL
20	81	GRAVEL
14	80	GRAVEL
10	79	GRAVEL
6.3	79	GRAVEL
5	79	GRAVEL
3.35	79	GRAVEL
2	79	GRAVEL
1.18	78	SAND
0.6	78	SAND
0.425	77	SAND
0.3	77	SAND
0.15	74	SAND
0.063	68	SILT/CLAY
0.037	59	SILT/CLAY
0.027	50	SILT/CLAY
0.018	41	SILT/CLAY
0.010	34	SILT/CLAY
0.007	29	SILT/CLAY
0.005	24	SILT/CLAY
0.002	17	SILT/CLAY



IGSL Ltd Materials Laboratory	Approved by:	Date:	Page no:
	H Byrne	04/05/22	1 of 1

Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 INAB ACCREDITED TESTING DETAILED IN SCOPE REG NO.133T

particle size	% passing	
75	100	COBBLES
63	100	
50	90	GRAVEL
37.5	83	
28	69	
20	61	
14	54	
10	50	
6.3	46	
5	45	
3.35	42	
2	38	SAND
1.18	35	
0.6	31	
0.425	30	
0.3	28	
0.15	26	
0.063	23	SILT/CLAY
0.037	20	
0.027	19	
0.017	18	
0.010	16	
0.007	14	
0.005	12	
0.001	10	

Contract No.	23927	Report No.	R133394
Contract Name :	Dalguise House , Monkstown , Dublin		
BH/TP* :	BH03		
Sample No.*	AA161710	Lab. Sample No.	A22/1718
Sample Type:	B		
Depth* (m)	5.00	Customer:	David Rehill C.E
Date Received	04/04/2022	Date Testing started	04/04/2022
Description:	Brown slightly sandy, gravelly, CLAY		

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.
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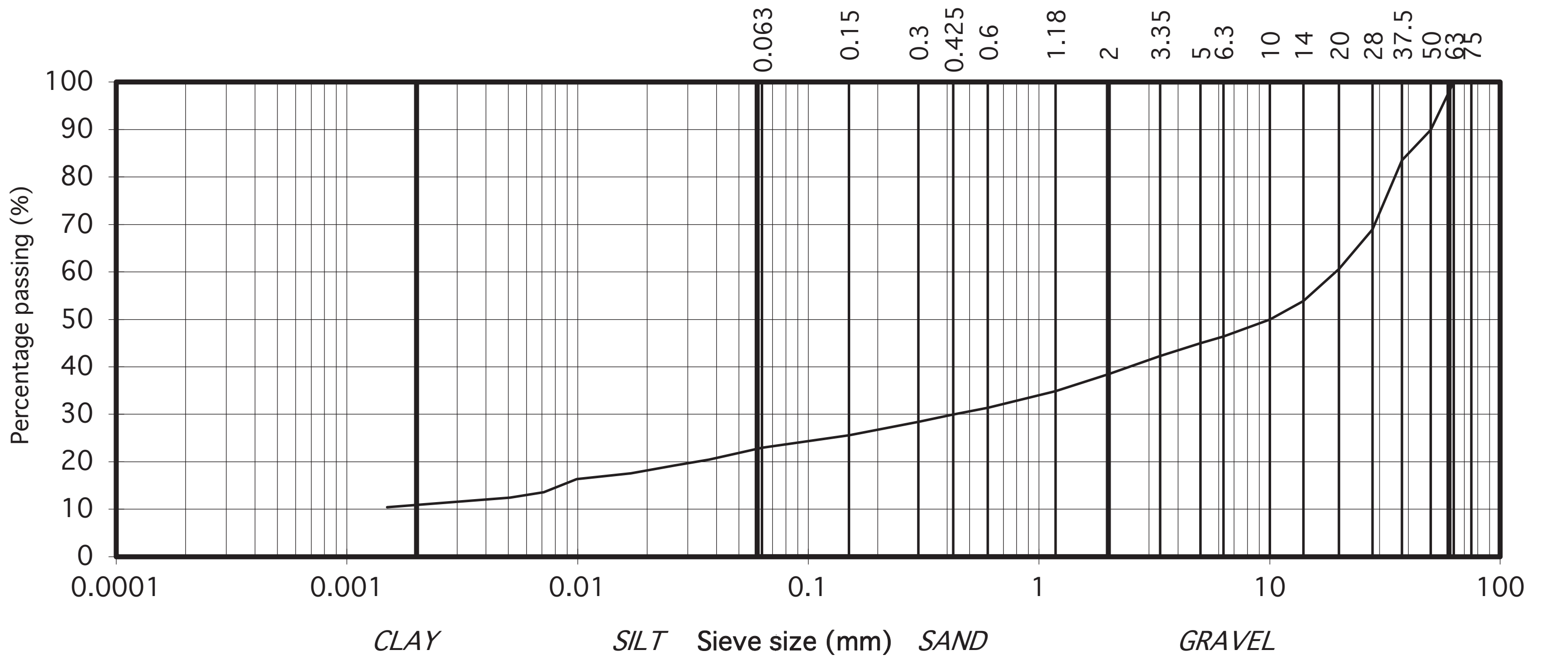
Remarks

Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4:2016 .



IGSL Ltd Materials Laboratory	Approved by:	Date:	Page no:
	H Byrne	04/05/22	1 of 1

Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution

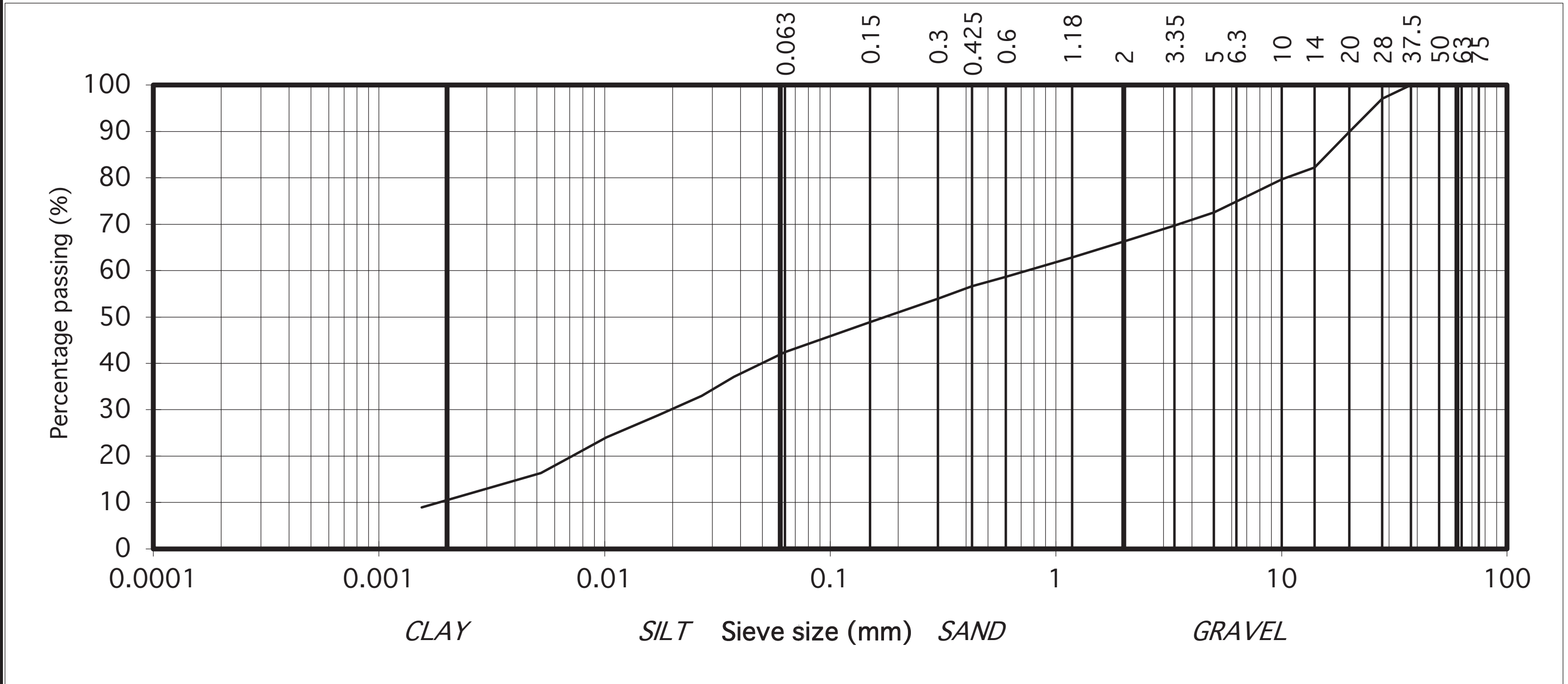
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 INAB ACCREDITED TESTING DETAILED IN SCOPE REG NO.133T

Contract No.	23927
Report No.	R133395
Contract Name :	Dalguise House , Monkstown , Dublin
BH/TP* :	BH05
Sample No.*	AA162664
Lab. Sample No.	A22/1720
Sample Type:	B
Depth* (m)	4.00
Customer:	David Rehill C.E
Date Received	04/04/2022
Date Testing started	04/04/2022
Description:	Brown slightly sandy, slightly gravelly, SILT
Remarks	Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4:2016 .

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation. This report shall not be reproduced except in full without the written approval of the Laboratory.

particle size	% passing	
75	100	COBBLES
63	100	
50	100	GRAVEL
37.5	100	
28	97	
20	90	
14	82	
10	80	
6.3	75	
5	73	
3.35	70	
2	66	SAND
1.18	63	
0.6	59	
0.425	57	
0.3	54	
0.15	49	
0.063	42	SILT/CLAY
0.037	37	
0.027	33	
0.017	29	
0.010	24	
0.007	20	
0.005	16	
0.002	9	



IGSL Ltd Materials Laboratory

Approved by:	Date:	Page no:
H Byrne	04/05/22	1 of 1

Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

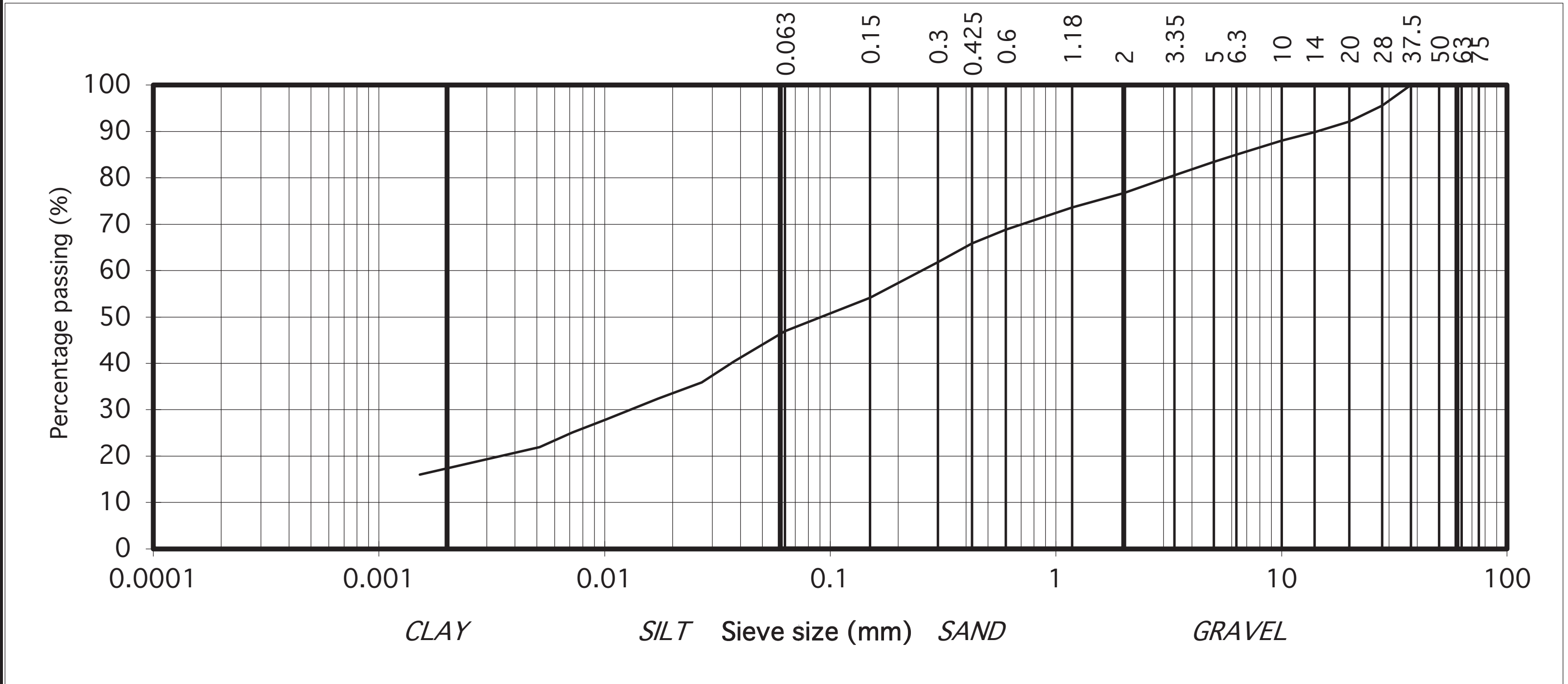
TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 INAB ACCREDITED TESTING DETAILED IN SCOPE REG NO.133T

Contract No.	23927	Report No.	R133396
Contract Name :	Dalguise House , Monkstown , Dublin		
BH/TP* :	BH06		
Sample No.*	AA166502	Lab. Sample No.	A22/1721
Sample Type:	B		
Depth* (m)	5.00	Customer:	David Rehill C.E
Date Received	04/04/2022	Date Testing started	04/04/2022
Description:	Brown slightly sandy, slightly gravelly, CLAY		
Remarks	Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4:2016 .		

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation. This report shall not be reproduced except in full without the written approval of the Laboratory.

particle size	% passing	
75	100	COBBLES
63	100	COBBLES
50	100	GRAVEL
37.5	100	GRAVEL
28	96	GRAVEL
20	92	GRAVEL
14	90	GRAVEL
10	88	GRAVEL
6.3	85	GRAVEL
5	83	GRAVEL
3.35	81	GRAVEL
2	77	SAND
1.18	74	SAND
0.6	69	SAND
0.425	66	SAND
0.3	62	SAND
0.15	54	SILT/CLAY
0.063	47	SILT/CLAY
0.037	40	SILT/CLAY
0.027	36	SILT/CLAY
0.017	32	SILT/CLAY
0.010	28	SILT/CLAY
0.007	25	SILT/CLAY
0.005	22	SILT/CLAY
0.002	16	SILT/CLAY



IGSL Ltd Materials Laboratory	Approved by:	Date:	Page no:
	H Byrne	04/05/22	1 of 1

Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT

Determination of Particle Size Distribution

Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**

(note: Sedimentation stage not accredited)

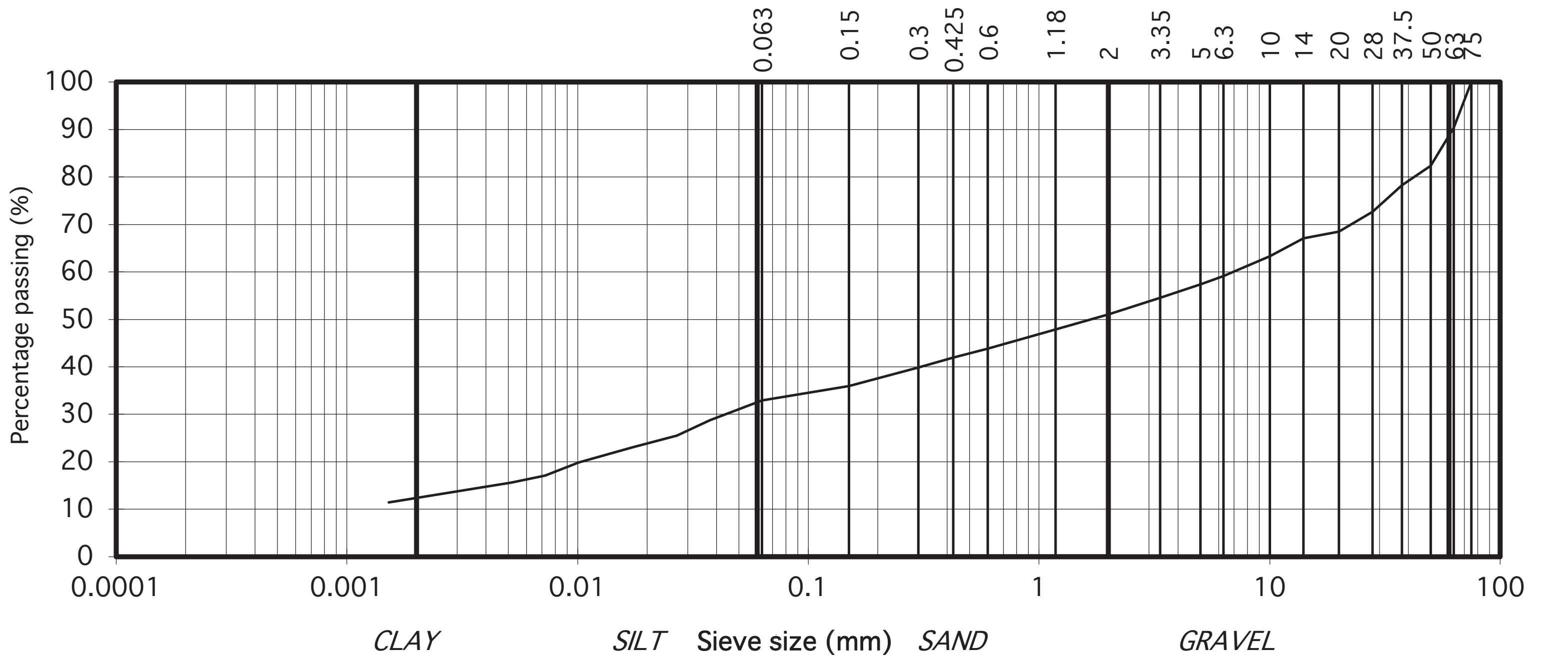
ISO 17025 INAB ACCREDITED TESTING DETAILED IN SCOPE REG NO.133T

Contract No.	23927	Report No.	R133397
Contract Name :	Dalguise House , Monkstown , Dublin		
BH/TP* :	TP23		
Sample No.*	AA146802	Lab. Sample No.	A22/1723
Sample Type:	B		
Depth* (m)	3.30	Customer:	David Rehill C.E
Date Received	04/04/2022	Date Testing started	04/04/2022
Description:	Grey/brown slightly sandy, gravelly, CLAY with some cobbles		
Remarks	Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4:2016 .		

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.

This report shall not be reproduced except in full without the written approval of the Laboratory.

particle size	% passing	
75	100	COBBLES
63	90	GRAVEL
50	82	GRAVEL
37.5	78	GRAVEL
28	73	GRAVEL
20	69	GRAVEL
14	67	GRAVEL
10	63	GRAVEL
6.3	59	GRAVEL
5	57	GRAVEL
3.35	55	GRAVEL
2	51	SAND
1.18	48	SAND
0.6	44	SAND
0.425	42	SAND
0.3	40	SAND
0.15	36	SILT/CLAY
0.063	33	SILT/CLAY
0.037	29	SILT/CLAY
0.027	26	SILT/CLAY
0.017	23	SILT/CLAY
0.010	20	SILT/CLAY
0.007	17	SILT/CLAY
0.005	16	SILT/CLAY
0.002	11	SILT/CLAY



IGSL Ltd Materials Laboratory	Approved by:	Date:	Page no:
	H Byrne	04/05/22	1 of 1

Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

(Diametrial) POINT LOAD STRENGTH INDEX TEST DATA

Contract: Dalguise House Development, Monkstown, Co.Dublin
Date of test: 12/05/2022

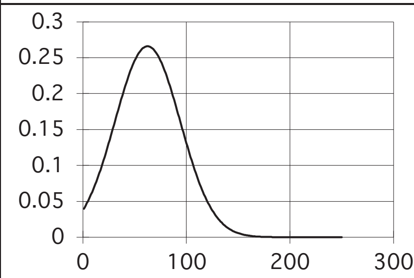
Sample Type: Core
Contract no. 23927

RC No.	Depth m	D (Diameter) mm	P (failure load) kN	F	Is (index strength) Mpa	Is(50) (index strength) Mpa	*UCS MPa	Type	Orienation
RC02	12.2	78	4.0	1.222	0.66	0.80	16	d	//
	13.9	78	12.0	1.222	1.97	2.41	48	d	//
	14.9	78	8.0	1.222	1.31	1.61	32	d	//
RC03	16.4	78	19.0	1.222	3.12	3.81	76	d	//
	16.9	78	11.0	1.222	1.81	2.21	44	d	//
RC04	15.6	78	21.0	1.222	3.45	4.22	84	d	//
	15.7	78	19.0	1.222	3.12	3.81	76	d	//
	15.8	78	22.0	1.222	3.62	4.42	88	d	//
RC05	13.7	78	6.0	1.222	0.99	1.20	24	d	//
	13.8	78	2.0	1.222	0.33	0.40	8	d	//
	14.9	78	8.0	1.222	1.31	1.61	32	d	//
RC06	11.2	78	23.0	1.222	3.78	4.62	92	d	//
	11.4	78	22.0	1.222	3.62	4.42	88	d	//
	11.9	78	18.0	1.222	2.96	3.61	72	d	//
RC07	11.4	78	9.0	1.222	1.48	1.81	36	d	//
	12.1	78	6.0	1.222	0.99	1.20	24	d	//
RC08	7.3	78	19.0	1.222	3.12	3.81	76	d	//
	7.6	78	26.0	1.222	4.27	5.22	104	d	//
	7.8	78	24.0	1.222	3.94	4.82	96	d	//
	8.4	78	26.0	1.222	4.27	5.22	104	d	//
	8.5	78	22.0	1.222	3.62	4.42	88	d	//

Statistical Summary Data	Is(50)	UCS*
Number of Samples Tested	21	21
Minimum	0.40	8
Average	3.13	63
Maximum	5.22	104
Standard Dev.	1.58	32
Upper 95% Confidence Limit	6.21	124.28
Lower 95% Confidence Limit	0.04	0.78

Comments:
*UCS taken as k x Point Load Is(50): k= 20

*UCS Normal Distribution Curve



Abbreviations	
i	irregular
a	axial
b	block
d	diametral

approx. orientation to planes of weakness/bedding

U	unknown
P	perpendicular
//	parallel

(Diametrial) POINT LOAD STRENGTH INDEX TEST DATA

Contract: Dalguise House Development, Monkstown, Co.Dublin
Date of test: 12/05/2022

Sample Type: Core
Contract no. 23927

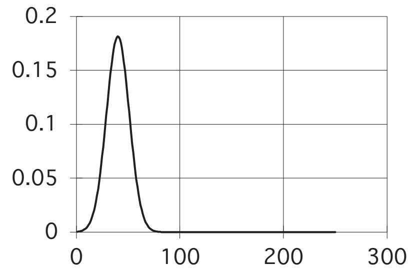
IGSL

RC No.	Depth m	D (Diameter) mm	P (failure load) kN	F	Is (index strength) Mpa	Is(50) (index strength) Mpa	*UCS MPa	Type	Orienation
RC09	4.7	78	7.0	1.222	1.15	1.41	28	d	//
	6.1	78	8.0	1.222	1.31	1.61	32	d	//
	6.4	78	14.0	1.222	2.30	2.81	56	d	//
	7.0	78	11.0	1.222	1.81	2.21	44	d	//
	7.1	78	10.0	1.222	1.64	2.01	40	d	//

Statistical Summary Data	Is(50)	UCS*
Number of Samples Tested	5	5
Minimum	1.41	28
Average	2.01	40
Maximum	2.81	56
Standard Dev.	0.55	11
Upper 95% Confidence Limit	3.09	61.71
Lower 95% Confidence Limit	0.93	18.60

Comments:
*UCS taken as k x Point Load Is(50): k= 20

*UCS Normal Distribution Curve



Abbreviations

i	irregular
a	axial
b	block
d	diametral

approx. orientation to planes of <u>weakness/bedding</u>

U	unknown
P	perpendicular
//	parallel

Appendix 9

Chemical and Environmental Laboratory Testing

Eurofins Chemtest Ltd
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.com

2183

Amended Report

Report No.:	22-12129-2		
Initial Date of Issue:	07-Apr-2022	**Date of Re-Issue:**	13-May-2022
Client	IGSL		
Client Address:	M7 Business Park Naas County Kildare Ireland		
Contact(s):	John Clancy		
Project	23927 Dalguise House Monkstown Dublin (David Rehill CE)		
Quotation No.:	Q20-19951	**Date Received:**	31-Mar-2022
Order No.:		**Date Instructed:**	31-Mar-2022
No. of Samples:	27		
Turnaround (Wkdays):	30	**Results Due:**	16-May-2022
Date Approved:	13-May-2022		

Approved By:

Details: Stuart Henderson, Technical Manager

Results - Leachate

Project: 23927 Dalguise House Monkstown Dublin (David Rehill CE)

Client: IGSL					**Chemtest Job No.:**	22-12129	22-12129	22-12129	22-12129	22-12129	22-12129	22-12129	22-12129	22-12129	22-12129	22-12129
Quotation No.: Q20-19951					**Chemtest Sample ID.:**	1402334	1402335	1402336	1402337	1402338	1402339	1402340	1402341	1402342	1402343	1402344
					Client Sample ID.:	AA165493	AA165494	AA161952	AA161953	AA165493	AA165495	AA165491	AA165492	AA162662	AA162663	AA165497
					Sample Location:	BH01	BH01	BH02A	BH02A	BH03	BH03	BH04	BH04	BH05	BH05	BH06
					Sample Type:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
					Top Depth (m):	1.0	2.0	2.0	3.0	1.0	3.0	1.0	2.0	2.0	3.0	1.0
Determinand	**Accred.**	**SOP**	**Type**	**Units**	**LOD**											
pH	U	1010	10:1		N/A	8.4	8.3	8.4	8.6	8.6	8.5	8.3	8.6	8.5	8.6	8.3
Ammonium	U	1220	10:1	mg/l	0.050	0.12	0.098	0.22	0.56	0.53	0.41	0.41	0.077	0.11	0.11	0.099
Ammonium	N	1220	10:1	mg/kg	0.10	1.4	1.1	2.5	6.8	6.5	4.9	4.6	0.96	1.3	1.3	1.1
Boron (Dissolved)	U	1455	10:1	mg/kg	0.01	< 0.01	< 0.01	< 0.01	0.19	0.16	0.20	0.14	< 0.01	< 0.01	< 0.01	< 0.01
Benzo[j]fluoranthene	N	1800	10:1	µg/l	0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010

Results - Leachate

Project: 23927 Dalguise House Monkstown Dublin (David Rehill CE)

Client: IGSL					**Chemtest Job No.:**	22-12129	22-12129	22-12129	22-12129	22-12129	22-12129	22-12129	22-12129	22-12129	22-12129	22-12129
Quotation No.: Q20-19951					**Chemtest Sample ID.:**	1402345	1402346	1402347	1402348	1402349	1402350	1402351	1402352	1402353	1402354	1402355
					Client Sample ID.:	AA165498	AA141843	AA141844	AA141845	AA141846	AA141847	AA141848	AA141849	AA141850	AA141801	AA146803
					Sample Location:	BH06	TP21	TP21	TP21	TP22	TP22	TP22	TP23	TP23	TP23	TP24
					Sample Type:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
					Top Depth (m):	2.0	0.75	1.5	3.0	0.6	1.5	3.3	0.3	1.2	2.4	0.5
Determinand	**Accred.**	**SOP**	**Type**	**Units**	**LOD**											
pH	U	1010	10:1		N/A	8.4	8.8	8.6	8.5	8.3	8.7	8.7	8.2	8.6	8.8	8.7
Ammonium	U	1220	10:1	mg/l	0.050	0.14	0.063	0.29	0.32	0.51	0.14	0.11	0.15	0.14	0.21	0.21
Ammonium	N	1220	10:1	mg/kg	0.10	1.6	0.84	3.6	3.8	5.6	1.8	1.4	1.6	1.7	2.8	2.7
Boron (Dissolved)	U	1455	10:1	mg/kg	0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo[j]fluoranthene	N	1800	10:1	µg/l	0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010

Results - Leachate

Project: 23927 Dalguise House Monkstown Dublin (David Rehill CE)

Client: IGSL					**Chemtest Job No.:**	22-12129	22-12129	22-12129	22-12129	22-12129
Quotation No.: Q20-19951					**Chemtest Sample ID.:**	1402356	1402357	1402358	1402359	1402360
					Client Sample ID.:	AA146804	AA146807	AA146808	AA146809	AA146810
					Sample Location:	TP24	TP25	TP25	TP26	TP26
					Sample Type:	SOIL	SOIL	SOIL	SOIL	SOIL
					Top Depth (m):	2.0	0.6	1.5	0.5	1.6
Determinand	**Accred.**	**SOP**	**Type**	**Units**	**LOD**					
pH	U	1010	10:1		N/A	8.7	8.3	8.9	8.4	9.0
Ammonium	U	1220	10:1	mg/l	0.050	0.20	0.22	0.16	0.33	0.061
Ammonium	N	1220	10:1	mg/kg	0.10	2.5	2.4	2.3	3.8	0.96
Boron (Dissolved)	U	1455	10:1	mg/kg	0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo[j]fluoranthene	N	1800	10:1	µg/l	0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010

Results - Soil

Project: 23927 Dalguise House Monkstown Dublin (David Rehill CE)

Client: IGSL				**Chemtest Job No.:**	22-12129	22-12129	22-12129	22-12129	22-12129	22-12129	22-12129	22-12129
Quotation No.: Q20-19951				**Chemtest Sample ID.:**	1402334	1402335	1402336	1402337	1402338	1402339	1402340	1402341
				Client Sample ID.:	AA165493	AA165494	AA161952	AA161953	AA165493	AA165495	AA165491	AA165492
				Sample Location:	BH01	BH01	BH02A	BH02A	BH03	BH03	BH04	BH04
				Sample Type:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
				Top Depth (m):	1.0	2.0	2.0	3.0	1.0	3.0	1.0	2.0
				Asbestos Lab:	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM
Determinand	**Accred.**	**SOP**	**Units**	**LOD**								
ACM Type	U	2192		N/A	-	-	-	-	-	-	-	-
Asbestos Identification	U	2192		N/A	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected
Moisture	N	2030	%	0.020	16	12	18	17	13	12	26	14
pH (2.5:1)	N	2010		4.0	[A] 8.6		[A] 8.5					
Boron (Hot Water Soluble)	U	2120	mg/kg	0.40	[A] 0.66	[A] 0.51	[A] 0.41	[A] 0.56	[A] < 0.40	[A] 0.58	[A] < 0.40	[A] < 0.40
Magnesium (Water Soluble)	N	2120	g/l	0.010	[A] < 0.010		[A] < 0.010					
Sulphate (2:1 Water Soluble) as SO4	U	2120	g/l	0.010	[A] 0.015		[A] 0.020					
Total Sulphur	U	2175	%	0.010	[A] 0.043		[A] 0.027					
Sulphur (Elemental)	U	2180	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] 2.3	[A] 11	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Chloride (Water Soluble)	U	2220	g/l	0.010	[A] 0.012		[A] 0.011					
Nitrate (Water Soluble)	N	2220	g/l	0.010	< 0.010		< 0.010					
Cyanide (Total)	U	2300	mg/kg	0.50	[A] < 0.50	[A] < 0.50	[A] < 0.50	[A] < 0.50	[A] < 0.50	[A] < 0.50	[A] < 0.50	[A] < 0.50
Sulphide (Easily Liberatable)	N	2325	mg/kg	0.50	[A] 3.9	[A] 6.5	[A] 8.8	[A] 8.8	[A] 5.9	[A] 5.9	[A] 5.6	[A] 4.1
Ammonium (Water Soluble)	U	2220	g/l	0.01	< 0.01		< 0.01					
Sulphate (Acid Soluble)	U	2430	%	0.010	[A] 0.028	[A] 0.012	[A] < 0.010	[A] < 0.010	[A] 0.014	[A] < 0.010	[A] 0.010	[A] 0.013
Arsenic	U	2450	mg/kg	1.0	14	14	11	5.1	13	9.9	13	12
Barium	U	2450	mg/kg	10	79	52	50	25	43	30	55	46
Cadmium	U	2450	mg/kg	0.10	1.1	1.4	0.47	0.25	1.6	1.0	1.7	1.8
Chromium	U	2450	mg/kg	1.0	14	13	27	10	13	9.9	23	12
Molybdenum	U	2450	mg/kg	2.0	2.7	3.1	< 2.0	< 2.0	2.6	< 2.0	2.0	3.2
Antimony	N	2450	mg/kg	2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Copper	U	2450	mg/kg	0.50	1200	52	19	7.0	21	14	22	21
Mercury	U	2450	mg/kg	0.10	0.11	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Nickel	U	2450	mg/kg	0.50	32	35	34	14	35	24	42	40
Lead	U	2450	mg/kg	0.50	130	51	22	7.2	13	11	18	11
Selenium	U	2450	mg/kg	0.20	0.37	0.56	< 0.20	< 0.20	0.22	0.34	< 0.20	1.2
Zinc	U	2450	mg/kg	0.50	290	110	55	29	64	43	86	61
Chromium (Trivalent)	N	2490	mg/kg	1.0	14	13	27	10	13	9.9	23	12
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Mineral Oil (TPH Calculation)	N	2670	mg/kg	10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Aliphatic TPH >C5-C6	N	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[AC] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aliphatic TPH >C6-C8	N	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[AC] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aliphatic TPH >C8-C10	U	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[AC] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aliphatic TPH >C10-C12	U	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[AC] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aliphatic TPH >C12-C16	U	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[AC] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aliphatic TPH >C16-C21	U	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[AC] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aliphatic TPH >C21-C35	U	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[AC] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0

Results - Soil

Project: 23927 Dalguise House Monkstown Dublin (David Rehill CE)

Client: IGSL	**Chemtest Job No.:**				22-12129	22-12129	22-12129	22-12129	22-12129	22-12129	22-12129	22-12129
Quotation No.: Q20-19951	**Chemtest Sample ID.:**				1402334	1402335	1402336	1402337	1402338	1402339	1402340	1402341
	Client Sample ID.:				AA165493	AA165494	AA161952	AA161953	AA165493	AA165495	AA165491	AA165492
	Sample Location:				BH01	BH01	BH02A	BH02A	BH03	BH03	BH04	BH04
	Sample Type:				SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	Top Depth (m):				1.0	2.0	2.0	3.0	1.0	3.0	1.0	2.0
	Asbestos Lab:				DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM
Determinand	**Accred.**	**SOP**	**Units**	**LOD**								
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[AC] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0	[A] < 5.0	[A] < 5.0	[AC] < 5.0	[A] < 5.0	[A] < 5.0	[A] < 5.0	[A] < 5.0	[A] < 5.0
Aromatic TPH >C5-C7	N	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[AC] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aromatic TPH >C7-C8	N	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[AC] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aromatic TPH >C8-C10	U	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[AC] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aromatic TPH >C10-C12	U	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[AC] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aromatic TPH >C12-C16	U	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[AC] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[AC] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aromatic TPH >C21-C35	U	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[AC] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[AC] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0	[A] < 5.0	[A] < 5.0	[AC] < 5.0	[A] < 5.0	[A] < 5.0	[A] < 5.0	[A] < 5.0	[A] < 5.0
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0	[A] < 10	[A] < 10	[AC] < 10	[A] < 10	[A] < 10	[A] < 10	[A] < 10	[A] < 10
Benzene	U	2760	µg/kg	1.0	[A] < 1.0	[A] < 1.0	[AC] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Toluene	U	2760	µg/kg	1.0	[A] < 1.0	[A] < 1.0	[AC] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Ethylbenzene	U	2760	µg/kg	1.0	[A] < 1.0	[A] < 1.0	[AC] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
m & p-Xylene	U	2760	µg/kg	1.0	[A] < 1.0	[A] < 1.0	[AC] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
o-Xylene	U	2760	µg/kg	1.0	[A] < 1.0	[A] < 1.0	[AC] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Methyl Tert-Butyl Ether	U	2760	µg/kg	1.0	[A] < 1.0	[A] < 1.0	[AC] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Naphthalene	N	2800	mg/kg	0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010
Acenaphthylene	N	2800	mg/kg	0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010
Acenaphthene	N	2800	mg/kg	0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010
Fluorene	N	2800	mg/kg	0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010
Phenanthrene	N	2800	mg/kg	0.010	[A] 0.11	[A] 0.11	[A] 0.14	[A] 0.096	[A] < 0.010	[A] 0.24	[A] < 0.010	[A] < 0.010
Anthracene	N	2800	mg/kg	0.010	[A] 0.060	[A] 0.089	[A] 0.036	[A] 0.010	[A] < 0.010	[A] 0.069	[A] < 0.010	[A] < 0.010
Fluoranthene	N	2800	mg/kg	0.010	[A] 0.13	[A] 0.12	[A] 0.10	[A] 0.18	[A] < 0.010	[A] 0.23	[A] < 0.010	[A] < 0.010
Pyrene	N	2800	mg/kg	0.010	[A] 0.12	[A] 0.15	[A] 0.19	[A] 0.13	[A] < 0.010	[A] 0.19	[A] < 0.010	[A] < 0.010
Benzo[a]anthracene	N	2800	mg/kg	0.010	[A] 0.10	[A] 0.14	[A] 0.13	[A] 0.089	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010
Chrysene	N	2800	mg/kg	0.010	[A] 0.11	[A] 0.17	[A] 0.21	[A] 0.077	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010
Benzo[b]fluoranthene	N	2800	mg/kg	0.010	[A] 0.13	[A] 0.15	[A] 0.24	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010
Benzo[k]fluoranthene	N	2800	mg/kg	0.010	[A] 0.13	[A] 0.093	[A] 0.074	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010
Benzo[a]pyrene	N	2800	mg/kg	0.010	[A] 0.18	[A] 0.11	[A] 0.18	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010
Indeno(1,2,3-c,d)Pyrene	N	2800	mg/kg	0.010	[A] 0.11	[A] < 0.010	[A] 0.11	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010
Dibenz(a,h)Anthracene	N	2800	mg/kg	0.010	[A] 0.11	[A] < 0.010	[A] 0.058	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010
Benzo[g,h,i]perylene	N	2800	mg/kg	0.010	[A] 0.13	[A] < 0.010	[A] 0.20	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010
Coronene	N	2800	mg/kg	0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010
Total Of 17 PAH's	N	2800	mg/kg	0.20	[A] 1.4	[A] 1.1	[A] 1.7	[A] 0.58	[A] < 0.20	[A] 0.73	[A] < 0.20	[A] < 0.20
PCB 28	N	2815	mg/kg	0.0010	[A] < 0.0010	[A] < 0.0010	[AC] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010
PCB 52	N	2815	mg/kg	0.0010	[A] < 0.0010	[A] < 0.0010	[AC] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010

Results - Soil

Project: 23927 Dalguise House Monkstown Dublin (David Rehill CE)

Client: IGSL				**Chemtest Job No.:**	22-12129	22-12129	22-12129	22-12129	22-12129	22-12129	22-12129	22-12129
Quotation No.: Q20-19951				**Chemtest Sample ID.:**	1402334	1402335	1402336	1402337	1402338	1402339	1402340	1402341
				Client Sample ID.:	AA165493	AA165494	AA161952	AA161953	AA165493	AA165495	AA165491	AA165492
				Sample Location:	BH01	BH01	BH02A	BH02A	BH03	BH03	BH04	BH04
				Sample Type:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
				Top Depth (m):	1.0	2.0	2.0	3.0	1.0	3.0	1.0	2.0
				Asbestos Lab:	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM
Determinand	**Accred.**	**SOP**	**Units**	**LOD**								
PCB 90+101	N	2815	mg/kg	0.0010	[A] < 0.0010	[A] < 0.0010	[AC] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010
PCB 118	N	2815	mg/kg	0.0010	[A] < 0.0010	[A] < 0.0010	[AC] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010
PCB 153	N	2815	mg/kg	0.0010	[A] < 0.0010	[A] < 0.0010	[AC] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010
PCB 138	N	2815	mg/kg	0.0010	[A] < 0.0010	[A] < 0.0010	[AC] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010
PCB 180	N	2815	mg/kg	0.0010	[A] < 0.0010	[A] < 0.0010	[AC] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010
Total PCBs (7 congeners)	N	2815	mg/kg	0.0010	[A] < 0.0010	[A] < 0.0010	[AC] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010
Total Phenols	U	2920	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10

Results - Soil

Project: 23927 Dalguise House Monkstown Dublin (David Rehill CE)

Client: IGSL				**Chemtest Job No.:**	22-12129	22-12129	22-12129	22-12129	22-12129	22-12129	22-12129	22-12129	22-12129
Quotation No.: Q20-19951				**Chemtest Sample ID.:**	1402342	1402343	1402344	1402345	1402346	1402347	1402348	1402349	1402350
				Client Sample ID.:	AA162662	AA162663	AA165497	AA165498	AA141843	AA141844	AA141845	AA141846	AA141847
				Sample Location:	BH05	BH05	BH06	BH06	TP21	TP21	TP21	TP22	TP22
				Sample Type:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
				Top Depth (m):	2.0	3.0	1.0	2.0	0.75	1.5	3.0	0.6	1.5
				Asbestos Lab:	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM
Determinand	**Accred.**	**SOP**	**Units**	**LOD**									
ACM Type	U	2192		N/A	-	-	-	-	-	-	-	-	-
Asbestos Identification	U	2192		N/A	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected
Moisture	N	2030	%	0.020	15	14	18	16	15	5.0	7.9	16	10
pH (2.5:1)	N	2010		4.0									[A] 8.6
Boron (Hot Water Soluble)	U	2120	mg/kg	0.40	[A] < 0.40	[A] < 0.40	[A] < 0.40	[A] 0.73	[A] 0.69	[A] 0.42	[A] < 0.40	[A] 0.68	[A] < 0.40
Magnesium (Water Soluble)	N	2120	g/l	0.010									[A] < 0.010
Sulphate (2:1 Water Soluble) as SO4	U	2120	g/l	0.010									[A] < 0.010
Total Sulphur	U	2175	%	0.010									[A] 0.040
Sulphur (Elemental)	U	2180	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] 1.3	[A] < 1.0	[A] 1.3	[A] 4.1	[A] < 1.0	[A] < 1.0
Chloride (Water Soluble)	U	2220	g/l	0.010									[A] < 0.010
Nitrate (Water Soluble)	N	2220	g/l	0.010									< 0.010
Cyanide (Total)	U	2300	mg/kg	0.50	[A] < 0.50	[A] < 0.50	[A] < 0.50	[A] < 0.50	[A] < 0.50	[A] < 0.50	[A] < 0.50	[A] < 0.50	[A] < 0.50
Sulphide (Easily Liberatable)	N	2325	mg/kg	0.50	[A] 3.8	[A] 3.2	[A] 5.4	[A] 6.7	[A] 5.0	[A] 3.3	[A] 5.1	[A] 6.8	[A] 8.6
Ammonium (Water Soluble)	U	2220	g/l	0.01									< 0.01
Sulphate (Acid Soluble)	U	2430	%	0.010	[A] 0.011	[A] < 0.010	[A] < 0.010	[A] 0.010	[A] 0.023	[A] 0.017	[A] 0.032	[A] 0.023	[A] < 0.010
Arsenic	U	2450	mg/kg	1.0	10	12	12	9.8	11	5.7	12	9.9	12
Barium	U	2450	mg/kg	10	64	56	50	49	51	23	62	51	40
Cadmium	U	2450	mg/kg	0.10	0.84	1.6	1.3	0.75	0.97	0.85	1.7	1.4	1.5
Chromium	U	2450	mg/kg	1.0	18	13	21	26	20	5.6	10	16	9.7
Molybdenum	U	2450	mg/kg	2.0	< 2.0	3.2	2.1	< 2.0	< 2.0	< 2.0	3.5	< 2.0	2.8
Antimony	N	2450	mg/kg	2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Copper	U	2450	mg/kg	0.50	14	20	23	18	24	11	22	22	18
Mercury	U	2450	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Nickel	U	2450	mg/kg	0.50	30	35	43	37	36	19	42	37	34
Lead	U	2450	mg/kg	0.50	10	12	19	15	39	5.5	13	17	11
Selenium	U	2450	mg/kg	0.20	< 0.20	0.53	0.42	< 0.20	0.46	0.20	3.1	0.30	0.34
Zinc	U	2450	mg/kg	0.50	52	56	74	53	84	31	63	78	57
Chromium (Trivalent)	N	2490	mg/kg	1.0	18	13	21	26	20	5.6	10	16	9.7
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Mineral Oil (TPH Calculation)	N	2670	mg/kg	10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Aliphatic TPH >C5-C6	N	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aliphatic TPH >C6-C8	N	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aliphatic TPH >C8-C10	U	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aliphatic TPH >C10-C12	U	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aliphatic TPH >C12-C16	U	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aliphatic TPH >C16-C21	U	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aliphatic TPH >C21-C35	U	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0

Results - Soil

Project: 23927 Dalguise House Monkstown Dublin (David Rehill CE)

Client: IGSL				**Chemtest Job No.:**	22-12129	22-12129	22-12129	22-12129	22-12129	22-12129	22-12129	22-12129	22-12129
Quotation No.: Q20-19951				**Chemtest Sample ID.:**	1402342	1402343	1402344	1402345	1402346	1402347	1402348	1402349	1402350
				Client Sample ID.:	AA162662	AA162663	AA165497	AA165498	AA141843	AA141844	AA141845	AA141846	AA141847
				Sample Location:	BH05	BH05	BH06	BH06	TP21	TP21	TP21	TP22	TP22
				Sample Type:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
				Top Depth (m):	2.0	3.0	1.0	2.0	0.75	1.5	3.0	0.6	1.5
				Asbestos Lab:	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM
Determinand	**Accred.**	**SOP**	**Units**	**LOD**									
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0	[A] < 5.0	[A] < 5.0	[A] < 5.0	[A] < 5.0	[A] < 5.0	[A] < 5.0	[A] < 5.0	[A] < 5.0	[A] < 5.0
Aromatic TPH >C5-C7	N	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aromatic TPH >C7-C8	N	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aromatic TPH >C8-C10	U	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aromatic TPH >C10-C12	U	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aromatic TPH >C12-C16	U	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aromatic TPH >C21-C35	U	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0	[A] < 5.0	[A] < 5.0	[A] < 5.0	[A] < 5.0	[A] < 5.0	[A] < 5.0	[A] < 5.0	[A] < 5.0	[A] < 5.0
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0	[A] < 10	[A] < 10	[A] < 10	[A] < 10	[A] < 10	[A] < 10	[A] < 10	[A] < 10	[A] < 10
Benzene	U	2760	µg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Toluene	U	2760	µg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Ethylbenzene	U	2760	µg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
m & p-Xylene	U	2760	µg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
o-Xylene	U	2760	µg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Methyl Tert-Butyl Ether	U	2760	µg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Naphthalene	N	2800	mg/kg	0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010
Acenaphthylene	N	2800	mg/kg	0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010
Acenaphthene	N	2800	mg/kg	0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010
Fluorene	N	2800	mg/kg	0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010
Phenanthrene	N	2800	mg/kg	0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010
Anthracene	N	2800	mg/kg	0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010
Fluoranthene	N	2800	mg/kg	0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010
Pyrene	N	2800	mg/kg	0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010
Benzo[a]anthracene	N	2800	mg/kg	0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010
Chrysene	N	2800	mg/kg	0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010
Benzo[b]fluoranthene	N	2800	mg/kg	0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010
Benzo[k]fluoranthene	N	2800	mg/kg	0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010
Benzo[a]pyrene	N	2800	mg/kg	0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010
Indeno(1,2,3-c,d)Pyrene	N	2800	mg/kg	0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010
Dibenz(a,h)Anthracene	N	2800	mg/kg	0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010
Benzo[g,h,i]perylene	N	2800	mg/kg	0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010
Coronene	N	2800	mg/kg	0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010
Total Of 17 PAH's	N	2800	mg/kg	0.20	[A] < 0.20	[A] < 0.20	[A] < 0.20	[A] < 0.20	[A] < 0.20	[A] < 0.20	[A] < 0.20	[A] < 0.20	[A] < 0.20
PCB 28	N	2815	mg/kg	0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010
PCB 52	N	2815	mg/kg	0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010

Results - Soil

Project: 23927 Dalguise House Monkstown Dublin (David Rehill CE)

Client: IGSL				**Chemtest Job No.:**	22-12129	22-12129	22-12129	22-12129	22-12129	22-12129	22-12129	22-12129	22-12129
Quotation No.: Q20-19951				**Chemtest Sample ID.:**	1402342	1402343	1402344	1402345	1402346	1402347	1402348	1402349	1402350
				Client Sample ID.:	AA162662	AA162663	AA165497	AA165498	AA141843	AA141844	AA141845	AA141846	AA141847
				Sample Location:	BH05	BH05	BH06	BH06	TP21	TP21	TP21	TP22	TP22
				Sample Type:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
				Top Depth (m):	2.0	3.0	1.0	2.0	0.75	1.5	3.0	0.6	1.5
				Asbestos Lab:	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM
Determinand	**Accred.**	**SOP**	**Units**	**LOD**									
PCB 90+101	N	2815	mg/kg	0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010
PCB 118	N	2815	mg/kg	0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010
PCB 153	N	2815	mg/kg	0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010
PCB 138	N	2815	mg/kg	0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010
PCB 180	N	2815	mg/kg	0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010
Total PCBs (7 congeners)	N	2815	mg/kg	0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010
Total Phenols	U	2920	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10

Results - Soil

Project: 23927 Dalguise House Monkstown Dublin (David Rehill CE)

Client: IGSL				**Chemtest Job No.:**	22-12129	22-12129	22-12129	22-12129	22-12129	22-12129	22-12129	22-12129	22-12129
Quotation No.: Q20-19951				**Chemtest Sample ID.:**	1402351	1402352	1402353	1402354	1402355	1402356	1402357	1402358	1402359
				Client Sample ID.:	AA141848	AA141849	AA141850	AA141801	AA146803	AA146804	AA146807	AA146808	AA146809
				Sample Location:	TP22	TP23	TP23	TP23	TP24	TP24	TP25	TP25	TP26
				Sample Type:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
				Top Depth (m):	3.3	0.3	1.2	2.4	0.5	2.0	0.6	1.5	0.5
				Asbestos Lab:	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM
Determinand	**Accred.**	**SOP**	**Units**	**LOD**									
ACM Type	U	2192		N/A	-	-	-	-	-	-	-	-	-
Asbestos Identification	U	2192		N/A	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected
Moisture	N	2030	%	0.020	9.9	16	12	13	13	14	14	13	19
pH (2.5:1)	N	2010		4.0						[A] 8.6			[A] 8.5
Boron (Hot Water Soluble)	U	2120	mg/kg	0.40	[A] 0.44	[A] 0.75	[A] < 0.40	[A] < 0.40	[A] 0.47	[A] < 0.40	[A] 1.1	[A] < 0.40	[A] 0.58
Magnesium (Water Soluble)	N	2120	g/l	0.010						[A] < 0.010			[A] < 0.010
Sulphate (2:1 Water Soluble) as SO4	U	2120	g/l	0.010						[A] < 0.010			[A] 0.015
Total Sulphur	U	2175	%	0.010						[A] 0.020			[A] 0.025
Sulphur (Elemental)	U	2180	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] 1.3	[A] < 1.0	[A] 3.7	[A] < 1.0
Chloride (Water Soluble)	U	2220	g/l	0.010						[A] < 0.010			[A] 0.054
Nitrate (Water Soluble)	N	2220	g/l	0.010						< 0.010			< 0.010
Cyanide (Total)	U	2300	mg/kg	0.50	[A] < 0.50	[A] < 0.50	[A] < 0.50	[A] < 0.50	[A] < 0.50	[A] < 0.50	[A] < 0.50	[A] < 0.50	[A] < 0.50
Sulphide (Easily Liberatable)	N	2325	mg/kg	0.50	[A] 10	[A] 3.6	[A] 2.1	[A] 3.9	[A] 2.2	[A] 5.1	[A] < 0.50	[A] 3.7	[A] 1.8
Ammonium (Water Soluble)	U	2220	g/l	0.01						< 0.01			< 0.01
Sulphate (Acid Soluble)	U	2430	%	0.010	[A] 0.013	[A] 0.017	[A] 0.013	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010
Arsenic	U	2450	mg/kg	1.0	5.8	9.4	12	8.2	6.2	4.4	4.2	4.1	2.9
Barium	U	2450	mg/kg	10	30	41	33	39	18	23	21	25	27
Cadmium	U	2450	mg/kg	0.10	0.81	0.88	1.5	0.36	0.60	0.15	0.51	0.33	0.29
Chromium	U	2450	mg/kg	1.0	5.5	16	12	25	7.8	16	8.5	9.8	8.0
Molybdenum	U	2450	mg/kg	2.0	< 2.0	< 2.0	2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Antimony	N	2450	mg/kg	2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Copper	U	2450	mg/kg	0.50	10	24	16	15	12	9.4	8.2	7.8	7.7
Mercury	U	2450	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Nickel	U	2450	mg/kg	0.50	19	29	27	34	20	20	15	15	14
Lead	U	2450	mg/kg	0.50	9.8	44	13	11	9.5	5.7	6.5	8.3	9.9
Selenium	U	2450	mg/kg	0.20	0.51	0.37	0.23	< 0.20	0.78	< 0.20	0.23	< 0.20	< 0.20
Zinc	U	2450	mg/kg	0.50	37	88	61	47	31	28	37	21	24
Chromium (Trivalent)	N	2490	mg/kg	1.0	5.5	16	12	25	7.8	16	8.5	9.8	8.0
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Mineral Oil (TPH Calculation)	N	2670	mg/kg	10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Aliphatic TPH >C5-C6	N	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aliphatic TPH >C6-C8	N	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aliphatic TPH >C8-C10	U	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aliphatic TPH >C10-C12	U	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aliphatic TPH >C12-C16	U	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aliphatic TPH >C16-C21	U	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aliphatic TPH >C21-C35	U	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0

Results - Soil

Project: 23927 Dalguise House Monkstown Dublin (David Rehill CE)

Client: IGSL				**Chemtest Job No.:**	22-12129	22-12129	22-12129	22-12129	22-12129	22-12129	22-12129	22-12129	22-12129
Quotation No.: Q20-19951				**Chemtest Sample ID.:**	1402351	1402352	1402353	1402354	1402355	1402356	1402357	1402358	1402359
				Client Sample ID.:	AA141848	AA141849	AA141850	AA141801	AA146803	AA146804	AA146807	AA146808	AA146809
				Sample Location:	TP22	TP23	TP23	TP23	TP24	TP24	TP25	TP25	TP26
				Sample Type:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
				Top Depth (m):	3.3	0.3	1.2	2.4	0.5	2.0	0.6	1.5	0.5
				Asbestos Lab:	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM
Determinand	**Accred.**	**SOP**	**Units**	**LOD**									
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0	[A] < 5.0	[A] < 5.0	[A] < 5.0	[A] < 5.0	[A] < 5.0	[A] < 5.0	[A] < 5.0	[A] < 5.0	[A] < 5.0
Aromatic TPH >C5-C7	N	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aromatic TPH >C7-C8	N	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aromatic TPH >C8-C10	U	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aromatic TPH >C10-C12	U	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aromatic TPH >C12-C16	U	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aromatic TPH >C21-C35	U	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0	[A] < 5.0	[A] < 5.0	[A] < 5.0	[A] < 5.0	[A] < 5.0	[A] < 5.0	[A] < 5.0	[A] < 5.0	[A] < 5.0
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0	[A] < 10	[A] < 10	[A] < 10	[A] < 10	[A] < 10	[A] < 10	[A] < 10	[A] < 10	[A] < 10
Benzene	U	2760	µg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Toluene	U	2760	µg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Ethylbenzene	U	2760	µg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
m & p-Xylene	U	2760	µg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
o-Xylene	U	2760	µg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Methyl Tert-Butyl Ether	U	2760	µg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Naphthalene	N	2800	mg/kg	0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010
Acenaphthylene	N	2800	mg/kg	0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010
Acenaphthene	N	2800	mg/kg	0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010
Fluorene	N	2800	mg/kg	0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010
Phenanthrene	N	2800	mg/kg	0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010
Anthracene	N	2800	mg/kg	0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010
Fluoranthene	N	2800	mg/kg	0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010
Pyrene	N	2800	mg/kg	0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010
Benzo[a]anthracene	N	2800	mg/kg	0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010
Chrysene	N	2800	mg/kg	0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010
Benzo[b]fluoranthene	N	2800	mg/kg	0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010
Benzo[k]fluoranthene	N	2800	mg/kg	0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010
Benzo[a]pyrene	N	2800	mg/kg	0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010
Indeno(1,2,3-c,d)Pyrene	N	2800	mg/kg	0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010
Dibenz(a,h)Anthracene	N	2800	mg/kg	0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010
Benzo[g,h,i]perylene	N	2800	mg/kg	0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010
Coronene	N	2800	mg/kg	0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010
Total Of 17 PAH's	N	2800	mg/kg	0.20	[A] < 0.20	[A] < 0.20	[A] < 0.20	[A] < 0.20	[A] < 0.20	[A] < 0.20	[A] < 0.20	[A] < 0.20	[A] < 0.20
PCB 28	N	2815	mg/kg	0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010
PCB 52	N	2815	mg/kg	0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010

Results - Soil

Project: 23927 Dalguise House Monkstown Dublin (David Rehill CE)

Client: IGSL				**Chemtest Job No.:**	22-12129	22-12129	22-12129	22-12129	22-12129	22-12129	22-12129	22-12129	22-12129
Quotation No.: Q20-19951				**Chemtest Sample ID.:**	1402351	1402352	1402353	1402354	1402355	1402356	1402357	1402358	1402359
				Client Sample ID.:	AA141848	AA141849	AA141850	AA141801	AA146803	AA146804	AA146807	AA146808	AA146809
				Sample Location:	TP22	TP23	TP23	TP23	TP24	TP24	TP25	TP25	TP26
				Sample Type:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
				Top Depth (m):	3.3	0.3	1.2	2.4	0.5	2.0	0.6	1.5	0.5
				Asbestos Lab:	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM
Determinand	**Accred.**	**SOP**	**Units**	**LOD**									
PCB 90+101	N	2815	mg/kg	0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010
PCB 118	N	2815	mg/kg	0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010
PCB 153	N	2815	mg/kg	0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010
PCB 138	N	2815	mg/kg	0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010
PCB 180	N	2815	mg/kg	0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010
Total PCBs (7 congeners)	N	2815	mg/kg	0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010
Total Phenols	U	2920	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10

Results - Soil

Project: 23927 Dalguise House Monkstown Dublin (David Rehill CE)

Client: IGSL				**Chemtest Job No.:**	22-12129
Quotation No.: Q20-19951				**Chemtest Sample ID.:**	1402360
				Client Sample ID.:	AA146810
				Sample Location:	TP26
				Sample Type:	SOIL
				Top Depth (m):	1.6
				Asbestos Lab:	DURHAM
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
ACM Type	U	2192		N/A	-
Asbestos Identification	U	2192		N/A	No Asbestos Detected
Moisture	N	2030	%	0.020	13
pH (2.5:1)	N	2010		4.0	
Boron (Hot Water Soluble)	U	2120	mg/kg	0.40	[A] < 0.40
Magnesium (Water Soluble)	N	2120	g/l	0.010	
Sulphate (2:1 Water Soluble) as SO4	U	2120	g/l	0.010	
Total Sulphur	U	2175	%	0.010	
Sulphur (Elemental)	U	2180	mg/kg	1.0	[A] < 1.0
Chloride (Water Soluble)	U	2220	g/l	0.010	
Nitrate (Water Soluble)	N	2220	g/l	0.010	
Cyanide (Total)	U	2300	mg/kg	0.50	[A] < 0.50
Sulphide (Easily Liberatable)	N	2325	mg/kg	0.50	[A] 4.3
Ammonium (Water Soluble)	U	2220	g/l	0.01	
Sulphate (Acid Soluble)	U	2430	%	0.010	[A] < 0.010
Arsenic	U	2450	mg/kg	1.0	8.5
Barium	U	2450	mg/kg	10	34
Cadmium	U	2450	mg/kg	0.10	1.3
Chromium	U	2450	mg/kg	1.0	11
Molybdenum	U	2450	mg/kg	2.0	2.0
Antimony	N	2450	mg/kg	2.0	< 2.0
Copper	U	2450	mg/kg	0.50	20
Mercury	U	2450	mg/kg	0.10	< 0.10
Nickel	U	2450	mg/kg	0.50	33
Lead	U	2450	mg/kg	0.50	12
Selenium	U	2450	mg/kg	0.20	0.33
Zinc	U	2450	mg/kg	0.50	66
Chromium (Trivalent)	N	2490	mg/kg	1.0	11
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50
Mineral Oil (TPH Calculation)	N	2670	mg/kg	10	< 10
Aliphatic TPH >C5-C6	N	2680	mg/kg	1.0	[A] < 1.0
Aliphatic TPH >C6-C8	N	2680	mg/kg	1.0	[A] < 1.0
Aliphatic TPH >C8-C10	U	2680	mg/kg	1.0	[A] < 1.0
Aliphatic TPH >C10-C12	U	2680	mg/kg	1.0	[A] < 1.0
Aliphatic TPH >C12-C16	U	2680	mg/kg	1.0	[A] < 1.0
Aliphatic TPH >C16-C21	U	2680	mg/kg	1.0	[A] < 1.0
Aliphatic TPH >C21-C35	U	2680	mg/kg	1.0	[A] < 1.0

Results - Soil

Project: 23927 Dalguise House Monkstown Dublin (David Rehill CE)

Client: IGSL			**Chemtest Job No.:**		22-12129
Quotation No.: Q20-19951			**Chemtest Sample ID.:**		1402360
			Client Sample ID.:		AA146810
			Sample Location:		TP26
			Sample Type:		SOIL
			Top Depth (m):		1.6
			Asbestos Lab:		DURHAM
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0	[A] < 1.0
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0	[A] < 5.0
Aromatic TPH >C5-C7	N	2680	mg/kg	1.0	[A] < 1.0
Aromatic TPH >C7-C8	N	2680	mg/kg	1.0	[A] < 1.0
Aromatic TPH >C8-C10	U	2680	mg/kg	1.0	[A] < 1.0
Aromatic TPH >C10-C12	U	2680	mg/kg	1.0	[A] < 1.0
Aromatic TPH >C12-C16	U	2680	mg/kg	1.0	[A] < 1.0
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0	[A] < 1.0
Aromatic TPH >C21-C35	U	2680	mg/kg	1.0	[A] < 1.0
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0	[A] < 1.0
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0	[A] < 5.0
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0	[A] < 10
Benzene	U	2760	µg/kg	1.0	[A] < 1.0
Toluene	U	2760	µg/kg	1.0	[A] < 1.0
Ethylbenzene	U	2760	µg/kg	1.0	[A] < 1.0
m & p-Xylene	U	2760	µg/kg	1.0	[A] < 1.0
o-Xylene	U	2760	µg/kg	1.0	[A] < 1.0
Methyl Tert-Butyl Ether	U	2760	µg/kg	1.0	[A] < 1.0
Naphthalene	N	2800	mg/kg	0.010	[A] < 0.010
Acenaphthylene	N	2800	mg/kg	0.010	[A] < 0.010
Acenaphthene	N	2800	mg/kg	0.010	[A] < 0.010
Fluorene	N	2800	mg/kg	0.010	[A] < 0.010
Phenanthrene	N	2800	mg/kg	0.010	[A] < 0.010
Anthracene	N	2800	mg/kg	0.010	[A] < 0.010
Fluoranthene	N	2800	mg/kg	0.010	[A] < 0.010
Pyrene	N	2800	mg/kg	0.010	[A] < 0.010
Benzo[a]anthracene	N	2800	mg/kg	0.010	[A] < 0.010
Chrysene	N	2800	mg/kg	0.010	[A] < 0.010
Benzo[b]fluoranthene	N	2800	mg/kg	0.010	[A] < 0.010
Benzo[k]fluoranthene	N	2800	mg/kg	0.010	[A] < 0.010
Benzo[a]pyrene	N	2800	mg/kg	0.010	[A] < 0.010
Indeno(1,2,3-c,d)Pyrene	N	2800	mg/kg	0.010	[A] < 0.010
Dibenz(a,h)Anthracene	N	2800	mg/kg	0.010	[A] < 0.010
Benzo[g,h,i]perylene	N	2800	mg/kg	0.010	[A] < 0.010
Coronene	N	2800	mg/kg	0.010	[A] < 0.010
Total Of 17 PAH's	N	2800	mg/kg	0.20	[A] < 0.20
PCB 28	N	2815	mg/kg	0.0010	[A] < 0.0010
PCB 52	N	2815	mg/kg	0.0010	[A] < 0.0010

Results - Soil

Project: 23927 Dalguise House Monkstown Dublin (David Rehill CE)

Client: IGSL				**Chemtest Job No.:**	22-12129
Quotation No.: Q20-19951				**Chemtest Sample ID.:**	1402360
				Client Sample ID.:	AA146810
				Sample Location:	TP26
				Sample Type:	SOIL
				Top Depth (m):	1.6
				Asbestos Lab:	DURHAM
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
PCB 90+101	N	2815	mg/kg	0.0010	[A] < 0.0010
PCB 118	N	2815	mg/kg	0.0010	[A] < 0.0010
PCB 153	N	2815	mg/kg	0.0010	[A] < 0.0010
PCB 138	N	2815	mg/kg	0.0010	[A] < 0.0010
PCB 180	N	2815	mg/kg	0.0010	[A] < 0.0010
Total PCBs (7 congeners)	N	2815	mg/kg	0.0010	[A] < 0.0010
Total Phenols	U	2920	mg/kg	0.10	< 0.10

Results - Single Stage WAC

Project: 23927 Dalguise House Monkstown Dublin (David Rehill CE)

Chemtest Job No:	22-12129				**Landfill Waste Acceptance Criteria Limits**		
Chemtest Sample ID:	1402334						
Sample Ref:					**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Sample ID:	AA165493						
Sample Location:	BH01						
Top Depth(m):	1.0						
Bottom Depth(m):							
Sampling Date:							
Determinand	**SOP**	**Accred.**	**Units**				
Total Organic Carbon	2625	U	%	[A] 1.8	3	5	6
Loss On Ignition	2610	U	%	3.8	--	--	10
Total BTEX	2760	U	mg/kg	[A] < 0.010	6	--	--
Total PCBs (7 congeners)	2815	N	mg/kg	[A] < 0.0010	1	--	--
TPH Total WAC	2670	U	mg/kg	[A] < 10	500	--	--
Total Of 17 PAH's	2800	N	mg/kg	[A] 1.4	100	--	--
pH	2010	U		8.4	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.0080	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455	U	0.0068	0.068	0.5	2	25
Barium	1455	U	< 0.005	< 0.0005	20	100	300
Cadmium	1455	U	< 0.00011	< 0.00011	0.04	1	5
Chromium	1455	U	< 0.0005	< 0.0005	0.5	10	70
Copper	1455	U	0.0064	0.064	2	50	100
Mercury	1455	U	< 0.00005	< 0.00005	0.01	0.2	2
Molybdenum	1455	U	0.019	0.18	0.5	10	30
Nickel	1455	U	0.0006	0.0063	0.4	10	40
Lead	1455	U	< 0.0005	< 0.0005	0.5	10	50
Antimony	1455	U	0.0016	0.016	0.06	0.7	5
Selenium	1455	U	< 0.0005	< 0.0005	0.1	0.5	7
Zinc	1455	U	< 0.003	< 0.003	4	50	200
Chloride	1220	U	1.2	12	800	15000	25000
Fluoride	1220	U	0.16	1.6	10	150	500
Sulphate	1220	U	1.6	16	1000	20000	50000
Total Dissolved Solids	1020	N	78	780	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	20	200	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	16

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: 23927 Dalguise House Monkstown Dublin (David Rehill CE)

					Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	22-12129						
Chemtest Sample ID:	1402335						
Sample Ref:							
Sample ID:	AA165494						
Sample Location:	BH01						
Top Depth(m):	2.0						
Bottom Depth(m):							
Sampling Date:					**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Determinand	**SOP**	**Accred.**	**Units**				
Total Organic Carbon	2625	U	%	[A] 0.84	3	5	6
Loss On Ignition	2610	U	%	3.2	--	--	10
Total BTEX	2760	U	mg/kg	[A] < 0.010	6	--	--
Total PCBs (7 congeners)	2815	N	mg/kg	[A] < 0.0010	1	--	--
TPH Total WAC	2670	U	mg/kg	[A] < 10	500	--	--
Total Of 17 PAH's	2800	N	mg/kg	[A] 1.1	100	--	--
pH	2010	U		8.5	--	>6	--
Acid Neutralisation Capacity					--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455	U	0.0044	0.044	0.5	2	25
Barium	1455	U	0.007	0.070	20	100	300
Cadmium	1455	U	< 0.00011	< 0.00011	0.04	1	5
Chromium	1455	U	0.0007	0.0067	0.5	10	70
Copper	1455	U	0.0067	0.067	2	50	100
Mercury	1455	U	< 0.00005	< 0.00005	0.01	0.2	2
Molybdenum	1455	U	0.020	0.20	0.5	10	30
Nickel	1455	U	0.0009	0.0093	0.4	10	40
Lead	1455	U	< 0.0005	< 0.0005	0.5	10	50
Antimony	1455	U	0.0014	0.014	0.06	0.7	5
Selenium	1455	U	< 0.0005	< 0.0005	0.1	0.5	7
Zinc	1455	U	< 0.003	< 0.003	4	50	200
Chloride	1220	U	1.2	12	800	15000	25000
Fluoride	1220	U	0.18	1.8	10	150	500
Sulphate	1220	U	2.8	28	1000	20000	50000
Total Dissolved Solids	1020	N	98	970	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	21	210	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	12

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: 23927 Dalguise House Monkstown Dublin (David Rehill CE)

					Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	22-12129						
Chemtest Sample ID:	1402336						
Sample Ref:							
Sample ID:	AA161952						
Sample Location:	BH02A						
Top Depth(m):	2.0						
Bottom Depth(m):							
Sampling Date:					**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Determinand	**SOP**	**Accred.**	**Units**				
Total Organic Carbon	2625	U	%	[A] 0.54	3	5	6
Loss On Ignition	2610	U	%	2.0	--	--	10
Total BTEX	2760	U	mg/kg	[AC] < 0.010	6	--	--
Total PCBs (7 congeners)	2815	N	mg/kg	[AC] < 0.0010	1	--	--
TPH Total WAC	2670	U	mg/kg	[AC] < 10	500	--	--
Total Of 17 PAH's	2800	N	mg/kg	[A] 1.7	100	--	--
pH	2010	U		8.5	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.0090	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455	U	0.0004	0.0041	0.5	2	25
Barium	1455	U	0.007	0.065	20	100	300
Cadmium	1455	U	< 0.00011	< 0.00011	0.04	1	5
Chromium	1455	U	0.0012	0.012	0.5	10	70
Copper	1455	U	0.0012	0.012	2	50	100
Mercury	1455	U	< 0.00005	< 0.00005	0.01	0.2	2
Molybdenum	1455	U	0.0077	0.077	0.5	10	30
Nickel	1455	U	< 0.0005	< 0.0005	0.4	10	40
Lead	1455	U	< 0.0005	< 0.0005	0.5	10	50
Antimony	1455	U	< 0.0005	< 0.0005	0.06	0.7	5
Selenium	1455	U	< 0.0005	< 0.0005	0.1	0.5	7
Zinc	1455	U	< 0.003	< 0.003	4	50	200
Chloride	1220	U	< 1.0	< 10	800	15000	25000
Fluoride	1220	U	0.37	3.7	10	150	500
Sulphate	1220	U	3.1	31	1000	20000	50000
Total Dissolved Solids	1020	N	78	780	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	2.5	< 50	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	18

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: 23927 Dalguise House Monkstown Dublin (David Rehill CE)

					Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	22-12129						
Chemtest Sample ID:	1402337						
Sample Ref:							
Sample ID:	AA161953						
Sample Location:	BH02A						
Top Depth(m):	3.0						
Bottom Depth(m):							
Sampling Date:					Inert Waste Landfill	Stable, Non-reactive hazardous waste in non-hazardous Landfill	Hazardous Waste Landfill
Determinand	**SOP**	**Accred.**	**Units**				
Total Organic Carbon	2625	U	%	[A] 0.39	3	5	6
Loss On Ignition	2610	U	%	2.3	--	--	10
Total BTEX	2760	U	mg/kg	[A] < 0.010	6	--	--
Total PCBs (7 congeners)	2815	N	mg/kg	[A] < 0.0010	1	--	--
TPH Total WAC	2670	U	mg/kg	[A] < 10	500	--	--
Total Of 17 PAH's	2800	N	mg/kg	[A] 0.58	100	--	--
pH	2010	U		8.5	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.016	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455	U	0.0003	0.0025	0.5	2	25
Barium	1455	U	< 0.005	< 0.0005	20	100	300
Cadmium	1455	U	< 0.00011	< 0.00011	0.04	1	5
Chromium	1455	U	0.0006	0.0056	0.5	10	70
Copper	1455	U	0.0010	0.0098	2	50	100
Mercury	1455	U	< 0.00005	< 0.00005	0.01	0.2	2
Molybdenum	1455	U	0.0045	0.046	0.5	10	30
Nickel	1455	U	< 0.0005	< 0.0005	0.4	10	40
Lead	1455	U	< 0.0005	< 0.0005	0.5	10	50
Antimony	1455	U	< 0.0005	< 0.0005	0.06	0.7	5
Selenium	1455	U	< 0.0005	< 0.0005	0.1	0.5	7
Zinc	1455	U	< 0.003	< 0.003	4	50	200
Chloride	1220	U	< 1.0	< 10	800	15000	25000
Fluoride	1220	U	0.22	2.2	10	150	500
Sulphate	1220	U	1.2	12	1000	20000	50000
Total Dissolved Solids	1020	N	59	580	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	4.0	< 50	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	17

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: 23927 Dalguise House Monkstown Dublin (David Rehill CE)

					Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	22-12129						
Chemtest Sample ID:	1402338						
Sample Ref:							
Sample ID:	AA165493						
Sample Location:	BH03						
Top Depth(m):	1.0						
Bottom Depth(m):							
Sampling Date:					Inert Waste Landfill	Stable, Non-reactive hazardous waste in non-hazardous Landfill	Hazardous Waste Landfill
Determinand	**SOP**	**Accred.**	**Units**				
Total Organic Carbon	2625	U	%	[A] 0.47	3	5	6
Loss On Ignition	2610	U	%	1.7	--	--	10
Total BTEX	2760	U	mg/kg	[A] < 0.010	6	--	--
Total PCBs (7 congeners)	2815	N	mg/kg	[A] < 0.0010	1	--	--
TPH Total WAC	2670	U	mg/kg	[A] < 10	500	--	--
Total Of 17 PAH's	2800	N	mg/kg	[A] < 0.20	100	--	--
pH	2010	U		8.6	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.079	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455	U	< 0.0002	< 0.0002	0.5	2	25
Barium	1455	U	< 0.005	< 0.0005	20	100	300
Cadmium	1455	U	< 0.00011	< 0.00011	0.04	1	5
Chromium	1455	U	0.0007	0.0074	0.5	10	70
Copper	1455	U	0.0010	0.0096	2	50	100
Mercury	1455	U	< 0.00005	< 0.00005	0.01	0.2	2
Molybdenum	1455	U	0.0056	0.056	0.5	10	30
Nickel	1455	U	< 0.0005	< 0.0005	0.4	10	40
Lead	1455	U	< 0.0005	< 0.0005	0.5	10	50
Antimony	1455	U	< 0.0005	< 0.0005	0.06	0.7	5
Selenium	1455	U	< 0.0005	< 0.0005	0.1	0.5	7
Zinc	1455	U	< 0.003	< 0.003	4	50	200
Chloride	1220	U	15	150	800	15000	25000
Fluoride	1220	U	0.32	3.2	10	150	500
Sulphate	1220	U	12	120	1000	20000	50000
Total Dissolved Solids	1020	N	59	580	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	2.8	< 50	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	13

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: 23927 Dalguise House Monkstown Dublin (David Rehill CE)

					Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	22-12129						
Chemtest Sample ID:	1402339						
Sample Ref:							
Sample ID:	AA165495						
Sample Location:	BH03						
Top Depth(m):	3.0						
Bottom Depth(m):							
Sampling Date:					**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Determinand	**SOP**	**Accred.**	**Units**				
Total Organic Carbon	2625	U	%	[A] 0.39	3	5	6
Loss On Ignition	2610	U	%	1.8	--	--	10
Total BTEX	2760	U	mg/kg	[A] < 0.010	6	--	--
Total PCBs (7 congeners)	2815	N	mg/kg	[A] < 0.0010	1	--	--
TPH Total WAC	2670	U	mg/kg	[A] < 10	500	--	--
Total Of 17 PAH's	2800	N	mg/kg	[A] 0.73	100	--	--
pH	2010	U		8.5	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.017	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455	U	0.0002	0.0021	0.5	2	25
Barium	1455	U	0.006	0.064	20	100	300
Cadmium	1455	U	< 0.00011	< 0.00011	0.04	1	5
Chromium	1455	U	0.0007	0.0071	0.5	10	70
Copper	1455	U	0.0009	0.0089	2	50	100
Mercury	1455	U	< 0.00005	< 0.00005	0.01	0.2	2
Molybdenum	1455	U	0.021	0.21	0.5	10	30
Nickel	1455	U	< 0.0005	< 0.0005	0.4	10	40
Lead	1455	U	< 0.0005	< 0.0005	0.5	10	50
Antimony	1455	U	< 0.0005	< 0.0005	0.06	0.7	5
Selenium	1455	U	< 0.0005	< 0.0005	0.1	0.5	7
Zinc	1455	U	< 0.003	< 0.003	4	50	200
Chloride	1220	U	1.8	18	800	15000	25000
Fluoride	1220	U	0.34	3.4	10	150	500
Sulphate	1220	U	2.6	26	1000	20000	50000
Total Dissolved Solids	1020	N	65	650	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	3.3	< 50	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	12

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: 23927 Dalguise House Monkstown Dublin (David Rehill CE)

					Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	22-12129						
Chemtest Sample ID:	1402340						
Sample Ref:					**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Sample ID:	AA165491						
Sample Location:	BH04						
Top Depth(m):	1.0						
Bottom Depth(m):							
Sampling Date:							
Determinand	**SOP**	**Accred.**	**Units**				
Total Organic Carbon	2625	U	%	[A] 1.2	3	5	6
Loss On Ignition	2610	U	%	4.1	--	--	10
Total BTEX	2760	U	mg/kg	[A] < 0.010	6	--	--
Total PCBs (7 congeners)	2815	N	mg/kg	[A] < 0.0010	1	--	--
TPH Total WAC	2670	U	mg/kg	[A] < 10	500	--	--
Total Of 17 PAH's	2800	N	mg/kg	[A] < 0.20	100	--	--
pH	2010	U		8.6	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.013	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455	U	< 0.0002	< 0.0002	0.5	2	25
Barium	1455	U	< 0.005	< 0.0005	20	100	300
Cadmium	1455	U	< 0.00011	< 0.00011	0.04	1	5
Chromium	1455	U	0.0009	0.0095	0.5	10	70
Copper	1455	U	0.0012	0.012	2	50	100
Mercury	1455	U	< 0.00005	< 0.00005	0.01	0.2	2
Molybdenum	1455	U	0.0056	0.056	0.5	10	30
Nickel	1455	U	< 0.0005	< 0.0005	0.4	10	40
Lead	1455	U	< 0.0005	< 0.0005	0.5	10	50
Antimony	1455	U	< 0.0005	< 0.0005	0.06	0.7	5
Selenium	1455	U	< 0.0005	< 0.0005	0.1	0.5	7
Zinc	1455	U	< 0.003	< 0.003	4	50	200
Chloride	1220	U	2.2	22	800	15000	25000
Fluoride	1220	U	0.39	3.9	10	150	500
Sulphate	1220	U	2.9	29	1000	20000	50000
Total Dissolved Solids	1020	N	91	900	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	2.7	< 50	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	26

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: 23927 Dalguise House Monkstown Dublin (David Rehill CE)

					Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	22-12129						
Chemtest Sample ID:	1402341						
Sample Ref:							
Sample ID:	AA165492						
Sample Location:	BH04						
Top Depth(m):	2.0				Inert Waste Landfill	Stable, Non-reactive hazardous waste in non-hazardous Landfill	Hazardous Waste Landfill
Bottom Depth(m):							
Sampling Date:							
Determinand	**SOP**	**Accred.**	**Units**				
Total Organic Carbon	2625	U	%	[A] 0.39	3	5	6
Loss On Ignition	2610	U	%	2.5	--	--	10
Total BTEX	2760	U	mg/kg	[A] < 0.010	6	--	--
Total PCBs (7 congeners)	2815	N	mg/kg	[A] < 0.0010	1	--	--
TPH Total WAC	2670	U	mg/kg	[A] < 10	500	--	--
Total Of 17 PAH's	2800	N	mg/kg	[A] < 0.20	100	--	--
pH	2010	U		8.5	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.078	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455	U	< 0.0002	< 0.0002	0.5	2	25
Barium	1455	U	< 0.005	< 0.0005	20	100	300
Cadmium	1455	U	< 0.00011	< 0.00011	0.04	1	5
Chromium	1455	U	< 0.0005	< 0.0005	0.5	10	70
Copper	1455	U	0.0007	0.0068	2	50	100
Mercury	1455	U	< 0.00005	< 0.00005	0.01	0.2	2
Molybdenum	1455	U	0.032	0.32	0.5	10	30
Nickel	1455	U	< 0.0005	< 0.0005	0.4	10	40
Lead	1455	U	< 0.0005	< 0.0005	0.5	10	50
Antimony	1455	U	< 0.0005	< 0.0005	0.06	0.7	5
Selenium	1455	U	< 0.0005	< 0.0005	0.1	0.5	7
Zinc	1455	U	< 0.003	< 0.003	4	50	200
Chloride	1220	U	< 1.0	< 10	800	15000	25000
Fluoride	1220	U	0.30	3.0	10	150	500
Sulphate	1220	U	1.7	17	1000	20000	50000
Total Dissolved Solids	1020	N	65	650	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	2.9	< 50	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	14

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: 23927 Dalguise House Monkstown Dublin (David Rehill CE)

					Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	22-12129						
Chemtest Sample ID:	1402342						
Sample Ref:					**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Sample ID:	AA162662						
Sample Location:	BH05						
Top Depth(m):	2.0						
Bottom Depth(m):							
Sampling Date:							
Determinand	**SOP**	**Accred.**	**Units**				
Total Organic Carbon	2625	U	%	[A] 0.33	3	5	6
Loss On Ignition	2610	U	%	3.2	--	--	10
Total BTEX	2760	U	mg/kg	[A] < 0.010	6	--	--
Total PCBs (7 congeners)	2815	N	mg/kg	[A] < 0.0010	1	--	--
TPH Total WAC	2670	U	mg/kg	[A] < 10	500	--	--
Total Of 17 PAH's	2800	N	mg/kg	[A] < 0.20	100	--	--
pH	2010	U		8.7	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.075	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455	U	0.0002	0.0020	0.5	2	25
Barium	1455	U	0.006	0.064	20	100	300
Cadmium	1455	U	< 0.00011	< 0.00011	0.04	1	5
Chromium	1455	U	0.0005	0.0052	0.5	10	70
Copper	1455	U	0.0010	0.0096	2	50	100
Mercury	1455	U	< 0.00005	< 0.00005	0.01	0.2	2
Molybdenum	1455	U	0.0093	0.093	0.5	10	30
Nickel	1455	U	< 0.0005	< 0.0005	0.4	10	40
Lead	1455	U	< 0.0005	< 0.0005	0.5	10	50
Antimony	1455	U	< 0.0005	< 0.0005	0.06	0.7	5
Selenium	1455	U	< 0.0005	< 0.0005	0.1	0.5	7
Zinc	1455	U	< 0.003	< 0.003	4	50	200
Chloride	1220	U	< 1.0	< 10	800	15000	25000
Fluoride	1220	U	0.42	4.2	10	150	500
Sulphate	1220	U	1.8	18	1000	20000	50000
Total Dissolved Solids	1020	N	65	650	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	< 2.5	< 50	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	15

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: 23927 Dalguise House Monkstown Dublin (David Rehill CE)

Chemtest Job No:	22-12129				**Landfill Waste Acceptance Criteria Limits**		
Chemtest Sample ID:	1402343						
Sample Ref:					**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Sample ID:	AA162663						
Sample Location:	BH05						
Top Depth(m):	3.0						
Bottom Depth(m):							
Sampling Date:							
Determinand	**SOP**	**Accred.**	**Units**				
Total Organic Carbon	2625	U	%	[A] 0.46	3	5	6
Loss On Ignition	2610	U	%	2.2	--	--	10
Total BTEX	2760	U	mg/kg	[A] < 0.010	6	--	--
Total PCBs (7 congeners)	2815	N	mg/kg	[A] < 0.0010	1	--	--
TPH Total WAC	2670	U	mg/kg	[A] < 10	500	--	--
Total Of 17 PAH's	2800	N	mg/kg	[A] < 0.20	100	--	--
pH	2010	U		8.6	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.023	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455	U	0.0003	0.0028	0.5	2	25
Barium	1455	U	0.006	0.056	20	100	300
Cadmium	1455	U	< 0.00011	< 0.00011	0.04	1	5
Chromium	1455	U	< 0.0005	< 0.0005	0.5	10	70
Copper	1455	U	0.0019	0.019	2	50	100
Mercury	1455	U	< 0.00005	< 0.00005	0.01	0.2	2
Molybdenum	1455	U	0.016	0.16	0.5	10	30
Nickel	1455	U	< 0.0005	< 0.0005	0.4	10	40
Lead	1455	U	< 0.0005	< 0.0005	0.5	10	50
Antimony	1455	U	< 0.0005	< 0.0005	0.06	0.7	5
Selenium	1455	U	< 0.0005	< 0.0005	0.1	0.5	7
Zinc	1455	U	< 0.003	< 0.003	4	50	200
Chloride	1220	U	1.1	11	800	15000	25000
Fluoride	1220	U	0.32	3.2	10	150	500
Sulphate	1220	U	2.7	27	1000	20000	50000
Total Dissolved Solids	1020	N	72	710	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	2.8	< 50	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	14

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: 23927 Dalguise House Monkstown Dublin (David Rehill CE)

					Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	22-12129						
Chemtest Sample ID:	1402344						
Sample Ref:							
Sample ID:	AA165497						
Sample Location:	BH06						
Top Depth(m):	1.0						
Bottom Depth(m):							
Sampling Date:					**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Determinand	**SOP**	**Accred.**	**Units**				
Total Organic Carbon	2625	U	%	[A] 0.76	3	5	6
Loss On Ignition	2610	U	%	3.2	--	--	10
Total BTEX	2760	U	mg/kg	[A] < 0.010	6	--	--
Total PCBs (7 congeners)	2815	N	mg/kg	[A] < 0.0010	1	--	--
TPH Total WAC	2670	U	mg/kg	[A] < 10	500	--	--
Total Of 17 PAH's	2800	N	mg/kg	[A] < 0.20	100	--	--
pH	2010	U		8.3	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.042	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455	U	0.0002	0.0022	0.5	2	25
Barium	1455	U	< 0.005	< 0.0005	20	100	300
Cadmium	1455	U	< 0.00011	< 0.00011	0.04	1	5
Chromium	1455	U	0.0007	0.0072	0.5	10	70
Copper	1455	U	0.0015	0.015	2	50	100
Mercury	1455	U	< 0.00005	< 0.00005	0.01	0.2	2
Molybdenum	1455	U	0.0044	0.044	0.5	10	30
Nickel	1455	U	< 0.0005	< 0.0005	0.4	10	40
Lead	1455	U	< 0.0005	< 0.0005	0.5	10	50
Antimony	1455	U	< 0.0005	< 0.0005	0.06	0.7	5
Selenium	1455	U	< 0.0005	< 0.0005	0.1	0.5	7
Zinc	1455	U	< 0.003	< 0.003	4	50	200
Chloride	1220	U	< 1.0	< 10	800	15000	25000
Fluoride	1220	U	0.33	3.3	10	150	500
Sulphate	1220	U	2.3	23	1000	20000	50000
Total Dissolved Solids	1020	N	100	1000	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	4.6	< 50	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	18

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: 23927 Dalguise House Monkstown Dublin (David Rehill CE)

					Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	22-12129						
Chemtest Sample ID:	1402345						
Sample Ref:							
Sample ID:	AA165498						
Sample Location:	BH06						
Top Depth(m):	2.0						
Bottom Depth(m):							
Sampling Date:					**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Determinand	**SOP**	**Accred.**	**Units**				
Total Organic Carbon	2625	U	%	[A] 0.66	3	5	6
Loss On Ignition	2610	U	%	4.5	--	--	10
Total BTEX	2760	U	mg/kg	[A] < 0.010	6	--	--
Total PCBs (7 congeners)	2815	N	mg/kg	[A] < 0.0010	1	--	--
TPH Total WAC	2670	U	mg/kg	[A] < 10	500	--	--
Total Of 17 PAH's	2800	N	mg/kg	[A] < 0.20	100	--	--
pH	2010	U		8.5	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.021	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455	U	< 0.0002	< 0.0002	0.5	2	25
Barium	1455	U	< 0.005	< 0.0005	20	100	300
Cadmium	1455	U	< 0.00011	< 0.00011	0.04	1	5
Chromium	1455	U	< 0.0005	< 0.0005	0.5	10	70
Copper	1455	U	0.0010	0.0097	2	50	100
Mercury	1455	U	< 0.00005	< 0.00005	0.01	0.2	2
Molybdenum	1455	U	0.0042	0.042	0.5	10	30
Nickel	1455	U	< 0.0005	< 0.0005	0.4	10	40
Lead	1455	U	< 0.0005	< 0.0005	0.5	10	50
Antimony	1455	U	< 0.0005	< 0.0005	0.06	0.7	5
Selenium	1455	U	< 0.0005	< 0.0005	0.1	0.5	7
Zinc	1455	U	< 0.003	< 0.003	4	50	200
Chloride	1220	U	< 1.0	< 10	800	15000	25000
Fluoride	1220	U	0.32	3.2	10	150	500
Sulphate	1220	U	2.0	20	1000	20000	50000
Total Dissolved Solids	1020	N	78	780	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	2.9	< 50	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	16

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: 23927 Dalguise House Monkstown Dublin (David Rehill CE)

Chemtest Job No:	22-12129				**Landfill Waste Acceptance Criteria Limits**		
Chemtest Sample ID:	1402346						
Sample Ref:					**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Sample ID:	AA141843						
Sample Location:	TP21						
Top Depth(m):	0.75						
Bottom Depth(m):							
Sampling Date:							
Determinand	**SOP**	**Accred.**	**Units**				
Total Organic Carbon	2625	U	%	[A] 1.8	3	5	6
Loss On Ignition	2610	U	%	4.3	--	--	10
Total BTEX	2760	U	mg/kg	[A] < 0.010	6	--	--
Total PCBs (7 congeners)	2815	N	mg/kg	[A] < 0.0010	1	--	--
TPH Total WAC	2670	U	mg/kg	[A] < 10	500	--	--
Total Of 17 PAH's	2800	N	mg/kg	[A] < 0.20	100	--	--
pH	2010	U		8.4	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.0080	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455	U	< 0.0002	< 0.0002	0.5	2	25
Barium	1455	U	< 0.005	< 0.0005	20	100	300
Cadmium	1455	U	< 0.00011	< 0.00011	0.04	1	5
Chromium	1455	U	0.0005	0.0051	0.5	10	70
Copper	1455	U	0.0005	0.0051	2	50	100
Mercury	1455	U	< 0.00005	< 0.00005	0.01	0.2	2
Molybdenum	1455	U	0.0092	0.092	0.5	10	30
Nickel	1455	U	< 0.0005	< 0.0005	0.4	10	40
Lead	1455	U	< 0.0005	< 0.0005	0.5	10	50
Antimony	1455	U	< 0.0005	< 0.0005	0.06	0.7	5
Selenium	1455	U	< 0.0005	< 0.0005	0.1	0.5	7
Zinc	1455	U	< 0.003	< 0.003	4	50	200
Chloride	1220	U	< 1.0	< 10	800	15000	25000
Fluoride	1220	U	0.34	3.4	10	150	500
Sulphate	1220	U	< 1.0	< 10	1000	20000	50000
Total Dissolved Solids	1020	N	46	450	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	4.5	< 50	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	15

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: 23927 Dalguise House Monkstown Dublin (David Rehill CE)

					Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	22-12129						
Chemtest Sample ID:	1402347						
Sample Ref:							
Sample ID:	AA141844						
Sample Location:	TP21						
Top Depth(m):	1.5						
Bottom Depth(m):							
Sampling Date:					**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Determinand	**SOP**	**Accred.**	**Units**				
Total Organic Carbon	2625	U	%	[A] 0.30	3	5	6
Loss On Ignition	2610	U	%	3.0	--	--	10
Total BTEX	2760	U	mg/kg	[A] < 0.010	6	--	--
Total PCBs (7 congeners)	2815	N	mg/kg	[A] < 0.0010	1	--	--
TPH Total WAC	2670	U	mg/kg	[A] < 10	500	--	--
Total Of 17 PAH's	2800	N	mg/kg	[A] < 0.20	100	--	--
pH	2010	U		8.6	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.023	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455	U	< 0.0002	< 0.0002	0.5	2	25
Barium	1455	U	< 0.005	< 0.0005	20	100	300
Cadmium	1455	U	< 0.00011	< 0.00011	0.04	1	5
Chromium	1455	U	0.0006	0.0061	0.5	10	70
Copper	1455	U	0.0008	0.0078	2	50	100
Mercury	1455	U	< 0.00005	< 0.00005	0.01	0.2	2
Molybdenum	1455	U	0.011	0.11	0.5	10	30
Nickel	1455	U	< 0.0005	< 0.0005	0.4	10	40
Lead	1455	U	< 0.0005	< 0.0005	0.5	10	50
Antimony	1455	U	< 0.0005	< 0.0005	0.06	0.7	5
Selenium	1455	U	< 0.0005	< 0.0005	0.1	0.5	7
Zinc	1455	U	< 0.003	< 0.003	4	50	200
Chloride	1220	U	< 1.0	< 10	800	15000	25000
Fluoride	1220	U	0.27	2.7	10	150	500
Sulphate	1220	U	1.0	10	1000	20000	50000
Total Dissolved Solids	1020	N	52	520	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	2.5	< 50	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	5.0

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: 23927 Dalguise House Monkstown Dublin (David Rehill CE)

Chemtest Job No:	22-12129				**Landfill Waste Acceptance Criteria Limits**		
Chemtest Sample ID:	1402348						
Sample Ref:							
Sample ID:	AA141845				**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Sample Location:	TP21						
Top Depth(m):	3.0						
Bottom Depth(m):							
Sampling Date:							
Determinand	**SOP**	**Accred.**	**Units**				
Total Organic Carbon	2625	U	%	[A] 0.56	3	5	6
Loss On Ignition	2610	U	%	2.2	--	--	10
Total BTEX	2760	U	mg/kg	[A] < 0.010	6	--	--
Total PCBs (7 congeners)	2815	N	mg/kg	[A] < 0.0010	1	--	--
TPH Total WAC	2670	U	mg/kg	[A] < 10	500	--	--
Total Of 17 PAH's	2800	N	mg/kg	[A] < 0.20	100	--	--
pH	2010	U		8.6	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.039	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455	U	< 0.0002	< 0.0002	0.5	2	25
Barium	1455	U	< 0.005	< 0.0005	20	100	300
Cadmium	1455	U	< 0.00011	< 0.00011	0.04	1	5
Chromium	1455	U	< 0.0005	< 0.0005	0.5	10	70
Copper	1455	U	0.0009	0.0092	2	50	100
Mercury	1455	U	< 0.00005	< 0.00005	0.01	0.2	2
Molybdenum	1455	U	0.029	0.29	0.5	10	30
Nickel	1455	U	< 0.0005	< 0.0005	0.4	10	40
Lead	1455	U	< 0.0005	< 0.0005	0.5	10	50
Antimony	1455	U	< 0.0005	< 0.0005	0.06	0.7	5
Selenium	1455	U	0.0053	0.053	0.1	0.5	7
Zinc	1455	U	< 0.003	< 0.003	4	50	200
Chloride	1220	U	3.1	31	800	15000	25000
Fluoride	1220	U	0.35	3.5	10	150	500
Sulphate	1220	U	9.1	91	1000	20000	50000
Total Dissolved Solids	1020	N	72	720	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	< 2.5	< 50	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	7.9

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: 23927 Dalguise House Monkstown Dublin (David Rehill CE)

					Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	22-12129				Inert Waste Landfill	Stable, Non-reactive hazardous waste in non-hazardous Landfill	Hazardous Waste Landfill
Chemtest Sample ID:	1402349						
Sample Ref:							
Sample ID:	AA141846						
Sample Location:	TP22						
Top Depth(m):	0.6						
Bottom Depth(m):							
Sampling Date:							
Determinand	**SOP**	**Accred.**	**Units**				
Total Organic Carbon	2625	U	%	[A] 1.0	3	5	6
Loss On Ignition	2610	U	%	5.4	--	--	10
Total BTEX	2760	U	mg/kg	[A] < 0.010	6	--	--
Total PCBs (7 congeners)	2815	N	mg/kg	[A] < 0.0010	1	--	--
TPH Total WAC	2670	U	mg/kg	[A] < 10	500	--	--
Total Of 17 PAH's	2800	N	mg/kg	[A] < 0.20	100	--	--
pH	2010	U		8.6	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.012	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455	U	< 0.0002	< 0.0002	0.5	2	25
Barium	1455	U	< 0.005	< 0.0005	20	100	300
Cadmium	1455	U	< 0.00011	< 0.00011	0.04	1	5
Chromium	1455	U	0.0007	0.0070	0.5	10	70
Copper	1455	U	0.0012	0.012	2	50	100
Mercury	1455	U	< 0.00005	< 0.00005	0.01	0.2	2
Molybdenum	1455	U	0.0017	0.017	0.5	10	30
Nickel	1455	U	< 0.0005	< 0.0005	0.4	10	40
Lead	1455	U	< 0.0005	< 0.0005	0.5	10	50
Antimony	1455	U	< 0.0005	< 0.0005	0.06	0.7	5
Selenium	1455	U	< 0.0005	< 0.0005	0.1	0.5	7
Zinc	1455	U	< 0.003	< 0.003	4	50	200
Chloride	1220	U	< 1.0	< 10	800	15000	25000
Fluoride	1220	U	0.39	3.9	10	150	500
Sulphate	1220	U	< 1.0	< 10	1000	20000	50000
Total Dissolved Solids	1020	N	65	650	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	7.5	75	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	16

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: 23927 Dalguise House Monkstown Dublin (David Rehill CE)

					Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	22-12129						
Chemtest Sample ID:	1402350						
Sample Ref:							
Sample ID:	AA141847						
Sample Location:	TP22						
Top Depth(m):	1.5						
Bottom Depth(m):							
Sampling Date:					Inert Waste Landfill	Stable, Non-reactive hazardous waste in non-hazardous Landfill	Hazardous Waste Landfill
Determinand	**SOP**	**Accred.**	**Units**				
Total Organic Carbon	2625	U	%	[A] 0.21	3	5	6
Loss On Ignition	2610	U	%	2.7	--	--	10
Total BTEX	2760	U	mg/kg	[A] < 0.010	6	--	--
Total PCBs (7 congeners)	2815	N	mg/kg	[A] < 0.0010	1	--	--
TPH Total WAC	2670	U	mg/kg	[A] < 10	500	--	--
Total Of 17 PAH's	2800	N	mg/kg	[A] < 0.20	100	--	--
pH	2010	U		8.6	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.48	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455	U	< 0.0002	< 0.0002	0.5	2	25
Barium	1455	U	< 0.005	< 0.0005	20	100	300
Cadmium	1455	U	< 0.00011	< 0.00011	0.04	1	5
Chromium	1455	U	0.0007	0.0073	0.5	10	70
Copper	1455	U	0.0006	0.0063	2	50	100
Mercury	1455	U	< 0.00005	< 0.00005	0.01	0.2	2
Molybdenum	1455	U	0.0083	0.083	0.5	10	30
Nickel	1455	U	< 0.0005	< 0.0005	0.4	10	40
Lead	1455	U	< 0.0005	< 0.0005	0.5	10	50
Antimony	1455	U	< 0.0005	< 0.0005	0.06	0.7	5
Selenium	1455	U	< 0.0005	< 0.0005	0.1	0.5	7
Zinc	1455	U	< 0.003	< 0.003	4	50	200
Chloride	1220	U	< 1.0	< 10	800	15000	25000
Fluoride	1220	U	0.26	2.6	10	150	500
Sulphate	1220	U	< 1.0	< 10	1000	20000	50000
Total Dissolved Solids	1020	N	59	580	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	2.5	< 50	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	10

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: 23927 Dalguise House Monkstown Dublin (David Rehill CE)

					Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	22-12129						
Chemtest Sample ID:	1402351						
Sample Ref:					**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Sample ID:	AA141848						
Sample Location:	TP22						
Top Depth(m):	3.3						
Bottom Depth(m):							
Sampling Date:							
Determinand	**SOP**	**Accred.**	**Units**				
Total Organic Carbon	2625	U	%	[A] 0.85	3	5	6
Loss On Ignition	2610	U	%	2.9	--	--	10
Total BTEX	2760	U	mg/kg	[A] < 0.010	6	--	--
Total PCBs (7 congeners)	2815	N	mg/kg	[A] < 0.0010	1	--	--
TPH Total WAC	2670	U	mg/kg	[A] < 10	500	--	--
Total Of 17 PAH's	2800	N	mg/kg	[A] < 0.20	100	--	--
pH	2010	U		8.3	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.014	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455	U	< 0.0002	< 0.0002	0.5	2	25
Barium	1455	U	< 0.005	< 0.0005	20	100	300
Cadmium	1455	U	< 0.00011	< 0.00011	0.04	1	5
Chromium	1455	U	0.0005	0.0053	0.5	10	70
Copper	1455	U	0.0008	0.0075	2	50	100
Mercury	1455	U	< 0.00005	< 0.00005	0.01	0.2	2
Molybdenum	1455	U	0.015	0.15	0.5	10	30
Nickel	1455	U	< 0.0005	< 0.0005	0.4	10	40
Lead	1455	U	< 0.0005	< 0.0005	0.5	10	50
Antimony	1455	U	< 0.0005	< 0.0005	0.06	0.7	5
Selenium	1455	U	< 0.0005	< 0.0005	0.1	0.5	7
Zinc	1455	U	< 0.003	< 0.003	4	50	200
Chloride	1220	U	< 1.0	< 10	800	15000	25000
Fluoride	1220	U	0.26	2.6	10	150	500
Sulphate	1220	U	< 1.0	< 10	1000	20000	50000
Total Dissolved Solids	1020	N	59	580	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	8.1	81	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	9.9

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: 23927 Dalguise House Monkstown Dublin (David Rehill CE)

Chemtest Job No:	22-12129				**Landfill Waste Acceptance Criteria Limits**		
Chemtest Sample ID:	1402352						
Sample Ref:					**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Sample ID:	AA141849						
Sample Location:	TP23						
Top Depth(m):	0.3						
Bottom Depth(m):							
Sampling Date:							
Determinand	**SOP**	**Accred.**	**Units**				
Total Organic Carbon	2625	U	%	[A] 1.9	3	5	6
Loss On Ignition	2610	U	%	4.9	--	--	10
Total BTEX	2760	U	mg/kg	[A] < 0.010	6	--	--
Total PCBs (7 congeners)	2815	N	mg/kg	[A] < 0.0010	1	--	--
TPH Total WAC	2670	U	mg/kg	[A] < 10	500	--	--
Total Of 17 PAH's	2800	N	mg/kg	[A] < 0.20	100	--	--
pH	2010	U		8.5	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.015	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455	U	0.0003	0.0029	0.5	2	25
Barium	1455	U	< 0.005	< 0.0005	20	100	300
Cadmium	1455	U	< 0.00011	< 0.00011	0.04	1	5
Chromium	1455	U	< 0.0005	< 0.0005	0.5	10	70
Copper	1455	U	0.0012	0.012	2	50	100
Mercury	1455	U	< 0.00005	< 0.00005	0.01	0.2	2
Molybdenum	1455	U	0.0004	0.0039	0.5	10	30
Nickel	1455	U	< 0.0005	< 0.0005	0.4	10	40
Lead	1455	U	< 0.0005	< 0.0005	0.5	10	50
Antimony	1455	U	< 0.0005	< 0.0005	0.06	0.7	5
Selenium	1455	U	< 0.0005	< 0.0005	0.1	0.5	7
Zinc	1455	U	0.003	0.025	4	50	200
Chloride	1220	U	1.1	11	800	15000	25000
Fluoride	1220	U	0.33	3.3	10	150	500
Sulphate	1220	U	< 1.0	< 10	1000	20000	50000
Total Dissolved Solids	1020	N	26	260	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	3.2	< 50	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	16

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: 23927 Dalguise House Monkstown Dublin (David Rehill CE)

					Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	22-12129						
Chemtest Sample ID:	1402353						
Sample Ref:							
Sample ID:	AA141850						
Sample Location:	TP23						
Top Depth(m):	1.2						
Bottom Depth(m):							
Sampling Date:					**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Determinand	**SOP**	**Accred.**	**Units**				
Total Organic Carbon	2625	U	%	[A] 0.40	3	5	6
Loss On Ignition	2610	U	%	1.8	--	--	10
Total BTEX	2760	U	mg/kg	[A] < 0.010	6	--	--
Total PCBs (7 congeners)	2815	N	mg/kg	[A] < 0.0010	1	--	--
TPH Total WAC	2670	U	mg/kg	[A] < 10	500	--	--
Total Of 17 PAH's	2800	N	mg/kg	[A] < 0.20	100	--	--
pH	2010	U		8.7	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.0070	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455	U	< 0.0002	< 0.0002	0.5	2	25
Barium	1455	U	< 0.005	< 0.0005	20	100	300
Cadmium	1455	U	< 0.00011	< 0.00011	0.04	1	5
Chromium	1455	U	< 0.0005	< 0.0005	0.5	10	70
Copper	1455	U	0.0007	0.0075	2	50	100
Mercury	1455	U	< 0.00005	< 0.00005	0.01	0.2	2
Molybdenum	1455	U	0.0007	0.0068	0.5	10	30
Nickel	1455	U	< 0.0005	< 0.0005	0.4	10	40
Lead	1455	U	< 0.0005	< 0.0005	0.5	10	50
Antimony	1455	U	< 0.0005	< 0.0005	0.06	0.7	5
Selenium	1455	U	< 0.0005	< 0.0005	0.1	0.5	7
Zinc	1455	U	< 0.003	< 0.003	4	50	200
Chloride	1220	U	< 1.0	< 10	800	15000	25000
Fluoride	1220	U	0.095	< 1.0	10	150	500
Sulphate	1220	U	< 1.0	< 10	1000	20000	50000
Total Dissolved Solids	1020	N	26	260	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	3.3	< 50	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	12

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: 23927 Dalguise House Monkstown Dublin (David Rehill CE)

					Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	22-12129						
Chemtest Sample ID:	1402354						
Sample Ref:							
Sample ID:	AA141801						
Sample Location:	TP23						
Top Depth(m):	2.4						
Bottom Depth(m):							
Sampling Date:					Inert Waste Landfill	Stable, Non-reactive hazardous waste in non-hazardous Landfill	Hazardous Waste Landfill
Determinand	**SOP**	**Accred.**	**Units**				
Total Organic Carbon	2625	U	%	[A] 0.30	3	5	6
Loss On Ignition	2610	U	%	20	--	--	10
Total BTEX	2760	U	mg/kg	[A] < 0.010	6	--	--
Total PCBs (7 congeners)	2815	N	mg/kg	[A] < 0.0010	1	--	--
TPH Total WAC	2670	U	mg/kg	[A] < 10	500	--	--
Total Of 17 PAH's	2800	N	mg/kg	[A] < 0.20	100	--	--
pH	2010	U		8.6	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.038	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455	U	< 0.0002	< 0.0002	0.5	2	25
Barium	1455	U	< 0.005	< 0.0005	20	100	300
Cadmium	1455	U	< 0.00011	< 0.00011	0.04	1	5
Chromium	1455	U	< 0.0005	< 0.0005	0.5	10	70
Copper	1455	U	0.0006	0.0056	2	50	100
Mercury	1455	U	< 0.00005	< 0.00005	0.01	0.2	2
Molybdenum	1455	U	0.0003	0.0025	0.5	10	30
Nickel	1455	U	< 0.0005	< 0.0005	0.4	10	40
Lead	1455	U	< 0.0005	< 0.0005	0.5	10	50
Antimony	1455	U	< 0.0005	< 0.0005	0.06	0.7	5
Selenium	1455	U	< 0.0005	< 0.0005	0.1	0.5	7
Zinc	1455	U	< 0.003	< 0.003	4	50	200
Chloride	1220	U	< 1.0	< 10	800	15000	25000
Fluoride	1220	U	0.087	< 1.0	10	150	500
Sulphate	1220	U	< 1.0	< 10	1000	20000	50000
Total Dissolved Solids	1020	N	20	200	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	< 2.5	< 50	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	13

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: 23927 Dalguise House Monkstown Dublin (David Rehill CE)

Chemtest Job No:	22-12129				Landfill Waste Acceptance Criteria Limits		
Chemtest Sample ID:	1402355						
Sample Ref:					Inert Waste Landfill	Stable, Non-reactive hazardous waste in non-hazardous Landfill	Hazardous Waste Landfill
Sample ID:	AA146803						
Sample Location:	TP24						
Top Depth(m):	0.5						
Bottom Depth(m):							
Sampling Date:							
Determinand	**SOP**	**Accred.**	**Units**				
Total Organic Carbon	2625	U	%	[A] 0.74	3	5	6
Loss On Ignition	2610	U	%	3.6	--	--	10
Total BTEX	2760	U	mg/kg	[A] < 0.010	6	--	--
Total PCBs (7 congeners)	2815	N	mg/kg	[A] < 0.0010	1	--	--
TPH Total WAC	2670	U	mg/kg	[A] < 10	500	--	--
Total Of 17 PAH's	2800	N	mg/kg	[A] < 0.20	100	--	--
pH	2010	U		9.3	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.0040	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455	U	0.0003	0.0029	0.5	2	25
Barium	1455	U	< 0.005	< 0.0005	20	100	300
Cadmium	1455	U	< 0.00011	< 0.00011	0.04	1	5
Chromium	1455	U	< 0.0005	< 0.0005	0.5	10	70
Copper	1455	U	0.0009	0.0094	2	50	100
Mercury	1455	U	< 0.00005	< 0.00005	0.01	0.2	2
Molybdenum	1455	U	0.0006	0.0057	0.5	10	30
Nickel	1455	U	< 0.0005	< 0.0005	0.4	10	40
Lead	1455	U	< 0.0005	< 0.0005	0.5	10	50
Antimony	1455	U	< 0.0005	< 0.0005	0.06	0.7	5
Selenium	1455	U	< 0.0005	< 0.0005	0.1	0.5	7
Zinc	1455	U	< 0.003	< 0.003	4	50	200
Chloride	1220	U	< 1.0	< 10	800	15000	25000
Fluoride	1220	U	0.12	1.2	10	150	500
Sulphate	1220	U	< 1.0	< 10	1000	20000	50000
Total Dissolved Solids	1020	N	33	320	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	3.7	< 50	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	13

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: 23927 Dalguise House Monkstown Dublin (David Rehill CE)

					Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	22-12129						
Chemtest Sample ID:	1402356						
Sample Ref:							
Sample ID:	AA146804						
Sample Location:	TP24						
Top Depth(m):	2.0						
Bottom Depth(m):							
Sampling Date:					Inert Waste Landfill	Stable, Non-reactive hazardous waste in non-hazardous Landfill	Hazardous Waste Landfill
Determinand	**SOP**	**Accred.**	**Units**				
Total Organic Carbon	2625	U	%	[A] 0.33	3	5	6
Loss On Ignition	2610	U	%	3.9	--	--	10
Total BTEX	2760	U	mg/kg	[A] < 0.010	6	--	--
Total PCBs (7 congeners)	2815	N	mg/kg	[A] < 0.0010	1	--	--
TPH Total WAC	2670	U	mg/kg	[A] < 10	500	--	--
Total Of 17 PAH's	2800	N	mg/kg	[A] < 0.20	100	--	--
pH	2010	U		8.6	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.017	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455	U	< 0.0002	< 0.0002	0.5	2	25
Barium	1455	U	< 0.005	< 0.0005	20	100	300
Cadmium	1455	U	< 0.00011	< 0.00011	0.04	1	5
Chromium	1455	U	< 0.0005	< 0.0005	0.5	10	70
Copper	1455	U	0.0013	0.013	2	50	100
Mercury	1455	U	< 0.00005	< 0.00005	0.01	0.2	2
Molybdenum	1455	U	< 0.0002	< 0.0002	0.5	10	30
Nickel	1455	U	< 0.0005	< 0.0005	0.4	10	40
Lead	1455	U	< 0.0005	< 0.0005	0.5	10	50
Antimony	1455	U	< 0.0005	< 0.0005	0.06	0.7	5
Selenium	1455	U	< 0.0005	< 0.0005	0.1	0.5	7
Zinc	1455	U	< 0.003	< 0.003	4	50	200
Chloride	1220	U	< 1.0	< 10	800	15000	25000
Fluoride	1220	U	0.085	< 1.0	10	150	500
Sulphate	1220	U	< 1.0	< 10	1000	20000	50000
Total Dissolved Solids	1020	N	20	200	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	< 2.5	< 50	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	14

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: 23927 Dalguise House Monkstown Dublin (David Rehill CE)

Chemtest Job No:	22-12129				**Landfill Waste Acceptance Criteria Limits**		
Chemtest Sample ID:	1402357						
Sample Ref:							
Sample ID:	AA146807						
Sample Location:	TP25				**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Top Depth(m):	0.6						
Bottom Depth(m):							
Sampling Date:							
Determinand	**SOP**	**Accred.**	**Units**				
Total Organic Carbon	2625	U	%	[A] 0.49	3	5	6
Loss On Ignition	2610	U	%	3.0	--	--	10
Total BTEX	2760	U	mg/kg	[A] < 0.010	6	--	--
Total PCBs (7 congeners)	2815	N	mg/kg	[A] < 0.0010	1	--	--
TPH Total WAC	2670	U	mg/kg	[A] < 10	500	--	--
Total Of 17 PAH's	2800	N	mg/kg	[A] < 0.20	100	--	--
pH	2010	U		8.3	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.0040	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455	U	< 0.0002	< 0.0002	0.5	2	25
Barium	1455	U	< 0.005	< 0.0005	20	100	300
Cadmium	1455	U	< 0.00011	< 0.00011	0.04	1	5
Chromium	1455	U	< 0.0005	< 0.0005	0.5	10	70
Copper	1455	U	0.0008	0.0080	2	50	100
Mercury	1455	U	< 0.00005	< 0.00005	0.01	0.2	2
Molybdenum	1455	U	0.0003	0.0026	0.5	10	30
Nickel	1455	U	< 0.0005	< 0.0005	0.4	10	40
Lead	1455	U	< 0.0005	< 0.0005	0.5	10	50
Antimony	1455	U	< 0.0005	< 0.0005	0.06	0.7	5
Selenium	1455	U	< 0.0005	< 0.0005	0.1	0.5	7
Zinc	1455	U	< 0.003	< 0.003	4	50	200
Chloride	1220	U	< 1.0	< 10	800	15000	25000
Fluoride	1220	U	0.10	1.0	10	150	500
Sulphate	1220	U	< 1.0	< 10	1000	20000	50000
Total Dissolved Solids	1020	N	20	200	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	3.2	< 50	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	14

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: 23927 Dalguise House Monkstown Dublin (David Rehill CE)

					Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	22-12129				Inert Waste Landfill	Stable, Non-reactive hazardous waste in non-hazardous Landfill	Hazardous Waste Landfill
Chemtest Sample ID:	1402358						
Sample Ref:							
Sample ID:	AA146808						
Sample Location:	TP25						
Top Depth(m):	1.5						
Bottom Depth(m):							
Sampling Date:							
Determinand	**SOP**	**Accred.**	**Units**				
Total Organic Carbon	2625	U	%	[A] 0.29	3	5	6
Loss On Ignition	2610	U	%	2.9	--	--	10
Total BTEX	2760	U	mg/kg	[A] < 0.010	6	--	--
Total PCBs (7 congeners)	2815	N	mg/kg	[A] < 0.0010	1	--	--
TPH Total WAC	2670	U	mg/kg	[A] < 10	500	--	--
Total Of 17 PAH's	2800	N	mg/kg	[A] < 0.20	100	--	--
pH	2010	U		8.5	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.015	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455	U	< 0.0002	< 0.0002	0.5	2	25
Barium	1455	U	< 0.005	< 0.0005	20	100	300
Cadmium	1455	U	< 0.00011	< 0.00011	0.04	1	5
Chromium	1455	U	< 0.0005	< 0.0005	0.5	10	70
Copper	1455	U	< 0.0005	< 0.0005	2	50	100
Mercury	1455	U	< 0.00005	< 0.00005	0.01	0.2	2
Molybdenum	1455	U	< 0.0002	< 0.0002	0.5	10	30
Nickel	1455	U	< 0.0005	< 0.0005	0.4	10	40
Lead	1455	U	< 0.0005	< 0.0005	0.5	10	50
Antimony	1455	U	< 0.0005	< 0.0005	0.06	0.7	5
Selenium	1455	U	< 0.0005	< 0.0005	0.1	0.5	7
Zinc	1455	U	< 0.003	< 0.003	4	50	200
Chloride	1220	U	< 1.0	< 10	800	15000	25000
Fluoride	1220	U	0.087	< 1.0	10	150	500
Sulphate	1220	U	< 1.0	< 10	1000	20000	50000
Total Dissolved Solids	1020	N	20	200	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	< 2.5	< 50	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	13

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: 23927 Dalguise House Monkstown Dublin (David Rehill CE)

					Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	22-12129						
Chemtest Sample ID:	1402359						
Sample Ref:							
Sample ID:	AA146809						
Sample Location:	TP26						
Top Depth(m):	0.5						
Bottom Depth(m):							
Sampling Date:					Inert Waste Landfill	Stable, Non-reactive hazardous waste in non-hazardous Landfill	Hazardous Waste Landfill
Determinand	**SOP**	**Accred.**	**Units**				
Total Organic Carbon	2625	U	%	[A] 0.99	3	5	6
Loss On Ignition	2610	U	%	3.8	--	--	10
Total BTEX	2760	U	mg/kg	[A] < 0.010	6	--	--
Total PCBs (7 congeners)	2815	N	mg/kg	[A] < 0.0010	1	--	--
TPH Total WAC	2670	U	mg/kg	[A] < 10	500	--	--
Total Of 17 PAH's	2800	N	mg/kg	[A] < 0.20	100	--	--
pH	2010	U		8.4	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.030	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455	U	< 0.0002	< 0.0002	0.5	2	25
Barium	1455	U	< 0.005	< 0.0005	20	100	300
Cadmium	1455	U	< 0.00011	< 0.00011	0.04	1	5
Chromium	1455	U	< 0.0005	< 0.0005	0.5	10	70
Copper	1455	U	< 0.0005	< 0.0005	2	50	100
Mercury	1455	U	< 0.00005	< 0.00005	0.01	0.2	2
Molybdenum	1455	U	< 0.0002	< 0.0002	0.5	10	30
Nickel	1455	U	< 0.0005	< 0.0005	0.4	10	40
Lead	1455	U	< 0.0005	< 0.0005	0.5	10	50
Antimony	1455	U	< 0.0005	< 0.0005	0.06	0.7	5
Selenium	1455	U	< 0.0005	< 0.0005	0.1	0.5	7
Zinc	1455	U	< 0.003	< 0.003	4	50	200
Chloride	1220	U	< 1.0	< 10	800	15000	25000
Fluoride	1220	U	0.092	< 1.0	10	150	500
Sulphate	1220	U	< 1.0	< 10	1000	20000	50000
Total Dissolved Solids	1020	N	6.5	65	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	3.0	< 50	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	19

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: 23927 Dalguise House Monkstown Dublin (David Rehill CE)

Chemtest Job No:	22-12129				Landfill Waste Acceptance Criteria Limits		
Chemtest Sample ID:	1402360						
Sample Ref:					Inert Waste Landfill	Stable, Non-reactive hazardous waste in non-hazardous Landfill	Hazardous Waste Landfill
Sample ID:	AA146810						
Sample Location:	TP26						
Top Depth(m):	1.6						
Bottom Depth(m):							
Sampling Date:							
Determinand	**SOP**	**Accred.**	**Units**				
Total Organic Carbon	2625	U	%	[A] 0.27	3	5	6
Loss On Ignition	2610	U	%	2.7	--	--	10
Total BTEX	2760	U	mg/kg	[A] < 0.010	6	--	--
Total PCBs (7 congeners)	2815	N	mg/kg	[A] < 0.0010	1	--	--
TPH Total WAC	2670	U	mg/kg	[A] < 10	500	--	--
Total Of 17 PAH's	2800	N	mg/kg	[A] < 0.20	100	--	--
pH	2010	U		8.6	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.067	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455	U	0.0002	0.0024	0.5	2	25
Barium	1455	U	< 0.005	< 0.0005	20	100	300
Cadmium	1455	U	< 0.00011	< 0.00011	0.04	1	5
Chromium	1455	U	< 0.0005	< 0.0005	0.5	10	70
Copper	1455	U	0.0009	0.0088	2	50	100
Mercury	1455	U	< 0.00005	< 0.00005	0.01	0.2	2
Molybdenum	1455	U	< 0.0002	< 0.0002	0.5	10	30
Nickel	1455	U	< 0.0005	< 0.0005	0.4	10	40
Lead	1455	U	< 0.0005	< 0.0005	0.5	10	50
Antimony	1455	U	< 0.0005	< 0.0005	0.06	0.7	5
Selenium	1455	U	< 0.0005	< 0.0005	0.1	0.5	7
Zinc	1455	U	< 0.003	< 0.003	4	50	200
Chloride	1220	U	< 1.0	< 10	800	15000	25000
Fluoride	1220	U	0.085	< 1.0	10	150	500
Sulphate	1220	U	< 1.0	< 10	1000	20000	50000
Total Dissolved Solids	1020	N	26	260	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	2.7	< 50	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	13

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Test Methods

SOP	Title	Parameters included	Method summary
1010	pH Value of Waters	pH	pH Meter
1020	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Conductivity Meter
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using ‘Aquakem 600’ Discrete Analyser.
1455	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).
1610	Total/Dissolved Organic Carbon in Waters	Organic Carbon	TOC Analyser using Catalytic Oxidation
1800	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Waters by GC-MS	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Pentane extraction / GCMS detection
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.
2010	pH Value of Soils	pH	pH Meter
2015	Acid Neutralisation Capacity	Acid Reserve	Titration
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2175	Total Sulphur in Soils	Total Sulphur	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2180	Sulphur (Elemental) in Soils by HPLC	Sulphur	Dichloromethane extraction / HPLC with UV detection
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry
2220	Water soluble Chloride in Soils	Chloride	Aqueous extraction and measuremernt by ‘Aquakem 600’ Discrete Analyser using ferric nitrate / mercuric thiocyanate.
2300	Cyanides & Thiocyanate in Soils	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Allkaline extraction followed by colorimetric determination using Automated Flow Injection Analyser.
2325	Sulphide in Soils	Sulphide	Steam distillation with sulphuric acid / analysis by ‘Aquakem 600’ Discrete Analyser, using N,N–dimethyl-p-phenylenediamine.
2430	Total Sulphate in soils	Total Sulphate	Acid digestion followed by determination of sulphate in extract by ICP-OES.
2450	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.
2490	Hexavalent Chromium in Soils	Chromium [VI]	Soil extracts are prepared by extracting dried and ground soil samples into boiling water. Chromium [VI] is determined by ‘Aquakem 600’ Discrete Analyser using 1,5-diphenylcarbazide.

Test Methods

SOP	Title	Parameters included	Method summary
2610	Loss on Ignition	loss on ignition (LOI)	Determination of the proportion by mass that is lost from a soil by ignition at 550°C.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2670	Total Petroleum Hydrocarbons (TPH) in Soils by GC-FID	TPH (C6–C40); optional carbon banding, e.g. 3-band – GRO, DRO & LRO*TPH C8–C40	Dichloromethane extraction / GC-FID
2680	TPH A/A Split	Aliphatics: >C5–C6, >C6–C8,>C8–C10, >C10–C12, >C12–C16, >C16–C21, >C21–C35, >C35– C44Aromatics: >C5–C7, >C7–C8, >C8– C10, >C10–C12, >C12–C16, >C16– C21, >C21– C35, >C35– C44	Dichloromethane extraction / GCxGC FID detection
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2800	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-MS	Acenaphthene*; Acenaphthylene; Anthracene*; Benzo[a]Anthracene*; Benzo[a]Pyrene*; Benzo[b]Fluoranthene*; Benzo[ghi]Perylene*; Benzo[k]Fluoranthene; Chrysene*; Dibenz[ah]Anthracene; Fluoranthene*; Fluorene*; Indeno[123cd]Pyrene*; Naphthalene*; Phenanthrene*; Pyrene*	Dichloromethane extraction / GC-MS
2815	Polychlorinated Biphenyls (PCB) ICES7Congeners in Soils by GC-MS	ICES7 PCB congeners	Acetone/Hexane extraction / GC-MS
2920	Phenols in Soils by HPLC	Phenolic compounds including Resorcinol, Phenol, Methylphenols, Dimethylphenols, 1-Naphthol and TrimethylphenolsNote: chlorophenols are excluded.	60:40 methanol/water mixture extraction, followed by HPLC determination using electrochemical detection.
640	Characterisation of Waste (Leaching C10)	Waste material including soil, sludges and granular waste	ComplianceTest for Leaching of Granular Waste Material and Sludge

Report Information

Key	
U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"
SOP	Standard operating procedure
LOD	Limit of detection

Comments or interpretations are beyond the scope of UKAS accreditation
The results relate only to the items tested
Uncertainty of measurement for the determinands tested are available upon request
None of the results in this report have been recovery corrected
All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis
All Asbestos testing is performed at the indicated laboratory
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied
B - Sample age exceeds stability time (sampling to extraction)
C - Sample not received in appropriate containers
D - Broken Container
E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 30 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.com

Eurofins Chemtest Ltd
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.com

UKAS TESTING 2183

Amended Report

Report No.:	22-12698-2
Initial Date of Issue:	12-Apr-2022
Client	IGSL
Client Address:	M7 Business Park Naas County Kildare Ireland
Contact(s):	Darren Keogh
Project	23927 Dalguise House Monkstown Dublin (David Rehill CE)

Quotation No.:	Q20-19951	**Date Received:**	04-Apr-2022
Order No.:		**Date Instructed:**	04-Apr-2022
No. of Samples:	3		
Turnaround (Wkdays):	7	**Results Due:**	12-Apr-2022
Date Approved:	12-Apr-2022		

Approved By:

A.C. Drinkwater

Details: Alison Drinkwater, Specalist Chemist

Results - Leachate

Project: 23927 Dalguise House Monkstown Dublin (David Rehill CE)

Client: IGSL					**Chemtest Job No.:**	22-12698	22-12698	22-12698
Quotation No.: Q20-19951					**Chemtest Sample ID.:**	1405028	1405032	1405036
					Client Sample ID.:	AA161951	AA165494	AA162661
					Sample Location:	BH02A	BH03	BH05
					Sample Type:	SOIL	SOIL	SOIL
					Top Depth (m):	1.00	2.00	1.00
Determinand	**Accred.**	**SOP**	**Type**	**Units**	**LOD**			
pH	U	1010	10:1		N/A	8.4	8.6	8.4
Ammonium	U	1220	10:1	mg/l	0.050	< 0.050	0.098	< 0.050
Ammonium	N	1220	10:1	mg/kg	0.10	0.34	1.2	0.15
Boron (Dissolved)	U	1455	10:1	mg/kg	0.01	< 0.01	< 0.01	< 0.01
Benzo[j]fluoranthene	N	1800	10:1	µg/l	0.010	< 0.010	< 0.010	< 0.010

Results - Soil

Project: 23927 Dalguise House Monkstown Dublin (David Rehill CE)

Client: IGSL	**Chemtest Job No.:**				22-12698	22-12698	22-12698
Quotation No.: Q20-19951	**Chemtest Sample ID.:**				1405028	1405032	1405036
	Client Sample ID.:				AA161951	AA165494	AA162661
	Sample Location:				BH02A	BH03	BH05
	Sample Type:				SOIL	SOIL	SOIL
	Top Depth (m):				1.00	2.00	1.00
	Asbestos Lab:				COVENTRY	COVENTRY	COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**			
ACM Type	U	2192		N/A	-	-	-
Asbestos Identification	U	2192		N/A	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected
Moisture	N	2030	%	0.020	18	14	10
Boron (Hot Water Soluble)	U	2120	mg/kg	0.40	0.67	< 0.40	< 0.40
Sulphur (Elemental)	U	2180	mg/kg	1.0	4.3	< 1.0	1.4
Cyanide (Total)	U	2300	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Sulphide (Easily Liberatable)	N	2325	mg/kg	0.50	7.2	3.9	6.7
Sulphate (Acid Soluble)	U	2430	%	0.010	0.02	0.018	0.027
Arsenic	U	2450	mg/kg	1.0	6.0	8.1	11
Barium	U	2450	mg/kg	10	41	27	49
Cadmium	U	2450	mg/kg	0.10	0.60	1.0	1.3
Chromium	U	2450	mg/kg	1.0	9.8	7.2	9.2
Molybdenum	U	2450	mg/kg	2.0	< 2.0	< 2.0	< 2.0
Antimony	N	2450	mg/kg	2.0	< 2.0	< 2.0	< 2.0
Copper	U	2450	mg/kg	0.50	15	14	21
Mercury	U	2450	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Nickel	U	2450	mg/kg	0.50	21	22	29
Lead	U	2450	mg/kg	0.50	26	8.0	22
Selenium	U	2450	mg/kg	0.20	0.20	0.54	0.43
Zinc	U	2450	mg/kg	0.50	37	40	87
Chromium (Trivalent)	N	2490	mg/kg	1.0	9.8	7.2	10.2
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Mineral Oil (TPH Calculation)	N	2670	mg/kg	10	< 10	< 10	< 10
Aliphatic TPH >C5-C6	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C6-C8	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C8-C10	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C10-C12	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C12-C16	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C16-C21	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C21-C35	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0	< 5.0	< 5.0	< 5.0
Aromatic TPH >C5-C7	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C7-C8	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C8-C10	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C10-C12	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C12-C16	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0

Results - Soil

Project: 23927 Dalguise House Monkstown Dublin (David Rehill CE)

Client: IGSL	**Chemtest Job No.:**				22-12698	22-12698	22-12698
Quotation No.: Q20-19951	**Chemtest Sample ID.:**				1405028	1405032	1405036
	Client Sample ID.:				AA161951	AA165494	AA162661
	Sample Location:				BH02A	BH03	BH05
	Sample Type:				SOIL	SOIL	SOIL
	Top Depth (m):				1.00	2.00	1.00
	Asbestos Lab:				COVENTRY	COVENTRY	COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**			
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C21-C35	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0	< 5.0	< 5.0	< 5.0
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0	< 10	< 10	< 10
Benzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Toluene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
m & p-Xylene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
o-Xylene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Methyl Tert-Butyl Ether	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Naphthalene	N	2800	mg/kg	0.010	0.43	< 0.010	< 0.010
Acenaphthylene	N	2800	mg/kg	0.010	0.048	< 0.010	< 0.010
Acenaphthene	N	2800	mg/kg	0.010	0.092	< 0.010	< 0.010
Fluorene	N	2800	mg/kg	0.010	0.04	< 0.010	< 0.010
Phenanthrene	N	2800	mg/kg	0.010	0.2	< 0.010	< 0.010
Anthracene	N	2800	mg/kg	0.010	0.038	< 0.010	< 0.010
Fluoranthene	N	2800	mg/kg	0.010	0.31	< 0.010	< 0.010
Pyrene	N	2800	mg/kg	0.010	0.34	< 0.010	< 0.010
Benzoanthracene	N	2800	mg/kg	0.010	0.31	< 0.010	< 0.010
Chrysene	N	2800	mg/kg	0.010	0.3	< 0.010	< 0.010
Benzo[b]fluoranthene	N	2800	mg/kg	0.010	0.6	< 0.010	< 0.010
Benzo[k]fluoranthene	N	2800	mg/kg	0.010	0.24	< 0.010	< 0.010
Benzopyrene	N	2800	mg/kg	0.010	0.58	< 0.010	< 0.010
Indeno(1,2,3-c,d)Pyrene	N	2800	mg/kg	0.010	0.46	< 0.010	< 0.010
Dibenz(a,h)Anthracene	N	2800	mg/kg	0.010	0.13	< 0.010	< 0.010
Benzo[g,h,i]perylene	N	2800	mg/kg	0.010	0.55	< 0.010	< 0.010
Coronene	N	2800	mg/kg	0.010	< 0.010	< 0.010	< 0.010
Total Of 17 PAH's	N	2800	mg/kg	0.20	4.7	< 0.20	< 0.20
PCB 28	N	2815	mg/kg	0.0010	< 0.0010	< 0.0010	< 0.0010
PCB 52	N	2815	mg/kg	0.0010	< 0.0010	< 0.0010	< 0.0010
PCB 90+101	N	2815	mg/kg	0.0010	< 0.0010	< 0.0010	< 0.0010
PCB 118	N	2815	mg/kg	0.0010	< 0.0010	< 0.0010	< 0.0010
PCB 153	N	2815	mg/kg	0.0010	< 0.0010	< 0.0010	< 0.0010
PCB 138	N	2815	mg/kg	0.0010	< 0.0010	< 0.0010	< 0.0010
PCB 180	N	2815	mg/kg	0.0010	< 0.0010	< 0.0010	< 0.0010
Total PCBs (7 congeners)	N	2815	mg/kg	0.0010	< 0.0010	< 0.0010	< 0.0010
Total Phenols	U	2920	mg/kg	0.10	< 0.10	< 0.10	< 0.10

Results - Single Stage WAC

Project: 23927 Dalguise House Monkstown Dublin (David Rehill CE)

					Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	22-12698						
Chemtest Sample ID:	1405028						
Sample Ref:							
Sample ID:	AA161951						
Sample Location:	BH02A						
Top Depth(m):	1.00						
Bottom Depth(m):							
Sampling Date:					Inert Waste Landfill	Stable, Non-reactive hazardous waste in non-hazardous Landfill	Hazardous Waste Landfill
Determinand	**SOP**	**Accred.**	**Units**				
Total Organic Carbon	2625	U	%	0.55	3	5	6
Loss On Ignition	2610	U	%	3.5	--	--	10
Total BTEX	2760	U	mg/kg	< 0.010	6	--	--
Total PCBs (7 congeners)	2815	N	mg/kg	< 0.0010	1	--	--
TPH Total WAC	2670	U	mg/kg	< 10	500	--	--
Total Of 17 PAH's	2800	N	mg/kg	4.7	100	--	--
pH	2010	U		9.9	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.015	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455	U	0.0004	0.0038	0.5	2	25
Barium	1455	U	0.006	0.061	20	100	300
Cadmium	1455	U	< 0.00011	< 0.00011	0.04	1	5
Chromium	1455	U	< 0.0005	< 0.0005	0.5	10	70
Copper	1455	U	0.0006	0.0063	2	50	100
Mercury	1455	U	< 0.00005	< 0.00005	0.01	0.2	2
Molybdenum	1455	U	0.0091	0.091	0.5	10	30
Nickel	1455	U	0.0007	0.0067	0.4	10	40
Lead	1455	U	< 0.0005	< 0.0005	0.5	10	50
Antimony	1455	U	< 0.0005	< 0.0005	0.06	0.7	5
Selenium	1455	U	< 0.0005	< 0.0005	0.1	0.5	7
Zinc	1455	U	< 0.003	< 0.003	4	50	200
Chloride	1220	U	< 1.0	< 10	800	15000	25000
Fluoride	1220	U	0.7	7	10	150	500
Sulphate	1220	U	3.3	33	1000	20000	50000
Total Dissolved Solids	1020	N	72	710	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	< 2.5	< 50	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	18

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: 23927 Dalguise House Monkstown Dublin (David Rehill CE)

					Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	22-12698						
Chemtest Sample ID:	1405032						
Sample Ref:					Inert Waste Landfill	Stable, Non-reactive hazardous waste in non-hazardous Landfill	Hazardous Waste Landfill
Sample ID:	AA165494						
Sample Location:	BH03						
Top Depth(m):	2.00						
Bottom Depth(m):							
Sampling Date:							
Determinand	**SOP**	**Accred.**	**Units**				
Total Organic Carbon	2625	U	%	0.63	3	5	6
Loss On Ignition	2610	U	%	2.2	--	--	10
Total BTEX	2760	U	mg/kg	< 0.010	6	--	--
Total PCBs (7 congeners)	2815	N	mg/kg	< 0.0010	1	--	--
TPH Total WAC	2670	U	mg/kg	< 10	500	--	--
Total Of 17 PAH's	2800	N	mg/kg	< 0.20	100	--	--
pH	2010	U		9.3	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.073	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455	U	< 0.0002	< 0.0002	0.5	2	25
Barium	1455	U	< 0.005	< 0.0005	20	100	300
Cadmium	1455	U	< 0.00011	< 0.00011	0.04	1	5
Chromium	1455	U	< 0.0005	< 0.0005	0.5	10	70
Copper	1455	U	< 0.0005	< 0.0005	2	50	100
Mercury	1455	U	< 0.00005	< 0.00005	0.01	0.2	2
Molybdenum	1455	U	0.0081	0.081	0.5	10	30
Nickel	1455	U	0.0008	0.0080	0.4	10	40
Lead	1455	U	< 0.0005	< 0.0005	0.5	10	50
Antimony	1455	U	< 0.0005	< 0.0005	0.06	0.7	5
Selenium	1455	U	< 0.0005	< 0.0005	0.1	0.5	7
Zinc	1455	U	< 0.003	< 0.003	4	50	200
Chloride	1220	U	< 1.0	< 10	800	15000	25000
Fluoride	1220	U	0.19	1.9	10	150	500
Sulphate	1220	U	< 1.0	< 10	1000	20000	50000
Total Dissolved Solids	1020	N	39	390	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	< 2.5	< 50	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	14

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: 23927 Dalguise House Monkstown Dublin (David Rehill CE)

					Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	22-12698						
Chemtest Sample ID:	1405036						
Sample Ref:							
Sample ID:	AA162661						
Sample Location:	BH05						
Top Depth(m):	1.00				**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Bottom Depth(m):							
Sampling Date:							
Determinand	**SOP**	**Accred.**	**Units**				
Total Organic Carbon	2625	U	%	0.3	3	5	6
Loss On Ignition	2610	U	%	2.6	--	--	10
Total BTEX	2760	U	mg/kg	< 0.010	6	--	--
Total PCBs (7 congeners)	2815	N	mg/kg	< 0.0010	1	--	--
TPH Total WAC	2670	U	mg/kg	< 10	500	--	--
Total Of 17 PAH's	2800	N	mg/kg	< 0.20	100	--	--
pH	2010	U		8.7	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.016	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455	U	< 0.0002	< 0.0002	0.5	2	25
Barium	1455	U	< 0.005	< 0.0005	20	100	300
Cadmium	1455	U	< 0.00011	< 0.00011	0.04	1	5
Chromium	1455	U	< 0.0005	< 0.0005	0.5	10	70
Copper	1455	U	0.0007	0.0070	2	50	100
Mercury	1455	U	< 0.00005	< 0.00005	0.01	0.2	2
Molybdenum	1455	U	0.0094	0.094	0.5	10	30
Nickel	1455	U	< 0.0005	< 0.0005	0.4	10	40
Lead	1455	U	< 0.0005	< 0.0005	0.5	10	50
Antimony	1455	U	< 0.0005	< 0.0005	0.06	0.7	5
Selenium	1455	U	< 0.0005	< 0.0005	0.1	0.5	7
Zinc	1455	U	< 0.003	< 0.003	4	50	200
Chloride	1220	U	< 1.0	< 10	800	15000	25000
Fluoride	1220	U	0.35	3.5	10	150	500
Sulphate	1220	U	< 1.0	< 10	1000	20000	50000
Total Dissolved Solids	1020	N	55	550	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	15	150	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	10

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Test Methods

SOP	Title	Parameters included	Method summary
1010	pH Value of Waters	pH	pH Meter
1020	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Conductivity Meter
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.
1455	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).
1610	Total/Dissolved Organic Carbon in Waters	Organic Carbon	TOC Analyser using Catalytic Oxidation
1800	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Waters by GC-MS	Acenaphthene; Acenaphthylene; Anthracene; BenzoAnthracene; BenzoPyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Pentane extraction / GCMS detection
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.
2010	pH Value of Soils	pH	pH Meter
2015	Acid Neutralisation Capacity	Acid Reserve	Titration
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2180	Sulphur (Elemental) in Soils by HPLC	Sulphur	Dichloromethane extraction / HPLC with UV detection
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry
2300	Cyanides & Thiocyanate in Soils	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Allkaline extraction followed by colorimetric determination using Automated Flow Injection Analyser.
2325	Sulphide in Soils	Sulphide	Steam distillation with sulphuric acid / analysis by 'Aquakem 600' Discrete Analyser, using N,N–dimethyl-p-phenylenediamine.
2430	Total Sulphate in soils	Total Sulphate	Acid digestion followed by determination of sulphate in extract by ICP-OES.
2450	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.
2490	Hexavalent Chromium in Soils	Chromium [VI]	Soil extracts are prepared by extracting dried and ground soil samples into boiling water. Chromium [VI] is determined by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
2610	Loss on Ignition	loss on ignition (LOI)	Determination of the proportion by mass that is lost from a soil by ignition at 550°C.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.

Test Methods

SOP	Title	Parameters included	Method summary
2670	Total Petroleum Hydrocarbons (TPH) in Soils by GC-FID	TPH (C6–C40); optional carbon banding, e.g. 3-band – GRO, DRO & LRO*TPH C8–C40	Dichloromethane extraction / GC-FID
2680	TPH A/A Split	Aliphatics: >C5–C6, >C6–C8,>C8–C10, >C10–C12, >C12–C16, >C16–C21, >C21–C35, >C35– C44Aromatics: >C5–C7, >C7–C8, >C8– C10, >C10–C12, >C12–C16, >C16– C21, >C21– C35, >C35– C44	Dichloromethane extraction / GCxGC FID detection
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2800	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-MS	Acenaphthene*; Acenaphthylene; Anthracene*; BenzoAnthracene*; BenzoPyrene*; Benzo[b]Fluoranthene*; Benzo[ghi]Perylene*; Benzo[k]Fluoranthene; Chrysene*; Dibenz[ah]Anthracene; Fluoranthene*; Fluorene*; Indeno[123cd]Pyrene*; Naphthalene*; Phenanthrene*; Pyrene*	Dichloromethane extraction / GC-MS
2815	Polychlorinated Biphenyls (PCB) ICES7Congeners in Soils by GC-MS	ICES7 PCB congeners	Acetone/Hexane extraction / GC-MS
2920	Phenols in Soils by HPLC	Phenolic compounds including Resorcinol, Phenol, Methylphenols, Dimethylphenols, 1-Naphthol and TrimethylphenolsNote: chlorophenols are excluded.	60:40 methanol/water mixture extraction, followed by HPLC determination using electrochemical detection.
640	Characterisation of Waste (Leaching C10)	Waste material including soil, sludges and granular waste	ComplianceTest for Leaching of Granular Waste Material and Sludge

Report Information

Key	
U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"
SOP	Standard operating procedure
LOD	Limit of detection

Comments or interpretations are beyond the scope of UKAS accreditation
The results relate only to the items tested
Uncertainty of measurement for the determinands tested are available upon request
None of the results in this report have been recovery corrected
All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis
All Asbestos testing is performed at the indicated laboratory
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied
B - Sample age exceeds stability time (sampling to extraction)
C - Sample not received in appropriate containers
D - Broken Container
E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 30 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.com

UKAS TESTING
2183

Eurofins Chemtest Ltd
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.com

Final Report

Report No.:	22-13843-1
Initial Date of Issue:	21-Apr-2022
Client	IGSL
Client Address:	M7 Business Park Naas County Kildare Ireland
Contact(s):	Darren Keogh
Project	23927 Dalguise House Monkstown Dublin

Quotation No.:	Q20-19951	**Date Received:**	12-Apr-2022
Order No.:		**Date Instructed:**	12-Apr-2022
No. of Samples:	12		
Turnaround (Wkdays):	7	**Results Due:**	22-Apr-2022
Date Approved:	21-Apr-2022		

Approved By:

Details: Stuart Henderson, Technical Manager

Results - Leachate

Project: Dalguise House Monkstown Dublin

Client: IGSL					**Chemtest Job No.:**	22-13843	22-13843	22-13843	22-13843	22-13843	22-13843	22-13843	22-13843	22-13843
Quotation No.: Q20-19951					**Chemtest Sample ID.:**	1410301	1410302	1410303	1410304	1410305	1410306	1410307	1410308	1410309
					Sample Location:	WS01	WS01	WS02	WS02	WS03	WS03	WS03	WS04	WS04
					Sample Type:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
					Top Depth (m):	0.0	1.0	0.0	1.0	0.0	1.0	2.0	0.0	1.0
					Bottom Depth (m):	1.0	2.0	1.0	2.0	1.0	2.0	3.0	1.0	2.0
					Date Sampled:	07-Apr-2022	07-Apr-2022	07-Apr-2022	07-Apr-2022	07-Apr-2022	07-Apr-2022	07-Apr-2022	07-Apr-2022	07-Apr-2022
Determinand	**Accred.**	**SOP**	**Type**	**Units**	**LOD**									
pH	U	1010	10:1		N/A	8.2	8.5	8.1	8.2	8.6	9.0	9.2	9.1	9.2
Ammonium	U	1220	10:1	mg/l	0.050	0.11	0.10	0.074	0.092	0.083	0.052	< 0.050	0.051	0.052
Ammonium	N	1220	10:1	mg/kg	0.10	1.2	1.2	0.79	1.0	1.0	0.80	0.93	0.90	1.0
Boron (Dissolved)	U	1455	10:1	mg/kg	0.01	0.16	0.13	0.16	0.16	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo[j]fluoranthene	N	1800	10:1	µg/l	0.010	< 0.010	0.082	0.038	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010

Results - Leachate

Project: Dalguise House Monkstown Dublin

Client: IGSL					**Chemtest Job No.:**	22-13843	22-13843	22-13843
Quotation No.: Q20-19951					**Chemtest Sample ID.:**	1410310	1410311	1410312
					Sample Location:	WS05	WS05	WS05
					Sample Type:	SOIL	SOIL	SOIL
					Top Depth (m):	0.0	1.0	2.0
					Bottom Depth (m):	1.0	2.0	3.0
					Date Sampled:	07-Apr-2022	07-Apr-2022	07-Apr-2022
Determinand	**Accred.**	**SOP**	**Type**	**Units**	**LOD**			
pH	U	1010	10:1		N/A	8.6	9.0	9.0
Ammonium	U	1220	10:1	mg/l	0.050	0.12	0.058	0.058
Ammonium	N	1220	10:1	mg/kg	0.10	1.5	0.89	0.91
Boron (Dissolved)	U	1455	10:1	mg/kg	0.01	< 0.01	< 0.01	< 0.01
Benzo[j]fluoranthene	N	1800	10:1	µg/l	0.010	< 0.010	< 0.010	< 0.010

Results - Soil

Project: Dalguise House Monkstown Dublin

Client: IGSL				**Chemtest Job No.:**	22-13843	22-13843	22-13843	22-13843	22-13843	22-13843	22-13843	22-13843	22-13843
Quotation No.: Q20-19951				**Chemtest Sample ID.:**	1410301	1410302	1410303	1410304	1410305	1410306	1410307	1410308	1410309
				Sample Location:	WS01	WS01	WS02	WS02	WS03	WS03	WS03	WS04	WS04
				Sample Type:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
				Top Depth (m):	0.0	1.0	0.0	1.0	0.0	1.0	2.0	0.0	1.0
				Bottom Depth (m):	1.0	2.0	1.0	2.0	1.0	2.0	3.0	1.0	2.0
				Date Sampled:	07-Apr-2022	07-Apr-2022	07-Apr-2022	07-Apr-2022	07-Apr-2022	07-Apr-2022	07-Apr-2022	07-Apr-2022	07-Apr-2022
				Asbestos Lab:	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM
Determinand	**Accred.**	**SOP**	**Units**	**LOD**									
ACM Type	U	2192		N/A	-	-	-	-	-	-	-	-	-
Asbestos Identification	U	2192		N/A	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected
Moisture	N	2030	%	0.020	18	16	18	17	12	12	9.6	11	9.5
Boron (Hot Water Soluble)	U	2120	mg/kg	0.40	0.76	< 0.40	0.97	2.8	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40
Sulphur (Elemental)	U	2180	mg/kg	1.0	< 1.0	< 1.0	3.2	23	< 1.0	19	< 1.0	< 1.0	1.8
Cyanide (Total)	U	2300	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Sulphide (Easily Liberatable)	N	2325	mg/kg	0.50	2.2	1.9	1.7	3.9	6.0	5.4	6.1	6.0	6.3
Sulphate (Acid Soluble)	U	2430	%	0.010	0.042	0.022	0.024	0.014	0.017	0.069	0.022	0.029	0.016
Arsenic	U	2450	mg/kg	1.0	21	17	18	15	14	18	17	31	24
Barium	U	2450	mg/kg	10	110	59	100	820	59	70	81	75	70
Cadmium	U	2450	mg/kg	0.10	1.7	1.2	1.6	< 0.10	1.2	1.6	1.8	2.2	2.0
Chromium	U	2450	mg/kg	1.0	29	23	25	13	15	13	16	25	26
Molybdenum	U	2450	mg/kg	2.0	4.5	2.6	3.9	< 2.0	< 2.0	2.3	2.9	3.2	3.3
Antimony	N	2450	mg/kg	2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Copper	U	2450	mg/kg	0.50	40	31	38	3.9	21	24	27	36	31
Mercury	U	2450	mg/kg	0.10	0.22	0.10	0.21	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Nickel	U	2450	mg/kg	0.50	54	45	46	10	32	37	43	50	53
Lead	U	2450	mg/kg	0.50	87	32	100	6.4	30	15	45	32	19
Selenium	U	2450	mg/kg	0.20	0.90	0.32	0.79	< 0.20	0.64	0.33	0.86	0.53	0.32
Zinc	U	2450	mg/kg	0.50	160	94	150	12	54	57	75	97	89
Chromium (Trivalent)	N	2490	mg/kg	1.0	29	23	25	13	15	13	16	25	26
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Mineral Oil (TPH Calculation)	N	2670	mg/kg	10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Aliphatic TPH >C5-C6	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C6-C8	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C8-C10	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C10-C12	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C12-C16	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C16-C21	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C21-C35	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Aromatic TPH >C5-C7	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C7-C8	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C8-C10	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C10-C12	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C12-C16	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0

Results - Soil

Project: Dalguise House Monkstown Dublin

Client: IGSL				**Chemtest Job No.:**	22-13843	22-13843	22-13843	22-13843	22-13843	22-13843	22-13843	22-13843	22-13843
Quotation No.: Q20-19951				**Chemtest Sample ID.:**	1410301	1410302	1410303	1410304	1410305	1410306	1410307	1410308	1410309
				Sample Location:	WS01	WS01	WS02	WS02	WS03	WS03	WS03	WS04	WS04
				Sample Type:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
				Top Depth (m):	0.0	1.0	0.0	1.0	0.0	1.0	2.0	0.0	1.0
				Bottom Depth (m):	1.0	2.0	1.0	2.0	1.0	2.0	3.0	1.0	2.0
				Date Sampled:	07-Apr-2022	07-Apr-2022	07-Apr-2022	07-Apr-2022	07-Apr-2022	07-Apr-2022	07-Apr-2022	07-Apr-2022	07-Apr-2022
				Asbestos Lab:	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM
Determinand	**Accred.**	**SOP**	**Units**	**LOD**									
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C21-C35	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Benzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
m & p-Xylene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-Xylene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Methyl Tert-Butyl Ether	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Naphthalene	N	2800	mg/kg	0.010	< 0.010	< 0.010	0.35	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Acenaphthylene	N	2800	mg/kg	0.010	< 0.010	< 0.010	0.070	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Acenaphthene	N	2800	mg/kg	0.010	< 0.010	< 0.010	0.040	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Fluorene	N	2800	mg/kg	0.010	< 0.010	< 0.010	0.050	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Phenanthrene	N	2800	mg/kg	0.010	0.080	0.060	0.12	< 0.010	< 0.010	< 0.010	< 0.010	0.16	< 0.010
Anthracene	N	2800	mg/kg	0.010	0.030	0.020	0.030	< 0.010	< 0.010	< 0.010	< 0.010	0.064	< 0.010
Fluoranthene	N	2800	mg/kg	0.010	0.070	0.16	0.10	< 0.010	< 0.010	< 0.010	< 0.010	0.25	< 0.010
Pyrene	N	2800	mg/kg	0.010	0.090	0.17	0.10	< 0.010	< 0.010	< 0.010	< 0.010	0.23	< 0.010
Benzo[a]anthracene	N	2800	mg/kg	0.010	< 0.010	0.090	0.040	< 0.010	< 0.010	< 0.010	< 0.010	0.13	< 0.010
Chrysene	N	2800	mg/kg	0.010	< 0.010	0.060	0.050	< 0.010	< 0.010	< 0.010	< 0.010	0.11	< 0.010
Benzo[b]fluoranthene	N	2800	mg/kg	0.010	< 0.010	0.15	0.060	< 0.010	< 0.010	< 0.010	< 0.010	0.14	< 0.010
Benzo[k]fluoranthene	N	2800	mg/kg	0.010	< 0.010	0.10	0.050	< 0.010	< 0.010	< 0.010	< 0.010	0.065	< 0.010
Benzo[a]pyrene	N	2800	mg/kg	0.010	< 0.010	0.13	0.080	< 0.010	< 0.010	< 0.010	< 0.010	0.12	< 0.010
Indeno(1,2,3-c,d)Pyrene	N	2800	mg/kg	0.010	< 0.010	0.070	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	0.061	< 0.010
Dibenz(a,h)Anthracene	N	2800	mg/kg	0.010	< 0.010	0.040	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	0.049	< 0.010
Benzo[g,h,i]perylene	N	2800	mg/kg	0.010	< 0.010	0.11	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	0.085	< 0.010
Coronene	N	2800	mg/kg	0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Total Of 17 PAH's	N	2800	mg/kg	0.20	0.27	1.2	1.1	< 0.20	< 0.20	< 0.20	< 0.20	1.5	< 0.20
PCB 28	N	2815	mg/kg	0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010
PCB 52	N	2815	mg/kg	0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010
PCB 90+101	N	2815	mg/kg	0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010
PCB 118	N	2815	mg/kg	0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010
PCB 153	N	2815	mg/kg	0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010
PCB 138	N	2815	mg/kg	0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010
PCB 180	N	2815	mg/kg	0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010
Total PCBs (7 congeners)	N	2815	mg/kg	0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010
Total Phenols	U	2920	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10

Results - Soil

Project: Dalguise House Monkstown Dublin

Client: IGSL	**Chemtest Job No.:**				22-13843	22-13843	22-13843
Quotation No.: Q20-19951	**Chemtest Sample ID.:**				1410310	1410311	1410312
	Sample Location:				WS05	WS05	WS05
	Sample Type:				SOIL	SOIL	SOIL
	Top Depth (m):				0.0	1.0	2.0
	Bottom Depth (m):				1.0	2.0	3.0
	Date Sampled:				07-Apr-2022	07-Apr-2022	07-Apr-2022
	Asbestos Lab:				DURHAM	DURHAM	DURHAM
Determinand	**Accred.**	**SOP**	**Units**	**LOD**			
ACM Type	U	2192		N/A	-	-	-
Asbestos Identification	U	2192		N/A	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected
Moisture	N	2030	%	0.020	15	11	9.4
Boron (Hot Water Soluble)	U	2120	mg/kg	0.40	< 0.40	< 0.40	< 0.40
Sulphur (Elemental)	U	2180	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Cyanide (Total)	U	2300	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Sulphide (Easily Liberatable)	N	2325	mg/kg	0.50	6.3	7.3	6.7
Sulphate (Acid Soluble)	U	2430	%	0.010	0.031	0.021	0.051
Arsenic	U	2450	mg/kg	1.0	28	38	55
Barium	U	2450	mg/kg	10	68	55	68
Cadmium	U	2450	mg/kg	0.10	1.8	1.7	1.9
Chromium	U	2450	mg/kg	1.0	23	24	24
Molybdenum	U	2450	mg/kg	2.0	2.8	3.0	2.6
Antimony	N	2450	mg/kg	2.0	< 2.0	< 2.0	< 2.0
Copper	U	2450	mg/kg	0.50	35	29	36
Mercury	U	2450	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Nickel	U	2450	mg/kg	0.50	48	45	51
Lead	U	2450	mg/kg	0.50	29	17	29
Selenium	U	2450	mg/kg	0.20	0.50	0.44	0.54
Zinc	U	2450	mg/kg	0.50	110	75	100
Chromium (Trivalent)	N	2490	mg/kg	1.0	23	24	24
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Mineral Oil (TPH Calculation)	N	2670	mg/kg	10	< 10	< 10	< 10
Aliphatic TPH >C5-C6	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C6-C8	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C8-C10	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C10-C12	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C12-C16	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C16-C21	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C21-C35	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0	< 5.0	< 5.0	< 5.0
Aromatic TPH >C5-C7	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C7-C8	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C8-C10	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C10-C12	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C12-C16	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0

Results - Soil

Project: Dalguise House Monkstown Dublin

Client: IGSL	**Chemtest Job No.:**				22-13843	22-13843	22-13843
Quotation No.: Q20-19951	**Chemtest Sample ID.:**				1410310	1410311	1410312
	Sample Location:				WS05	WS05	WS05
	Sample Type:				SOIL	SOIL	SOIL
	Top Depth (m):				0.0	1.0	2.0
	Bottom Depth (m):				1.0	2.0	3.0
	Date Sampled:				07-Apr-2022	07-Apr-2022	07-Apr-2022
	Asbestos Lab:				DURHAM	DURHAM	DURHAM
Determinand	**Accred.**	**SOP**	**Units**	**LOD**			
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C21-C35	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0	< 5.0	< 5.0	< 5.0
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0	< 10	< 10	< 10
Benzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Toluene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
m & p-Xylene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
o-Xylene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Methyl Tert-Butyl Ether	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Naphthalene	N	2800	mg/kg	0.010	< 0.010	< 0.010	< 0.010
Acenaphthylene	N	2800	mg/kg	0.010	< 0.010	< 0.010	< 0.010
Acenaphthene	N	2800	mg/kg	0.010	< 0.010	< 0.010	< 0.010
Fluorene	N	2800	mg/kg	0.010	< 0.010	< 0.010	< 0.010
Phenanthrene	N	2800	mg/kg	0.010	< 0.010	< 0.010	< 0.010
Anthracene	N	2800	mg/kg	0.010	< 0.010	< 0.010	< 0.010
Fluoranthene	N	2800	mg/kg	0.010	0.050	< 0.010	< 0.010
Pyrene	N	2800	mg/kg	0.010	0.078	< 0.010	< 0.010
Benzo[a]anthracene	N	2800	mg/kg	0.010	< 0.010	< 0.010	< 0.010
Chrysene	N	2800	mg/kg	0.010	< 0.010	< 0.010	< 0.010
Benzo[b]fluoranthene	N	2800	mg/kg	0.010	< 0.010	< 0.010	< 0.010
Benzo[k]fluoranthene	N	2800	mg/kg	0.010	< 0.010	< 0.010	< 0.010
Benzo[a]pyrene	N	2800	mg/kg	0.010	< 0.010	< 0.010	< 0.010
Indeno(1,2,3-c,d)Pyrene	N	2800	mg/kg	0.010	< 0.010	< 0.010	< 0.010
Dibenz(a,h)Anthracene	N	2800	mg/kg	0.010	< 0.010	< 0.010	< 0.010
Benzo[g,h,i]perylene	N	2800	mg/kg	0.010	< 0.010	< 0.010	< 0.010
Coronene	N	2800	mg/kg	0.010	< 0.010	< 0.010	< 0.010
Total Of 17 PAH's	N	2800	mg/kg	0.20	< 0.20	< 0.20	< 0.20
PCB 28	N	2815	mg/kg	0.0010	< 0.0010	< 0.0010	< 0.0010
PCB 52	N	2815	mg/kg	0.0010	< 0.0010	< 0.0010	< 0.0010
PCB 90+101	N	2815	mg/kg	0.0010	< 0.0010	< 0.0010	< 0.0010
PCB 118	N	2815	mg/kg	0.0010	< 0.0010	< 0.0010	< 0.0010
PCB 153	N	2815	mg/kg	0.0010	< 0.0010	< 0.0010	< 0.0010
PCB 138	N	2815	mg/kg	0.0010	< 0.0010	< 0.0010	< 0.0010
PCB 180	N	2815	mg/kg	0.0010	< 0.0010	< 0.0010	< 0.0010
Total PCBs (7 congeners)	N	2815	mg/kg	0.0010	< 0.0010	< 0.0010	< 0.0010
Total Phenols	U	2920	mg/kg	0.10	< 0.10	< 0.10	< 0.10

Results - Single Stage WAC

Project: Dalguise House Monkstown Dublin

Chemtest Job No:	22-13843				**Landfill Waste Acceptance Criteria Limits**		
Chemtest Sample ID:	1410301						
Sample Ref:					**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Sample ID:							
Sample Location:	WS01						
Top Depth(m):	0.0						
Bottom Depth(m):	1.0						
Sampling Date:	07-Apr-2022						
Determinand	**SOP**	**Accred.**	**Units**				
Total Organic Carbon	2625	U	%	1.2	3	5	6
Loss On Ignition	2610	U	%	4.5	--	--	10
Total BTEX	2760	U	mg/kg	< 0.010	6	--	--
Total PCBs (7 congeners)	2815	N	mg/kg	< 0.0010	1	--	--
TPH Total WAC	2670	U	mg/kg	< 10	500	--	--
Total Of 17 PAH's	2800	N	mg/kg	0.27	100	--	--
pH	2010	U		8.5	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.0040	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455	U	0.0042	0.042	0.5	2	25
Barium	1455	U	< 0.005	< 0.0005	20	100	300
Cadmium	1455	U	< 0.00011	< 0.00011	0.04	1	5
Chromium	1455	U	0.0052	0.052	0.5	10	70
Copper	1455	U	0.0029	0.029	2	50	100
Mercury	1455	U	< 0.00005	< 0.00005	0.01	0.2	2
Molybdenum	1455	U	0.012	0.12	0.5	10	30
Nickel	1455	U	0.0037	0.037	0.4	10	40
Lead	1455	U	< 0.0005	< 0.0005	0.5	10	50
Antimony	1455	U	0.0005	0.0054	0.06	0.7	5
Selenium	1455	U	< 0.0005	< 0.0005	0.1	0.5	7
Zinc	1455	U	0.003	0.031	4	50	200
Chloride	1220	U	< 1.0	< 10	800	15000	25000
Fluoride	1220	U	0.13	1.3	10	150	500
Sulphate	1220	U	< 1.0	< 10	1000	20000	50000
Total Dissolved Solids	1020	N	130	1300	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	18	180	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	18

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: Dalguise House Monkstown Dublin

					Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	22-13843						
Chemtest Sample ID:	1410302						
Sample Ref:							
Sample ID:							
Sample Location:	WS01						
Top Depth(m):	1.0						
Bottom Depth(m):	2.0						
Sampling Date:	07-Apr-2022				**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Determinand	**SOP**	**Accred.**	**Units**				
Total Organic Carbon	2625	U	%	0.63	3	5	6
Loss On Ignition	2610	U	%	3.6	--	--	10
Total BTEX	2760	U	mg/kg	< 0.010	6	--	--
Total PCBs (7 congeners)	2815	N	mg/kg	< 0.0010	1	--	--
TPH Total WAC	2670	U	mg/kg	< 10	500	--	--
Total Of 17 PAH's	2800	N	mg/kg	1.2	100	--	--
pH	2010	U		8.6	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.019	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455	U	0.0008	0.0083	0.5	2	25
Barium	1455	U	0.005	0.053	20	100	300
Cadmium	1455	U	< 0.00011	< 0.00011	0.04	1	5
Chromium	1455	U	0.0055	0.055	0.5	10	70
Copper	1455	U	0.0028	0.028	2	50	100
Mercury	1455	U	< 0.00005	< 0.00005	0.01	0.2	2
Molybdenum	1455	U	0.013	0.13	0.5	10	30
Nickel	1455	U	0.0039	0.039	0.4	10	40
Lead	1455	U	0.0006	0.0059	0.5	10	50
Antimony	1455	U	< 0.0005	< 0.0005	0.06	0.7	5
Selenium	1455	U	< 0.0005	< 0.0005	0.1	0.5	7
Zinc	1455	U	0.004	0.037	4	50	200
Chloride	1220	U	1.2	12	800	15000	25000
Fluoride	1220	U	0.20	2.0	10	150	500
Sulphate	1220	U	< 1.0	< 10	1000	20000	50000
Total Dissolved Solids	1020	N	72	710	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	15	150	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	16

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: Dalguise House Monkstown Dublin

					Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	22-13843						
Chemtest Sample ID:	1410303						
Sample Ref:							
Sample ID:							
Sample Location:	WS02						
Top Depth(m):	0.0						
Bottom Depth(m):	1.0						
Sampling Date:	07-Apr-2022				Inert Waste Landfill	Stable, Non-reactive hazardous waste in non-hazardous Landfill	Hazardous Waste Landfill
Determinand	**SOP**	**Accred.**	**Units**				
Total Organic Carbon	2625	U	%	2.2	3	5	6
Loss On Ignition	2610	U	%	5.0	--	--	10
Total BTEX	2760	U	mg/kg	< 0.010	6	--	--
Total PCBs (7 congeners)	2815	N	mg/kg	< 0.0010	1	--	--
TPH Total WAC	2670	U	mg/kg	< 10	500	--	--
Total Of 17 PAH's	2800	N	mg/kg	1.1	100	--	--
pH	2010	U		8.4	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.0070	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455	U	0.013	0.13	0.5	2	25
Barium	1455	U	< 0.005	< 0.0005	20	100	300
Cadmium	1455	U	< 0.00011	< 0.00011	0.04	1	5
Chromium	1455	U	0.0050	0.049	0.5	10	70
Copper	1455	U	0.0043	0.043	2	50	100
Mercury	1455	U	< 0.00005	< 0.00005	0.01	0.2	2
Molybdenum	1455	U	0.0061	0.061	0.5	10	30
Nickel	1455	U	0.0043	0.043	0.4	10	40
Lead	1455	U	< 0.0005	< 0.0005	0.5	10	50
Antimony	1455	U	0.0015	0.015	0.06	0.7	5
Selenium	1455	U	< 0.0005	< 0.0005	0.1	0.5	7
Zinc	1455	U	< 0.003	< 0.003	4	50	200
Chloride	1220	U	< 1.0	< 10	800	15000	25000
Fluoride	1220	U	0.084	< 1.0	10	150	500
Sulphate	1220	U	< 1.0	< 10	1000	20000	50000
Total Dissolved Solids	1020	N	72	710	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	12	120	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	18

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: Dalguise House Monkstown Dublin

Chemtest Job No:	22-13843				**Landfill Waste Acceptance Criteria Limits**		
Chemtest Sample ID:	1410304						
Sample Ref:					**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Sample ID:							
Sample Location:	WS02						
Top Depth(m):	1.0						
Bottom Depth(m):	2.0						
Sampling Date:	07-Apr-2022						
Determinand	**SOP**	**Accred.**	**Units**				
Total Organic Carbon	2625	U	%	1.3	3	5	6
Loss On Ignition	2610	U	%	2.2	--	--	10
Total BTEX	2760	U	mg/kg	< 0.010	6	--	--
Total PCBs (7 congeners)	2815	N	mg/kg	< 0.0010	1	--	--
TPH Total WAC	2670	U	mg/kg	< 10	500	--	--
Total Of 17 PAH's	2800	N	mg/kg	< 0.20	100	--	--
pH	2010	U		8.6	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.029	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455	U	0.0068	0.068	0.5	2	25
Barium	1455	U	< 0.005	< 0.0005	20	100	300
Cadmium	1455	U	< 0.00011	< 0.00011	0.04	1	5
Chromium	1455	U	0.0047	0.047	0.5	10	70
Copper	1455	U	0.0042	0.042	2	50	100
Mercury	1455	U	< 0.00005	< 0.00005	0.01	0.2	2
Molybdenum	1455	U	0.018	0.18	0.5	10	30
Nickel	1455	U	0.0040	0.040	0.4	10	40
Lead	1455	U	< 0.0005	< 0.0005	0.5	10	50
Antimony	1455	U	< 0.0005	< 0.0005	0.06	0.7	5
Selenium	1455	U	< 0.0005	< 0.0005	0.1	0.5	7
Zinc	1455	U	< 0.003	< 0.003	4	50	200
Chloride	1220	U	< 1.0	< 10	800	15000	25000
Fluoride	1220	U	0.12	1.2	10	150	500
Sulphate	1220	U	< 1.0	< 10	1000	20000	50000
Total Dissolved Solids	1020	N	65	650	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	19	190	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	17

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: Dalguise House Monkstown Dublin

Chemtest Job No:	22-13843				**Landfill Waste Acceptance Criteria Limits**		
Chemtest Sample ID:	1410305						
Sample Ref:					**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Sample ID:							
Sample Location:	WS03						
Top Depth(m):	0.0						
Bottom Depth(m):	1.0						
Sampling Date:	07-Apr-2022						
Determinand	**SOP**	**Accred.**	**Units**				
Total Organic Carbon	2625	U	%	0.79	3	5	6
Loss On Ignition	2610	U	%	2.7	--	--	10
Total BTEX	2760	U	mg/kg	< 0.010	6	--	--
Total PCBs (7 congeners)	2815	N	mg/kg	< 0.0010	1	--	--
TPH Total WAC	2670	U	mg/kg	< 10	500	--	--
Total Of 17 PAH's	2800	N	mg/kg	< 0.20	100	--	--
pH	2010	U		9.1	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.025	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455	U	0.0009	0.0093	0.5	2	25
Barium	1455	U	0.006	0.057	20	100	300
Cadmium	1455	U	< 0.00011	< 0.00011	0.04	1	5
Chromium	1455	U	0.0052	0.052	0.5	10	70
Copper	1455	U	0.0035	0.035	2	50	100
Mercury	1455	U	< 0.00005	< 0.00005	0.01	0.2	2
Molybdenum	1455	U	0.0049	0.049	0.5	10	30
Nickel	1455	U	0.0041	0.041	0.4	10	40
Lead	1455	U	0.0006	0.0062	0.5	10	50
Antimony	1455	U	< 0.0005	< 0.0005	0.06	0.7	5
Selenium	1455	U	< 0.0005	< 0.0005	0.1	0.5	7
Zinc	1455	U	0.008	0.081	4	50	200
Chloride	1220	U	< 1.0	< 10	800	15000	25000
Fluoride	1220	U	0.47	4.7	10	150	500
Sulphate	1220	U	< 1.0	< 10	1000	20000	50000
Total Dissolved Solids	1020	N	59	580	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	12	120	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	12

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: Dalguise House Monkstown Dublin

Chemtest Job No:	22-13843				**Landfill Waste Acceptance Criteria Limits**		
Chemtest Sample ID:	1410306						
Sample Ref:					**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Sample ID:							
Sample Location:	WS03						
Top Depth(m):	1.0						
Bottom Depth(m):	2.0						
Sampling Date:	07-Apr-2022						
Determinand	**SOP**	**Accred.**	**Units**				
Total Organic Carbon	2625	U	%	0.21	3	5	6
Loss On Ignition	2610	U	%	2.4	--	--	10
Total BTEX	2760	U	mg/kg	< 0.010	6	--	--
Total PCBs (7 congeners)	2815	N	mg/kg	< 0.0010	1	--	--
TPH Total WAC	2670	U	mg/kg	< 10	500	--	--
Total Of 17 PAH's	2800	N	mg/kg	< 0.20	100	--	--
pH	2010	U		8.9	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.066	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455	U	0.0004	0.0038	0.5	2	25
Barium	1455	U	< 0.005	< 0.0005	20	100	300
Cadmium	1455	U	< 0.00011	< 0.00011	0.04	1	5
Chromium	1455	U	0.0048	0.048	0.5	10	70
Copper	1455	U	0.0022	0.022	2	50	100
Mercury	1455	U	< 0.00005	< 0.00005	0.01	0.2	2
Molybdenum	1455	U	0.0006	0.0063	0.5	10	30
Nickel	1455	U	0.0032	0.032	0.4	10	40
Lead	1455	U	< 0.0005	< 0.0005	0.5	10	50
Antimony	1455	U	< 0.0005	< 0.0005	0.06	0.7	5
Selenium	1455	U	< 0.0005	< 0.0005	0.1	0.5	7
Zinc	1455	U	< 0.003	< 0.003	4	50	200
Chloride	1220	U	< 1.0	< 10	800	15000	25000
Fluoride	1220	U	0.060	< 1.0	10	150	500
Sulphate	1220	U	< 1.0	< 10	1000	20000	50000
Total Dissolved Solids	1020	N	26	260	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	< 2.5	< 50	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	12

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: Dalguise House Monkstown Dublin

Chemtest Job No:	22-13843				**Landfill Waste Acceptance Criteria Limits**		
Chemtest Sample ID:	1410307						
Sample Ref:					**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Sample ID:							
Sample Location:	WS03						
Top Depth(m):	2.0						
Bottom Depth(m):	3.0						
Sampling Date:	07-Apr-2022						
Determinand	**SOP**	**Accred.**	**Units**				
Total Organic Carbon	2625	U	%	0.57	3	5	6
Loss On Ignition	2610	U	%	3.0	--	--	10
Total BTEX	2760	U	mg/kg	< 0.010	6	--	--
Total PCBs (7 congeners)	2815	N	mg/kg	< 0.0010	1	--	--
TPH Total WAC	2670	U	mg/kg	< 10	500	--	--
Total Of 17 PAH's	2800	N	mg/kg	< 0.20	100	--	--
pH	2010	U		8.9	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.037	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455	U	0.0002	0.0023	0.5	2	25
Barium	1455	U	< 0.005	< 0.0005	20	100	300
Cadmium	1455	U	< 0.00011	< 0.00011	0.04	1	5
Chromium	1455	U	0.0046	0.046	0.5	10	70
Copper	1455	U	0.0021	0.021	2	50	100
Mercury	1455	U	< 0.00005	< 0.00005	0.01	0.2	2
Molybdenum	1455	U	0.0017	0.017	0.5	10	30
Nickel	1455	U	0.0032	0.032	0.4	10	40
Lead	1455	U	< 0.0005	< 0.0005	0.5	10	50
Antimony	1455	U	< 0.0005	< 0.0005	0.06	0.7	5
Selenium	1455	U	< 0.0005	< 0.0005	0.1	0.5	7
Zinc	1455	U	< 0.003	< 0.003	4	50	200
Chloride	1220	U	< 1.0	< 10	800	15000	25000
Fluoride	1220	U	0.052	< 1.0	10	150	500
Sulphate	1220	U	1.1	11	1000	20000	50000
Total Dissolved Solids	1020	N	26	260	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	< 2.5	< 50	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	9.6

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: Dalguise House Monkstown Dublin

Chemtest Job No:	22-13843				**Landfill Waste Acceptance Criteria Limits**		
Chemtest Sample ID:	1410308						
Sample Ref:					**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Sample ID:							
Sample Location:	WS04						
Top Depth(m):	0.0						
Bottom Depth(m):	1.0						
Sampling Date:	07-Apr-2022						
Determinand	**SOP**	**Accred.**	**Units**				
Total Organic Carbon	2625	U	%	0.62	3	5	6
Loss On Ignition	2610	U	%	2.6	--	--	10
Total BTEX	2760	U	mg/kg	< 0.010	6	--	--
Total PCBs (7 congeners)	2815	N	mg/kg	< 0.0010	1	--	--
TPH Total WAC	2670	U	mg/kg	< 10	500	--	--
Total Of 17 PAH's	2800	N	mg/kg	1.5	100	--	--
pH	2010	U		7.9	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.067	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455	U	0.0004	0.0039	0.5	2	25
Barium	1455	U	< 0.005	< 0.0005	20	100	300
Cadmium	1455	U	< 0.00011	< 0.00011	0.04	1	5
Chromium	1455	U	0.0048	0.048	0.5	10	70
Copper	1455	U	0.0026	0.026	2	50	100
Mercury	1455	U	< 0.00005	< 0.00005	0.01	0.2	2
Molybdenum	1455	U	0.0008	0.0080	0.5	10	30
Nickel	1455	U	0.0035	0.035	0.4	10	40
Lead	1455	U	< 0.0005	< 0.0005	0.5	10	50
Antimony	1455	U	< 0.0005	< 0.0005	0.06	0.7	5
Selenium	1455	U	< 0.0005	< 0.0005	0.1	0.5	7
Zinc	1455	U	< 0.003	< 0.003	4	50	200
Chloride	1220	U	< 1.0	< 10	800	15000	25000
Fluoride	1220	U	< 0.050	< 1.0	10	150	500
Sulphate	1220	U	< 1.0	< 10	1000	20000	50000
Total Dissolved Solids	1020	N	26	260	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	2.7	< 50	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	11

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: Dalguise House Monkstown Dublin

					Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	22-13843						
Chemtest Sample ID:	1410309						
Sample Ref:							
Sample ID:							
Sample Location:	WS04						
Top Depth(m):	1.0						
Bottom Depth(m):	2.0						
Sampling Date:	07-Apr-2022				**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Determinand	**SOP**	**Accred.**	**Units**				
Total Organic Carbon	2625	U	%	0.26	3	5	6
Loss On Ignition	2610	U	%	2.1	--	--	10
Total BTEX	2760	U	mg/kg	< 0.010	6	--	--
Total PCBs (7 congeners)	2815	N	mg/kg	< 0.0010	1	--	--
TPH Total WAC	2670	U	mg/kg	< 10	500	--	--
Total Of 17 PAH's	2800	N	mg/kg	< 0.20	100	--	--
pH	2010	U		8.1	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.050	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455	U	0.0003	0.0028	0.5	2	25
Barium	1455	U	< 0.005	< 0.0005	20	100	300
Cadmium	1455	U	< 0.00011	< 0.00011	0.04	1	5
Chromium	1455	U	0.0051	0.051	0.5	10	70
Copper	1455	U	0.0027	0.027	2	50	100
Mercury	1455	U	< 0.00005	< 0.00005	0.01	0.2	2
Molybdenum	1455	U	0.0013	0.013	0.5	10	30
Nickel	1455	U	0.0035	0.035	0.4	10	40
Lead	1455	U	< 0.0005	< 0.0005	0.5	10	50
Antimony	1455	U	< 0.0005	< 0.0005	0.06	0.7	5
Selenium	1455	U	< 0.0005	< 0.0005	0.1	0.5	7
Zinc	1455	U	< 0.003	< 0.003	4	50	200
Chloride	1220	U	< 1.0	< 10	800	15000	25000
Fluoride	1220	U	< 0.050	< 1.0	10	150	500
Sulphate	1220	U	< 1.0	< 10	1000	20000	50000
Total Dissolved Solids	1020	N	26	260	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	2.6	< 50	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	9.5

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: Dalguise House Monkstown Dublin

Chemtest Job No:	22-13843				**Landfill Waste Acceptance Criteria Limits**		
Chemtest Sample ID:	1410310						
Sample Ref:					**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Sample ID:							
Sample Location:	WS05						
Top Depth(m):	0.0						
Bottom Depth(m):	1.0						
Sampling Date:	07-Apr-2022						
Determinand	**SOP**	**Accred.**	**Units**				
Total Organic Carbon	2625	U	%	0.49	3	5	6
Loss On Ignition	2610	U	%	2.9	--	--	10
Total BTEX	2760	U	mg/kg	< 0.010	6	--	--
Total PCBs (7 congeners)	2815	N	mg/kg	< 0.0010	1	--	--
TPH Total WAC	2670	U	mg/kg	< 10	500	--	--
Total Of 17 PAH's	2800	N	mg/kg	< 0.20	100	--	--
pH	2010	U		8.1	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.076	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455	U	0.0003	0.0026	0.5	2	25
Barium	1455	U	< 0.005	< 0.0005	20	100	300
Cadmium	1455	U	< 0.00011	< 0.00011	0.04	1	5
Chromium	1455	U	0.0049	0.049	0.5	10	70
Copper	1455	U	0.0022	0.022	2	50	100
Mercury	1455	U	< 0.00005	< 0.00005	0.01	0.2	2
Molybdenum	1455	U	0.0004	0.0045	0.5	10	30
Nickel	1455	U	0.0035	0.035	0.4	10	40
Lead	1455	U	< 0.0005	< 0.0005	0.5	10	50
Antimony	1455	U	< 0.0005	< 0.0005	0.06	0.7	5
Selenium	1455	U	< 0.0005	< 0.0005	0.1	0.5	7
Zinc	1455	U	< 0.003	< 0.003	4	50	200
Chloride	1220	U	< 1.0	< 10	800	15000	25000
Fluoride	1220	U	< 0.050	< 1.0	10	150	500
Sulphate	1220	U	< 1.0	< 10	1000	20000	50000
Total Dissolved Solids	1020	N	13	130	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	2.6	< 50	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	15

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: Dalguise House Monkstown Dublin

					Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	22-13843						
Chemtest Sample ID:	1410311						
Sample Ref:							
Sample ID:							
Sample Location:	WS05						
Top Depth(m):	1.0				Inert Waste Landfill	Stable, Non-reactive hazardous waste in non-hazardous Landfill	Hazardous Waste Landfill
Bottom Depth(m):	2.0						
Sampling Date:	07-Apr-2022						
Determinand	**SOP**	**Accred.**	**Units**				
Total Organic Carbon	2625	U	%	0.63	3	5	6
Loss On Ignition	2610	U	%	2.3	--	--	10
Total BTEX	2760	U	mg/kg	< 0.010	6	--	--
Total PCBs (7 congeners)	2815	N	mg/kg	< 0.0010	1	--	--
TPH Total WAC	2670	U	mg/kg	< 10	500	--	--
Total Of 17 PAH's	2800	N	mg/kg	< 0.20	100	--	--
pH	2010	U		8.1	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.073	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455	U	< 0.0002	< 0.0002	0.5	2	25
Barium	1455	U	< 0.005	< 0.0005	20	100	300
Cadmium	1455	U	< 0.00011	< 0.00011	0.04	1	5
Chromium	1455	U	0.0042	0.042	0.5	10	70
Copper	1455	U	0.0018	0.019	2	50	100
Mercury	1455	U	< 0.00005	< 0.00005	0.01	0.2	2
Molybdenum	1455	U	0.0016	0.016	0.5	10	30
Nickel	1455	U	0.0027	0.027	0.4	10	40
Lead	1455	U	< 0.0005	< 0.0005	0.5	10	50
Antimony	1455	U	< 0.0005	< 0.0005	0.06	0.7	5
Selenium	1455	U	< 0.0005	< 0.0005	0.1	0.5	7
Zinc	1455	U	< 0.003	< 0.003	4	50	200
Chloride	1220	U	< 1.0	< 10	800	15000	25000
Fluoride	1220	U	< 0.050	< 1.0	10	150	500
Sulphate	1220	U	< 1.0	< 10	1000	20000	50000
Total Dissolved Solids	1020	N	26	260	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	< 2.5	< 50	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	11

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: Dalguise House Monkstown Dublin

Chemtest Job No:	22-13843				**Landfill Waste Acceptance Criteria Limits**		
Chemtest Sample ID:	1410312						
Sample Ref:					**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Sample ID:							
Sample Location:	WS05						
Top Depth(m):	2.0						
Bottom Depth(m):	3.0						
Sampling Date:	07-Apr-2022						
Determinand	**SOP**	**Accred.**	**Units**				
Total Organic Carbon	2625	U	%	0.55	3	5	6
Loss On Ignition	2610	U	%	2.2	--	--	10
Total BTEX	2760	U	mg/kg	< 0.010	6	--	--
Total PCBs (7 congeners)	2815	N	mg/kg	< 0.0010	1	--	--
TPH Total WAC	2670	U	mg/kg	< 10	500	--	--
Total Of 17 PAH's	2800	N	mg/kg	< 0.20	100	--	--
pH	2010	U		8.2	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.13	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455	U	< 0.0002	< 0.0002	0.5	2	25
Barium	1455	U	< 0.005	< 0.0005	20	100	300
Cadmium	1455	U	< 0.00011	< 0.00011	0.04	1	5
Chromium	1455	U	0.0045	0.045	0.5	10	70
Copper	1455	U	0.0024	0.024	2	50	100
Mercury	1455	U	< 0.00005	< 0.00005	0.01	0.2	2
Molybdenum	1455	U	0.0012	0.012	0.5	10	30
Nickel	1455	U	0.0034	0.034	0.4	10	40
Lead	1455	U	< 0.0005	< 0.0005	0.5	10	50
Antimony	1455	U	< 0.0005	< 0.0005	0.06	0.7	5
Selenium	1455	U	< 0.0005	< 0.0005	0.1	0.5	7
Zinc	1455	U	< 0.003	< 0.003	4	50	200
Chloride	1220	U	< 1.0	< 10	800	15000	25000
Fluoride	1220	U	< 0.050	< 1.0	10	150	500
Sulphate	1220	U	< 1.0	< 10	1000	20000	50000
Total Dissolved Solids	1020	N	26	260	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	< 2.5	< 50	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	9.4

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Test Methods

SOP	Title	Parameters included	Method summary
1010	pH Value of Waters	pH	pH Meter
1020	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Conductivity Meter
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.
1455	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).
1610	Total/Dissolved Organic Carbon in Waters	Organic Carbon	TOC Analyser using Catalytic Oxidation
1800	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Waters by GC-MS	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Pentane extraction / GCMS detection
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.
2010	pH Value of Soils	pH	pH Meter
2015	Acid Neutralisation Capacity	Acid Reserve	Titration
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2180	Sulphur (Elemental) in Soils by HPLC	Sulphur	Dichloromethane extraction / HPLC with UV detection
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry
2300	Cyanides & Thiocyanate in Soils	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Allkaline extraction followed by colorimetric determination using Automated Flow Injection Analyser.
2325	Sulphide in Soils	Sulphide	Steam distillation with sulphuric acid / analysis by 'Aquakem 600' Discrete Analyser, using N,N–dimethyl-p-phenylenediamine.
2430	Total Sulphate in soils	Total Sulphate	Acid digestion followed by determination of sulphate in extract by ICP-OES.
2450	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.
2490	Hexavalent Chromium in Soils	Chromium [VI]	Soil extracts are prepared by extracting dried and ground soil samples into boiling water. Chromium [VI] is determined by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
2610	Loss on Ignition	loss on ignition (LOI)	Determination of the proportion by mass that is lost from a soil by ignition at 550°C.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.

Test Methods

SOP	Title	Parameters included	Method summary
2670	Total Petroleum Hydrocarbons (TPH) in Soils by GC-FID	TPH (C6–C40); optional carbon banding, e.g. 3-band – GRO, DRO & LRO*TPH C8–C40	Dichloromethane extraction / GC-FID
2680	TPH A/A Split	Aliphatics: >C5–C6, >C6–C8,>C8–C10, >C10–C12, >C12–C16, >C16–C21, >C21–C35, >C35– C44Aromatics: >C5–C7, >C7–C8, >C8– C10, >C10–C12, >C12–C16, >C16– C21, >C21– C35, >C35– C44	Dichloromethane extraction / GCxGC FID detection
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2800	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-MS	Acenaphthene*; Acenaphthylene; Anthracene*; Benzo[a]Anthracene*; Benzo[a]Pyrene*; Benzo[b]Fluoranthene*; Benzo[ghi]Perylene*; Benzo[k]Fluoranthene; Chrysene*; Dibenz[ah]Anthracene; Fluoranthene*; Fluorene*; Indeno[123cd]Pyrene*; Naphthalene*; Phenanthrene*; Pyrene*	Dichloromethane extraction / GC-MS
2815	Polychlorinated Biphenyls (PCB) ICES7Congeners in Soils by GC-MS	ICES7 PCB congeners	Acetone/Hexane extraction / GC-MS
2920	Phenols in Soils by HPLC	Phenolic compounds including Resorcinol, Phenol, Methylphenols, Dimethylphenols, 1-Naphthol and TrimethylphenolsNote: chlorophenols are excluded.	60:40 methanol/water mixture extraction, followed by HPLC determination using electrochemical detection.
640	Characterisation of Waste (Leaching C10)	Waste material including soil, sludges and granular waste	ComplianceTest for Leaching of Granular Waste Material and Sludge

Report Information

Key	
U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"
SOP	Standard operating procedure
LOD	Limit of detection

Comments or interpretations are beyond the scope of UKAS accreditation
The results relate only to the items tested
Uncertainty of measurement for the determinands tested are available upon request
None of the results in this report have been recovery corrected
All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis
All Asbestos testing is performed at the indicated laboratory
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied
B - Sample age exceeds stability time (sampling to extraction)
C - Sample not received in appropriate containers
D - Broken Container
E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 30 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.com

Appendix 10

Site Plans

Dalguise House
Exploratory hole locations
Legend
Borehole/Rotary Location
Plate test
Foundation pit
Soakaway test
Trial pit
RC09
SA01
RC08
TP26
SA02
SA03
RC07
FP14
BH06
CBR03
TP25
BH05
TP24
TP23
CBR02
FP12
BH04
TP21
BH03
CBR01
TP22
SA05
SA04
FP13
FP09
FP08
FP05
BH02
FP04
SA06
FP02
BH01
FP03
FP01
Southdene
Arundel
The Beeches
Kenilworth Way
Richmond Park
Brook Cl
Ave
Google Earth
N
100 m


Dalguise House
Window Sample Locations
Legend
Window Sample
WS01
WS02
WS03
WS04
WS05
N
100 m
Google Earth

APPENDIX 9.3

WASTE CHARACTERISATION ASSESSMENT

(PREPARED BY O'CALLAGHAN MORAN & ASSOCIATES, JUNE 2023)

Unit 15
Melbourne Business Park
Model Farm Road
Cork T12 WR89

T: 021 434 5366
E:admin@ocallaghanmoran.com
www.ocallaghanmoran.com

Waste Characterisation Assessment

Dalguise House

Clifton Lane

Monkstown

Co. Dublin

Prepared For: -

IGSL Limited
Unit F
M7 Business Park
Naas
County Kildare

Prepared By: -

O'Callaghan Moran & Associates
Unit 15 Melbourne Business Park
Model Farm Road
Cork

June 2023

Project	Waste Characterisation: Dalguise House, Monkstown			
Client	IGSL Limited			
Report No	Date	Status	Prepared By	Reviewed By
220011801	13/05/2022	Final	Austin Hynes MSc PGeo	Sean Moran B.Sc. MSc
220011802	16/06/2023	Final	Austin Hynes MSc PGeo	Sean Moran B.Sc. MSc

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APPENDICES

1 INTRODUCTION

IGSL Limited requested O'Callaghan Moran & Associates (OCM) to undertake a waste characterisation assessment of samples of made ground and natural ground collected from six (6 No.) trial pits, six (6 No.) cable percussion and five (5 No.) window sample boreholes in March 2022 at a site at Dalguise House, Monkstown, Co. Dublin.

A second round of nine (9 No.) composite samples were collected from five (5 No.) trial pits in April 2023. IGSL Limited requested O'Callaghan Moran & Associates (OCM) to update the original waste characterisation assessment to include for these samples.

1.1 Methodology

IGSL provided a description of the ground conditions and collected samples of the soils from the trial pit and borehole locations. The samples were analysed at an accredited laboratory and the results formed the basis for a waste classification assessment, which was undertaken by OCM in accordance with the Environmental Protection Agency (EPA) Guidelines on the Classification of Waste (2015).

2 WASTE CLASSIFICATION ASSESSMENT

2.1 Soil Sampling and Laboratory Analysis

2.1.1 *Site Investigation*

The initial site investigation was completed by IGSL Limited in March 2022 and included the collection of forty two composite samples from six (6 No.) cable percussion boreholes, six (6 No.) trial pits and five (5 No.) window sample boreholes. The subsequent site investigation was completed in April 2023 and included the collection of nine (9 No.) composite samples were collected from five (5 No.) trial pits. The locations are shown on figure 2.1. The logs are in Appendix 1.

There is topsoil at the surface of all locations with the exception of BH01 and BH02A. There is Made Ground composed of sandy CLAY at the surface of BH01 and GRAVEL at the surface of BH02A.

The subsurface of BH01, TP23 and WS03 is composed of Made Ground underlain by Natural Ground. The Made Ground at BH01 is composed of sandy CLAY to 1.60 mbgl. The Made Ground at TP23 is composed of sandy gravelly CLAY to 0.70 mbgl which is underlain by clayey gravelly SAND with cobble content to 1.40 mbgl. The Made Ground at WS03 is composed of sandy gravelly CLAY to 1.20 mbgl.

The Natural Ground at all locations is composed of firm sandy gravelly CLAY with some cobble content which becomes stiff to very stiff at depths greater than 2.00 mbgl. The maximum depth reached was 10.00 mbgl in BH02A

The Made Ground contains rare non-natural material including brick, ceramic and metal fragments <2% of the soil matrix.

2.1.2 *Sample Collection*

IGSL collected the samples and placed them in laboratory prepared containers that were stored in coolers prior to shipment to Chemtest Ltd.

2.1.3 *Laboratory Analysis*

The samples were tested for Total Heavy Metals, Total Organic Carbon (TOC), BTEX (benzene, toluene, ethylbenzene and xylene) aliphatic and aromatic hydrocarbons, Polychlorinated Biphenyls (PCB), Mineral Oil, Polyaromatic Hydrocarbons (PAH) and asbestos. Leachate generated from the samples was tested for arsenic, barium, cadmium, chromium, copper, mercury, molybdenum, nickel, lead, antimony, selenium and zinc, chloride, fluoride, soluble sulphate, phenols, dissolved organic carbon (DOC), total dissolved solids (TDS).

This parameter range facilitates an assessment of the hazardous properties of the waste, and also allows a determination of appropriate off-site management options based on the Waste Acceptance Criteria (WAC) applied by landfill operators.

The analytical methods were all ISO/CEN approved and the method detection limits were below the relevant guidance/threshold values. The full laboratory report is in Appendix 2.

2.2 Waste Classification

The Haz Waste Online Classification Engine, developed in the UK by One Touch Data Ltd, was used to determine the waste classification. This tool was developed specifically to establish whether waste is non-hazardous or hazardous and has been approved for use in Ireland by the Environmental Protection Agency.

The full Waste Classification Reports are in Appendix 3 and the results are summarised in Table 2.1 and 2.2.

Table 2.1 Waste Classification March 2022

Sample No.	Depth	Classification	LoW Code	Sample No.	Depth	Classification	LoW Code
BH01	1.0	Non-Hazardous	17 05 04	TP23	0.3	Non-Hazardous	17 05 04
BH01	2.0	Non-Hazardous	17 05 04	TP23	1.2	Non-Hazardous	17 05 04
BH02A	1.00	Non-Hazardous	17 05 04	TP23	2.4	Non-Hazardous	17 05 04
BH02A	2.0	Non-Hazardous	17 05 04	TP24	0.5	Non-Hazardous	17 05 04
BH02A	3.0	Non-Hazardous	17 05 04	TP24	2.0	Non-Hazardous	17 05 04
BH03	1.0	Non-Hazardous	17 05 04	TP25	0.6	Non-Hazardous	17 05 04
BH03	2.00	Non-Hazardous	17 05 04	TP25	1.5	Non-Hazardous	17 05 04
BH03	3.0	Non-Hazardous	17 05 04	TP26	0.5	Non-Hazardous	17 05 04
BH04	1.0	Non-Hazardous	17 05 04	TP26	1.6	Non-Hazardous	17 05 04
BH04	2.0	Non-Hazardous	17 05 04	WS01	0.0-1.0	Non-Hazardous	17 05 04
BH05	1.00	Non-Hazardous	17 05 04	WS01	1.0-2.0	Non-Hazardous	17 05 04
BH05	2.0	Non-Hazardous	17 05 04	WS02	0.0-1.0	Non-Hazardous	17 05 04
BH05	3.0	Non-Hazardous	17 05 04	WS02	1.0-2.0	Non-Hazardous	17 05 04
BH06	1.0	Non-Hazardous	17 05 04	WS03	0.0-1.0	Non-Hazardous	17 05 04
BH06	2.0	Non-Hazardous	17 05 04	WS03	1.0-2.0	Non-Hazardous	17 05 04
TP21	0.75	Non-Hazardous	17 05 04	WS03	2.0-3.0	Non-Hazardous	17 05 04
TP21	1.5	Non-Hazardous	17 05 04	WS04	0.0-1.0	Non-Hazardous	17 05 04
TP21	3.0	Non-Hazardous	17 05 04	WS04	1.0-2.0	Non-Hazardous	17 05 04
TP22	0.6	Non-Hazardous	17 05 04	WS05	0.0-1.0	Non-Hazardous	17 05 04
TP22	1.5	Non-Hazardous	17 05 04	WS05	1.0-2.0	Non-Hazardous	17 05 04
TP22	3.3	Non-Hazardous	17 05 04	WS05	2.0-3.0	Non-Hazardous	17 05 04

Table 2.1 Waste Classification April 2023

Sample No.	Depth	Classification	LoW Code
TP12	0.5-1.0	Non-Hazardous	17 05 04
TP13	0.2-0.6	Non-Hazardous	17 05 04
TP13	0.6-1.0	Non-Hazardous	17 05 04
TP14	0.25-0.9	Non-Hazardous	17 05 04
TP14	1.0-1.2	Non-Hazardous	17 05 04
TP15	0.2-0.7	Non-Hazardous	17 05 04
TP15	0.7-1.0	Non-Hazardous	17 05 04
TP16	0.2-0.9	Non-Hazardous	17 05 04
TP16	0.9-1.2	Non-Hazardous	17 05 04

Asbestos was not detected in any of the samples.

All samples are classified as non-hazardous and the appropriate List of Waste Code is 17 05 04 (Soil and Stone other than those mentioned in 17 05 03*).

O'Callaghan Moran & Associates

O'Callaghan Moran & Associates,
Unit 15 Melbourne Business Park,
Model Farm Road, Cork.
Tel. (021) 4345366

Email: info@ocallaghanmoran.com

Title:

Figure 2.1 Sample Location Plan

Client:

IGSL Limited

2.3 **Waste Acceptance Criteria**

The results of the WAC testing are presented in Table 2.2-2.6, which includes for comparative purposes the WAC for Inert, Non Hazardous and Hazardous Waste Landfills pursuant to Article 16 of the EU Landfill Directive 1999/31/EC Annex II which establishes criteria and procedures for the acceptance of waste at landfills.

All samples meet the inert WAC.

Table 2.2 WAC Results March 2022

Parameter	Unit	BH01	BH02A	BH02A	BH02A	BH03	BH03	BH03	BH04	BH04	BH05	Inert Landfill	Inert Landfill Increased Limits	Non-Hazardous Landfill	Hazardous Landfill
Depth	m	1.0	1.00	2.0	3.0	1.0	2.00	3.0	1.0	2.0	1.00				
Antimony	mg/kg	0.016	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	0.06	0.18	0.7	5
Arsenic	mg/kg	0.068	0.0038	0.0041	0.0025	< 0.0002	< 0.0002	0.0021	< 0.0002	< 0.0002	< 0.0002	0.5	1.5	2	25
Barium	mg/kg	< 0.0005	0.061	0.065	< 0.0005	< 0.0005	< 0.0005	0.064	< 0.0005	< 0.0005	< 0.0005	20	20	100	300
Cadmium	mg/kg	< 0.00011	< 0.00011	< 0.00011	< 0.00011	< 0.00011	< 0.00011	< 0.00011	< 0.00011	< 0.00011	< 0.00011	0.04	0.04	1	5
Chromium	mg/kg	< 0.0005	< 0.0005	0.012	0.0056	0.0074	< 0.0005	0.0071	0.0095	< 0.0005	< 0.0005	0.5	0.5	10	70
Copper	mg/kg	0.064	0.0063	0.012	0.0098	0.0096	< 0.0005	0.0089	0.012	0.0068	0.0070	2	2	50	100
Lead	mg/kg	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	0.5	0.5	10	50
Molybdenum	mg/kg	0.18	0.091	0.077	0.046	0.056	0.081	0.21	0.056	0.32	0.094	0.5	1.5	10	30
Nickel	mg/kg	0.0063	0.0067	< 0.0005	< 0.0005	< 0.0005	0.0080	< 0.0005	< 0.0005	< 0.0005	< 0.0005	0.4	0.4	10	40
Selenium	mg/kg	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	0.1	0.3	0.5	7
Zinc	mg/kg	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	4	4	50	200
Mercury	mg/kg	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	0.01	0.01	0.2	2
Phenol	mg/kg	< 0.30	< 0.30	< 0.30	< 0.30	< 0.30	< 0.30	< 0.30	< 0.30	< 0.30	< 0.30	1	1	NE	NE
Fluoride	mg/kg	1.6	7	3.7	2.2	3.2	1.9	3.4	3.9	3.0	3.5	10	10	150	500
Chloride	mg/kg	12	< 10	< 10	< 10	150	< 10	18	22	< 10	< 10	800	2,400	15,000	25,000
Sulphate	mg/kg	16	33	31	12	120	< 10	26	29	17	< 10	1000*	3,000	20000*	50,000
DOC **	mg/kg	200	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	150	500	500	800	1,000
pH	pH units	8.4	9.9	8.5	8.5	8.6	9.3	8.5	8.6	8.5	8.7	NE	NE	NE	NE
TDS ***	mg/kg	780	710	780	580	580	390	650	900	650	550	4,000	12,000	60,000	100,000
TOC	%	1.8	0.55	0.54	0.39	0.47	0.63	0.39	1.2	0.39	0.3	3	6	NE	6
Benzene	mg/kg	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	6	6	NE	NE
Toluene	mg/kg	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	6	6	NE	NE
Ethylbenzene	mg/kg	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	6	6	NE	NE
m/p-Xylene	mg/kg	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	6	6	NE	NE
o-Xylene	mg/kg	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	6	6	NE	NE
PCB Total of 7	mg/kg	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	1	1	NE	NE
Total 17 PAH's	mg/kg	1.4	4.7	1.7	0.58	< 0.20	< 0.20	0.73	< 0.20	< 0.20	< 0.20	NE	100	NE	NE
Mineral Oil	mg/kg	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	500	500	NE	NE
Asbestos	% mass	NAD	NAD	NAD	NAD	NAD	NAD	NAD	NAD	NAD	NAD	NE	NE	NE	NE

NAD denotes No Asbestos Detected

* denotes sulphate level exceeding inert waste limit may be considered as complying if the TDS value does not exceed 6,000mg/kg at L/S = 10l/kg.

** denotes a higher limit may be accepted provided the DOC values of 500mg/kg is achieved

*** denotes TDS. The values for TDS can be used alternative to sulphate and chloride.

PAH over 1mg/kg and/or Mineral Oil over 50 mg/kg exceeds PAH limit at soil recovery site in Ireland. Material is suitable for Inert Landfill.

Table 2.3 WAC Results March 2022 cont.

Parameter	Unit	BH05	BH05	BH06	BH06	TP21	TP21	TP21	TP22	TP22	TP22	TP23	Inert Landfill	Inert Landfill Increased Limits	Non-Hazardous Landfill	Hazardous Landfill
Depth	m	2.0	3.0	1.0	2.0	0.75	1.5	3.0	0.6	1.5	3.3	0.3				
Antimony	mg/kg	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	0.06	0.18	0.7	5
Arsenic	mg/kg	0.0020	0.0028	0.0022	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	0.0029	0.5	1.5	2	25
Barium	mg/kg	0.064	0.056	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	20	20	100	300
Cadmium	mg/kg	< 0.00011	< 0.00011	< 0.00011	< 0.00011	< 0.00011	< 0.00011	< 0.00011	< 0.00011	< 0.00011	< 0.00011	< 0.00011	0.04	0.04	1	5
Chromium	mg/kg	0.0052	< 0.0005	0.0072	< 0.0005	0.0051	0.0061	< 0.0005	0.0070	0.0073	0.0053	< 0.0005	0.5	0.5	10	70
Copper	mg/kg	0.0096	0.019	0.015	0.0097	0.0051	0.0078	0.0092	0.012	0.0063	0.0075	0.012	2	2	50	100
Lead	mg/kg	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	0.5	0.5	10	50
Molybdenum	mg/kg	0.093	0.16	0.044	0.042	0.092	0.11	0.29	0.017	0.083	0.15	0.0039	0.5	1.5	10	30
Nickel	mg/kg	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	0.4	0.4	10	40
Selenium	mg/kg	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	0.053	< 0.0005	< 0.0005	< 0.0005	< 0.0005	0.1	0.3	0.5	7
Zinc	mg/kg	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	0.025	4	4	50	200
Mercury	mg/kg	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	0.01	0.01	0.2	2
Phenol	mg/kg	< 0.30	< 0.30	< 0.30	< 0.30	< 0.30	< 0.30	< 0.30	< 0.30	< 0.30	< 0.30	< 0.30	1	1	NE	NE
Fluoride	mg/kg	4.2	3.2	3.3	3.2	3.4	2.7	3.5	3.9	2.6	2.6	3.3	10	10	150	500
Chloride	mg/kg	< 10	11	< 10	< 10	< 10	< 10	31	< 10	< 10	< 10	11	800	2,400	15,000	25,000
Sulphate	mg/kg	18	27	23	20	< 10	10	91	< 10	< 10	< 10	< 10	1000*	3,000	20000*	50,000
DOC **	mg/kg	< 50	< 50	< 50	< 50	< 50	< 50	< 50	75	< 50	81	< 50	500	500	800	1,000
pH	pH units	8.7	8.6	8.3	8.5	8.4	8.6	8.6	8.6	8.6	8.3	8.5	NE	NE	NE	NE
TDS ***	mg/kg	650	710	1000	780	450	520	720	650	580	580	260	4,000	12,000	60,000	100,000
TOC	%	0.33	0.46	0.76	0.66	1.8	0.3	0.56	1	0.21	0.85	1.9	3	6	NE	6
Benzene	mg/kg	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	6	6	NE	NE
Toluene	mg/kg	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	6	6	NE	NE
Ethylbenzene	mg/kg	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	6	6	NE	NE
m/p-Xylene	mg/kg	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	6	6	NE	NE
o-Xylene	mg/kg	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	6	6	NE	NE
PCB Total of 7	mg/kg	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	1	1	NE	NE
Total 17 PAH's	mg/kg	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	NE	100	NE	NE
Mineral Oil	mg/kg	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	500	500	NE	NE
Asbestos	% mass	NAD	NAD	NAD	NAD	NAD	NAD	NAD	NAD	NAD	NAD	NAD	NE	NE	NE	NE

NAD denotes No Asbestos Detected

* denotes sulphate level exceeding inert waste limit may be considered as complying if the TDS value does not exceed 6,000mg/kg at L/S = 10l/kg.

** denotes a higher limit may be accepted provided the DOC values of 500mg/kg is achieved

*** denotes TDS. The values for TDS can be used alternative to sulphate and chloride.

PAH over 1mg/kg and/or Mineral Oil over 50 mg/kg exceeds PAH limit at soil recovery site in Ireland. Material is suitable for Inert Landfill.

Table 2.4 WAC Results March 2022 cont.

Parameter	Unit	TP23	TP23	TP24	TP24	TP25	TP25	TP26	TP26	WS01	WS01	Inert Landfill	Inert Landfill Increased Limits	Non-Hazardous Landfill	Hazardous Landfill
Depth	**m**	**1.2**	**2.4**	**0.5**	**2.0**	**0.6**	**1.5**	**0.5**	**1.6**	**0.0-1.0**	**1.0-2.0**				
Antimony	mg/kg	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	0.0054	< 0.0005	0.06	0.18	0.7	5
Arsenic	mg/kg	< 0.0002	< 0.0002	0.0029	< 0.0002	< 0.0002	< 0.0002	< 0.0002	0.0024	0.042	0.0083	0.5	1.5	2	25
Barium	mg/kg	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	0.053	20	20	100	300
Cadmium	mg/kg	< 0.00011	< 0.00011	< 0.00011	< 0.00011	< 0.00011	< 0.00011	< 0.00011	< 0.00011	< 0.00011	< 0.00011	0.04	0.04	1	5
Chromium	mg/kg	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	0.052	0.055	0.5	0.5	10	70
Copper	mg/kg	0.0075	0.0056	0.0094	0.013	0.0080	< 0.0005	< 0.0005	0.0088	0.029	0.028	2	2	50	100
Lead	mg/kg	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	0.0059	0.5	0.5	10	50
Molybdenum	mg/kg	0.0068	0.0025	0.0057	< 0.0002	0.0026	< 0.0002	< 0.0002	< 0.0002	0.12	0.13	0.5	1.5	10	30
Nickel	mg/kg	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	0.037	0.039	0.4	0.4	10	40
Selenium	mg/kg	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	0.1	0.3	0.5	7
Zinc	mg/kg	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	0.031	0.037	4	4	50	200
Mercury	mg/kg	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	0.01	0.01	0.2	2
Phenol	mg/kg	< 0.30	< 0.30	< 0.30	< 0.30	< 0.30	< 0.30	< 0.30	< 0.30	< 0.30	< 0.30	1	1	NE	NE
Fluoride	mg/kg	< 1.0	< 1.0	1.2	< 1.0	1.0	< 1.0	< 1.0	< 1.0	1.3	2.0	10	10	150	500
Chloride	mg/kg	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	12	800	2,400	15,000	25,000
Sulphate	mg/kg	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	1000*	3,000	20000*	50,000
DOC **	mg/kg	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	180	150	500	500	800	1,000
pH	pH units	8.7	8.6	9.3	8.6	8.3	8.5	8.4	8.6	8.5	8.6	NE	NE	NE	NE
TDS ***	mg/kg	260	200	320	200	200	200	65	260	1300	710	4,000	12,000	60,000	100,000
TOC	%	0.4	0.3	0.74	0.33	0.49	0.29	0.99	0.27	1.2	0.63	3	6	NE	6
Benzene	mg/kg	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	6	6	NE	NE
Toluene	mg/kg	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	6	6	NE	NE
Ethylbenzene	mg/kg	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	6	6	NE	NE
m/p-Xylene	mg/kg	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	6	6	NE	NE
o-Xylene	mg/kg	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	6	6	NE	NE
PCB Total of 7	mg/kg	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	1	1	NE	NE
Total 17 PAH's	mg/kg	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	0.27	1.2	NE	100	NE	NE
Mineral Oil	mg/kg	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	500	500	NE	NE
Asbestos	% mass	NAD	NAD	NAD	NAD	NAD	NAD	NAD	NAD	NAD	NAD	NE	NE	NE	NE

NAD denotes No Asbestos Detected

* denotes sulphate level exceeding inert waste limit may be considered as complying if the TDS value does not exceed 6,000mg/kg at L/S = 10l/kg.

** denotes a higher limit may be accepted provided the DOC values of 500mg/kg is achieved

*** denotes TDS. The values for TDS can be used alternative to sulphate and chloride.

PAH over 1mg/kg and/or Mineral Oil over 50 mg/kg exceeds PAH limit at soil recovery site in Ireland. Material is suitable for Inert Landfill.

Table 2.5 WAC Results March 2022 cont.

Parameter	Unit	WS02	WS02	WS03	WS03	WS03	WS04	WS04	WS05	WS05	WS05	Inert Landfill	Inert Landfill Increased Limits	Non-Hazardous Landfill	Hazardous Landfill
Depth	**m**	**0.0-1.0**	**1.0-2.0**	**0.0-1.0**	**1.0-2.0**	**2.0-3.0**	**0.0-1.0**	**1.0-2.0**	**0.0-1.0**	**1.0-2.0**	**2.0-3.0**				
Antimony	mg/kg	0.015	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	0.06	0.18	0.7	5
Arsenic	mg/kg	0.13	0.068	0.0093	0.0038	0.0023	0.0039	0.0028	0.0026	< 0.0002	< 0.0002	0.5	1.5	2	25
Barium	mg/kg	< 0.0005	< 0.0005	0.057	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	20	20	100	300
Cadmium	mg/kg	< 0.00011	< 0.00011	< 0.00011	< 0.00011	< 0.00011	< 0.00011	< 0.00011	< 0.00011	< 0.00011	< 0.00011	0.04	0.04	1	5
Chromium	mg/kg	0.049	0.047	0.052	0.048	0.046	0.048	0.051	0.049	0.042	0.045	0.5	0.5	10	70
Copper	mg/kg	0.043	0.042	0.035	0.022	0.021	0.026	0.027	0.022	0.019	0.024	2	2	50	100
Lead	mg/kg	< 0.0005	< 0.0005	0.0062	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	0.5	0.5	10	50
Molybdenum	mg/kg	0.061	0.18	0.049	0.0063	0.017	0.0080	0.013	0.0045	0.016	0.012	0.5	1.5	10	30
Nickel	mg/kg	0.043	0.040	0.041	0.032	0.032	0.035	0.035	0.035	0.027	0.034	0.4	0.4	10	40
Selenium	mg/kg	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	0.1	0.3	0.5	7
Zinc	mg/kg	< 0.003	< 0.003	0.081	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	4	4	50	200
Mercury	mg/kg	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	0.01	0.01	0.2	2
Phenol	mg/kg	< 0.30	< 0.30	< 0.30	< 0.30	< 0.30	< 0.30	< 0.30	< 0.30	< 0.30	< 0.30	1	1	NE	NE
Fluoride	mg/kg	< 1.0	1.2	4.7	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	10	10	150	500
Chloride	mg/kg	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	800	2,400	15,000	25,000
Sulphate	mg/kg	< 10	< 10	< 10	< 10	11	< 10	< 10	< 10	< 10	< 10	1000*	3,000	20000*	50,000
DOC **	mg/kg	120	190	120	< 50	< 50	< 50	< 50	< 50	< 50	< 50	500	500	800	1,000
pH	pH units	8.4	8.6	9.1	8.9	8.9	7.9	8.1	8.1	8.1	8.2	NE	NE	NE	NE
TDS ***	mg/kg	710	650	580	260	260	260	260	130	260	260	4,000	12,000	60,000	100,000
TOC	%	2.2	1.3	0.79	0.21	0.57	0.62	0.26	0.49	0.63	0.55	3	6	NE	6
Benzene	mg/kg	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	6	6	NE	NE
Toluene	mg/kg	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	6	6	NE	NE
Ethylbenzene	mg/kg	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	6	6	NE	NE
m/p-Xylene	mg/kg	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	6	6	NE	NE
o-Xylene	mg/kg	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	6	6	NE	NE
PCB Total of 7	mg/kg	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	1	1	NE	NE
Total 17 PAH's	mg/kg	1.1	< 0.20	< 0.20	< 0.20	< 0.20	1.5	< 0.20	< 0.20	< 0.20	< 0.20	NE	100	NE	NE
Mineral Oil	mg/kg	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	500	500	NE	NE
Asbestos	% mass	NAD	NAD	NAD	NAD	NAD	NAD	NAD	NAD	NAD	NAD	NE	NE	NE	NE

NAD denotes No Asbestos Detected

* denotes sulphate level exceeding inert waste limit may be considered as complying if the TDS value does not exceed 6,000mg/kg at L/S = 10l/kg.

** denotes a higher limit may be accepted provided the DOC values of 500mg/kg is achieved

*** denotes TDS. The values for TDS can be used alternative to sulphate and chloride.

PAH over 1mg/kg and/or Mineral Oil over 50 mg/kg exceeds PAH limit at soil recovery site in Ireland. Material is suitable for Inert Landfill.

Table 2.6 WAC Results April 2023

Parameter	Unit	TP12	TP13	TP13	TP14	TP14	TP15	TP15	TP16	TP16	Inert Landfill	Inert Landfill Increased Limits	Non-Hazardous Landfill	Hazardous Landfill
Depth	m	**0.5-1.0**	**0.2-0.6**	**0.6-1.0**	**0.25-0.9**	**1.0-1.2**	**0.2-0.7**	**0.7-1.0**	**0.2-0.9**	**0.9-1.2**				
Antimony	mg/kg	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	0.011	0.0059	< 0.0050	< 0.0050	0.06	0.18	0.7	5
Arsenic	mg/kg	0.0030	0.0037	0.0043	0.014	0.0040	0.048	0.031	0.0023	0.022	0.5	1.5	2	25
Barium	mg/kg	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	0.20	< 0.050	20	20	100	300
Cadmium	mg/kg	< 0.0011	< 0.0011	< 0.0011	< 0.0011	< 0.0011	< 0.0011	< 0.0011	< 0.0011	< 0.0011	0.04	0.04	1	5
Chromium	mg/kg	< 0.0050	< 0.0050	< 0.0050	0.020	< 0.0050	< 0.0050	0.025	0.0071	0.0051	0.5	0.5	10	70
Copper	mg/kg	< 0.0050	0.0069	< 0.0050	0.019	0.0067	0.0089	0.027	< 0.0050	0.014	2	2	50	100
Lead	mg/kg	< 0.0050	< 0.0050	< 0.0050	0.013	< 0.0050	< 0.0050	0.013	< 0.0050	< 0.0050	0.5	0.5	10	50
Molybdenum	mg/kg	0.0021	0.0064	0.0077	0.014	0.0060	0.021	0.025	0.0057	0.041	0.5	1.5	10	30
Nickel	mg/kg	< 0.0050	< 0.0050	< 0.0050	0.016	< 0.0050	< 0.0050	0.028	0.012	0.0072	0.4	0.4	10	40
Selenium	mg/kg	< 0.0050	< 0.0050	< 0.0050	0.0063	< 0.0050	< 0.0050	0.0056	0.041	< 0.0050	0.1	0.3	0.5	7
Zinc	mg/kg	0.042	0.052	0.033	0.21	0.067	0.087	0.25	0.033	0.080	4	4	50	200
Mercury	mg/kg	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.01	0.01	0.2	2
Phenol	mg/kg	< 0.30	< 0.30	< 0.30	< 0.30	< 0.30	< 0.30	< 0.30	< 0.30	< 0.30	1	1	NE	NE
Fluoride	mg/kg	1.7	1.2	1.4	1.6	1.5	< 1.0	1.0	< 1.0	< 1.0	10	10	150	500
Chloride	mg/kg	20	< 10	< 10	< 10	< 10	< 10	< 10	58	< 10	800	2,400	15,000	25,000
Sulphate	mg/kg	< 10	< 10	< 10	11	< 10	< 10	11	520	< 10	1000*	3,000	20000*	50,000
DOC **	mg/kg	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	500	500	800	1,000
pH	pH units	8.1	8.2	8.2	8.1	7.8	8.0	8.0	7.9	8.1	NE	NE	NE	NE
TDS ***	mg/kg	350	190	320	180	310	150	130	780	290	4,000	12,000	60,000	100,000
TOC	%	1.2	1.2	1.1	0.8	1.2	2.1	1.3	1.1	1.4	3	6	NE	6
Benzene	mg/kg	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	6	6	NE	NE
Toluene	mg/kg	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	6	6	NE	NE
Ethylbenzene	mg/kg	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	6	6	NE	NE
m/p-Xylene	mg/kg	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	6	6	NE	NE
o-Xylene	mg/kg	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	6	6	NE	NE
PCB Total of 7	mg/kg	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	1	1	NE	NE
Total 17 PAH's	mg/kg	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	3.5	NE	100	NE	NE
Mineral Oil	mg/kg	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	500	500	NE	NE
Asbestos	% mass	NAD	NAD	NAD	NAD	NAD	NAD	NAD	NAD	NAD	NE	NE	NE	NE

NAD denotes No Asbestos Detected

* denotes sulphate level exceeding inert waste limit may be considered as complying if the TDS value does not exceed 6,000mg/kg at L/S = 10l/kg.

** denotes a higher limit may be accepted provided the DOC values of 500mg/kg is achieved

*** denotes TDS. The values for TDS can be used alternative to sulphate and chloride.

PAH over 1mg/kg and/or Mineral Oil over 50 mg/kg exceeds PAH limit at soil recovery site in Ireland. Material is suitable for Inert Landfill.

2.4 Waste Management Options

All of the soils are suitable for retention on site for landscaping or similar purposes. However if the soils are removed from the site options for recovery or disposal are outlined in this section.

The EPA has issued guidance on acceptance criteria for a range of parameters for soil recovery sites. This includes;

- Metals (solid conc. not leachability) in soil and stone (including As, Cd, Cr, Cu, Hg, Ni, Pb, Zn);
- Total organic carbon in soil and stone;
- Total BTEX (benzene, toluene, ethylbenzene, xylenes) in soil and stone;
- Mineral oil in soil and stone;
- Polycyclic aromatic hydrocarbons (PAHs) in soil and stone;
- Polychlorinated Biphenyls (PCBs) in soil and stone;
- Asbestos fibres in soil and stone.

The guidance requires that soils from brownfield sites should not exceed the limits for the parameters specified in Table 2.7 and 2.8. For metals limits have been specified for a range of soil types nationally separated into six domain areas.

Table 2.7 Soil Recovery Site Criteria

Parameter	Limit for Soil Recovery Sites
Total BTEX	0.05 mg/kg
Mineral oil	50 mg/kg
Total PAHs	1 mg/kg
Total PCBs	0.05 mg/kg

The samples from BH01, BH02A (2.00 m), WS01 (1.0-2.0m), WS02 (0.0-1.0m) and WS04 (0.0-1.0m) in the March 2022 investigation exceed the soil recovery criteria for PAH's. The sample from TP16 (0.9-1.2m) in the April 2023 investigation exceeds the soil recovery limits for PAH's. These samples have been classified as (B-1) suitable for inert landfill. All other samples meet the soil recovery criteria.

The soil and stone cannot be sent for recovery if the trigger levels for a particular domain are exceeded. There is however some flexibility in applying the limits. A derogation applies where up to three parameters can exceed the limit for a sample provided the concentration in the samples is no more than 1.5 times the trigger level. The site which is subject to this investigation is located in Domain 6 and the trigger levels are listed in Table 2.8.

Table 2.8 Soil Recovery Trigger Levels for Metal Concentrations

		Domain 6 Trigger Level	1.5 times Trigger Level
Arsenic	**mg/kg**	85.8	128.7
Cadmium	**mg/kg**	2.38	3.57
Chromium	**mg/kg**	54	81
Copper	**mg/kg**	40	60
Mercury	**mg/kg**	0.527	0.7905
Nickel	**mg/kg**	28.2	42.3
Lead	**mg/kg**	108	162
Zinc	**mg/kg**	168	252

The samples from BH01 (1.0m), BH06 (1.0m), WS01, WS02 (0.0-1.0m), WS03 (2.0-3.0m), WS04 (1.0-2.0m) and WS05 from the initial investigation, and the samples from TP12 (0.5-1.0m) and TP13 (0.2-0.6m) from the April 2023 investigation exceed the soil recovery criteria for metal concentrations.

The sample from BH01 (1.0m) exceeds the 1.5 times trigger level for Copper and Zinc.

The remaining samples exceed the 1.5 times trigger level for Nickel.

Waste management options are summarised on Table 2.9 and 2.10. All are subject to approval of the waste management facility operators. Class A material meets the soil recovery criteria and is suitable for removal to a soil recovery facility. Class B-1 wastes are suitable for disposal to inert landfill.

Table 2.9 Waste Management Options March 2022

Sample No.	Depth	LoW Code	Category	Sample No.	Depth	LoW Code	Category
BH01	1.0	17 05 04	B-1	TP23	0.3	17 05 04	A
BH01	2.0	17 05 04	B-1	TP23	1.2	17 05 04	A
BH02A	1.00	17 05 04	B-1	TP23	2.4	17 05 04	A
BH02A	2.0	17 05 04	B-1	TP24	0.5	17 05 04	A
BH02A	3.0	17 05 04	A	TP24	2.0	17 05 04	A
BH03	1.0	17 05 04	A	TP25	0.6	17 05 04	A
BH03	2.00	17 05 04	A	TP25	1.5	17 05 04	A
BH03	3.0	17 05 04	A	TP26	0.5	17 05 04	A
BH04	1.0	17 05 04	A	TP26	1.6	17 05 04	A
BH04	2.0	17 05 04	A	WS01	0.0-1.0	17 05 04	B-1
BH05	1.00	17 05 04	A	WS01	1.0-2.0	17 05 04	B-1
BH05	2.0	17 05 04	A	WS02	0.0-1.0	17 05 04	B-1
BH05	3.0	17 05 04	A	WS02	1.0-2.0	17 05 04	A
BH06	1.0	17 05 04	B-1	WS03	0.0-1.0	17 05 04	A
BH06	2.0	17 05 04	A	WS03	1.0-2.0	17 05 04	A
TP21	0.75	17 05 04	A	WS03	2.0-3.0	17 05 04	B-1
TP21	1.5	17 05 04	A	WS04	0.0-1.0	17 05 04	B-1
TP21	3.0	17 05 04	A	WS04	1.0-2.0	17 05 04	B-1
TP22	0.6	17 05 04	A	WS05	0.0-1.0	17 05 04	B-1
TP22	1.5	17 05 04	A	WS05	1.0-2.0	17 05 04	B-1
TP22	3.3	17 05 04	A	WS05	2.0-3.0	17 05 04	B-1

Table 2.10 Waste Management Options April 2023

Sample No.	Depth	Classification	LoW Code	Category
TP12	0.5-1.0	Non-Hazardous	17 05 04	B-1
TP13	0.2-0.6	Non-Hazardous	17 05 04	B-1
TP13	0.6-1.0	Non-Hazardous	17 05 04	A
TP14	0.25-0.9	Non-Hazardous	17 05 04	A
TP14	1.0-1.2	Non-Hazardous	17 05 04	A
TP15	0.2-0.7	Non-Hazardous	17 05 04	A
TP15	0.7-1.0	Non-Hazardous	17 05 04	A
TP16	0.2-0.9	Non-Hazardous	17 05 04	A
TP16	0.9-1.2	Non-Hazardous	17 05 04	B-1

A	Meets Soil Recovery Criteria
B-1	Suitable for disposal/recovery to Inert Landfill

3 CONCLUSIONS AND RECOMMENDATIONS

3.1 Conclusions

3.1.1 *Waste Classification*

Asbestos was not detected in any of the samples.

All samples are classified as non-hazardous and the appropriate List of Waste Code is 17 05 04 (Soil and Stone other than those mentioned in 17 05 03*).

The recovery/disposal options are discussed in Section 2.4. An excavation plan is contained in Appendix 4.

3.2 Recommendations

OCM recommend that a copy of this report be provided in full to the relevant waste management facilities to which the made ground will be consigned to confirm its suitability for acceptance.

Appendix 1

Borehole, Trial Pit and Window Sample Logs

WINDOW SAMPLE RECORD

REPORT NUMBER 23927

CONTRACT	Dalguise House Development , Monkstown , Co.Dublin	**PROBE NO.**	**WS01**
		SHEET	Sheet 1 of 1
CO-ORDINATES		**DATE DRILLED**	06/03/2022
GROUND LEVEL (mOD)		**DATE LOGGED**	06/03/2022
CLIENT	Greystar Ltd	**SAMPLED BY**	W. Cahill
ENGINEER	Byrne Looby	**LOGGED BY**	C. Moynihan

Depth (m)	Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Depth of Sample Run (m)	Recovery (%)	Blowcount	Vane Test (KPa)	Hand Penetrometer (KPa)
0.0	Topsoil		0.10							
	Firm dark brown slightly gravelly sandy SILT		0.30							
	Soft to firm brown slightly gravelly CLAY. Lens of soft black organic material at 0.70m, likely peat		0.90							
1.0	No recovery, possible material fallout		1.00			0.00-1.00	90			
	Firm brown slightly gravelly CLAY		1.20			0.10-1.00				
	Firm greyish brown slightly sandy very gravelly CLAY. Gravels fine to coarse and sub-angular to sub-rounded		1.50							
2.0	No recovery, possible material fallout		2.00			1.00-2.00	50			
3.0			3.00			2.00-3.00	0			
	Final Depth 3.00m									
4.0										
5.0										

General Remarks

Installations

WINDOW SAMPLE RECORD

REPORT NUMBER 23927

CONTRACT Dalguise House Development , Monkstown , Co.Dublin

PROBE NO. **WS02**
SHEET Sheet 1 of 1

CO-ORDINATES

GROUND LEVEL (mOD)

DATE DRILLED 06/03/2022
DATE LOGGED 06/03/2022

CLIENT Greystar Ltd
ENGINEER Byrne Looby

SAMPLED BY W. Cahill
LOGGED BY C. Moynihan

Depth (m)	Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Depth of Sample Run (m)	Recovery (%)	Blowcount	Vane Test (KPa)	Hand Penetrometer (KPa)
0.0	Topsoil									
	Firm brown slightly sandy gravelly CLAY. Gravels fine to coarse and sub-angular to sub-rounded		0.20							
	No recovery, possible material fallout		0.85			0.00-1.00	85			
1.0	Firm brown slightly sandy slightly gravelly CLAY		1.00			0.20-1.00				
	No recovery, cobble blocking liner		1.60			1.00-2.00	60			
2.0	Final Depth 2.00m		2.00							
3.0										
4.0										
5.0										

General Remarks

Installations

WINDOW SAMPLE RECORD

REPORT NUMBER	23927
CONTRACT	Dalguise House Development , Monkstown , Co.Dublin
PROBE NO.	WS03
SHEET	Sheet 1 of 1
CO-ORDINATES	
GROUND LEVEL (mOD)	
DATE DRILLED	06/03/2022
DATE LOGGED	06/03/2022
CLIENT	Greystar Ltd
ENGINEER	Byrne Looby
SAMPLED BY	W. Cahill
LOGGED BY	C. Moynihan

Depth (m)	Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Depth of Sample Run (m)	Recovery (%)	Blowcount	Vane Test (KPa)	Hand Penetrometer (KPa)
0.0	MADE GROUND - Topsoil		0.20							
	MADE GROUND - Firm greyish brown slightly gravelly slightly sandy SILT		0.30							
	MADE GROUND - Medium dense grey slightly clayey sandy GRAVEL. Gravels fine to coarse and sub-angular to sub-rounded		0.40							
1.0	MADE GROUND - Firm greyish brown slightly sandy gravelly CLAY with rare wood pieces. Gravels fine to coarse and sub-angular to sub-rounded		1.00			0.00-1.00 0.20-1.00	100			
	MADE GROUND - Firm greyish brown slightly sandy gravelly CLAY with rare wood pieces. Gravels fine to coarse and sub-angular to sub-rounded		1.20							
	Soft to firm brownish grey slightly gravelly SAND with gravel lens at 1.60m. Gravel fine to coarse and sub-rounded to rounded. Large limestone cobble included at 1.30m		1.70							
2.0	Stiff to very stiff brownish grey slightly gravelly sandy CLAY. Sand is fine		1.90			1.00-2.00	90			
	No recovery, possible material fallout		2.00							
	Stiff to very stiff brownish grey gravelly sandy CLAY. Sand is fine. Gravely fine to coarse and sub-angular to sub-rounded					2.00-3.00	100			
3.0	Final Depth 3.00m		3.00							
4.0										
5.0										

General Remarks

Installations

WINDOW SAMPLE RECORD

REPORT NUMBER	23927		
CONTRACT	Dalguise House Development , Monkstown , Co.Dublin	**PROBE NO.**	**WS04**
		SHEET	Sheet 1 of 1
CO-ORDINATES		**DATE DRILLED**	06/03/2022
GROUND LEVEL (mOD)		**DATE LOGGED**	06/03/2022
CLIENT	Greystar Ltd	**SAMPLED BY**	W. Cahill
ENGINEER	Byrne Looby	**LOGGED BY**	C. Moynihan

Depth (m)	Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Depth of Sample Run (m)	Recovery (%)	Blowcount	Vane Test (KPa)	Hand Penetrometer (KPa)
0.0	Topsoil									
	Firm brown slightly gravelly slightly sandy SILT		0.30							
	Firm brownish grey slightly gravelly sandy CLAY. Limestone cobble at 0.07m		0.70			0.00-1.00	100			
1.0	Firm brown slightly gravelly very sandy CLAY		1.00			0.30-1.00				
	Medium dense greyish brown slightly clayey very sandy GRAVEL. Gravels fine to coarse and sub-angular to sub-rounded		1.10							
	Stiff greyish brown sandy gravelly CLAY. Gravels fine to coarse and sub-angular to rounded		1.30			1.00-2.00	100			
2.0	Stiff greyish brown sandy gravelly CLAY. Gravels fine to coarse and sub-angular to rounded. Limestone cobbles at 2.0m, 2.20m and 2.30m		2.00							
	No recovery, possible cobble blocking liner		2.30			2.00-3.00	30			
3.0	Final Depth 3.00m		3.00							
4.0										
5.0										

General Remarks

Installations

WINDOW SAMPLE RECORD

REPORT NUMBER 23927

CONTRACT	Dalguise House Development , Monkstown , Co.Dublin	**PROBE NO.**	**WS05**
		SHEET	Sheet 1 of 1
CO-ORDINATES		**DATE DRILLED**	06/03/2022
GROUND LEVEL (mOD)		**DATE LOGGED**	06/03/2022
CLIENT	Greystar Ltd	**SAMPLED BY**	W. Cahill
ENGINEER	Byrne Looby	**LOGGED BY**	C. Moynihan

Depth (m)	Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Depth of Sample Run (m)	Recovery (%)	Blowcount	Vane Test (KPa)	Hand Penetrometer (KPa)
0.0	Topsoil									
	Firm to stiff brown slightly gravelly SILT		0.30							
	Firm greyish brown slightly gravelly sandy CLAY with sand lens at 0.80m and gravel lens at 0.90m. Sand is fine. Gravels are fine to coarse and sub-angular to sub-rounded		0.70			0.00-1.00	100			
1.0	Stiff brown slightly sandy gravelly CLAY. Gravels fine to coarse and angular to sub-rounded		1.00			0.30-1.00				
						1.00-2.00	100			
2.0	Very stiff brown gravelly CLAY. Gravels fine to coarse and sub-angular to sub-rounded		1.95							
	Stiff brown slightly gravelly slightly sandy CLAY		2.00							
	Stiff greyish brown sandy gravelly CLAY. Gravels fine to coarse and sub-angular to sub-rounded		2.40			2.00-3.00	100			
3.0	Stiff greyish brown slightly gravelly sandy CLAY with sand lens at 3.40m. Sand is orange brown and fine		3.00							
	Stiff to very stiff dark grey sandy gravelly CLAY		3.80			3.00-4.00	95			
	No recovery, possible material fallout		3.90							
4.0	Final Depth 4.00m		4.00							
5.0										

General Remarks

Installations

GEOTECHNICAL BORING RECORD

REPORT NUMBER 23927

CONTRACT	Dalguise House Development , Monkstown , Co.Dublin	**BOREHOLE NO.**	**BH01**
		SHEET	Sheet 1 of 1
CO-ORDINATES		**RIG TYPE**	Dando 2000
		BOREHOLE DIAMETER (mm)	200
GROUND LEVEL (mOD)		**BOREHOLE DEPTH (m)**	3.40
DATE COMMENCED	05/03/2022	**DATE COMPLETED**	05/03/2022
CLIENT	Greystar Ltd	**SPT HAMMER REF. NO.**	
ENGINEER	Byrne Looby	**ENERGY RATIO (%)**	
BORED BY	W.Cahill	**PROCESSED BY**	F.C

Description	Legend	Elevation	Depth (m)	Ref. Number	Sample Type	Depth (m)	Recovery	Field Test Results	Standpipe Details
MADE GROUND (Comprised of dark brown sandy SILT/CLAY with metal pieces)			1.60	AA165493	B	1.00		N = 11 (2, 2, 3, 3, 2, 3)	
Firm dark brown sandy SILT/CLAY with occasional gravel			2.90	AA165494	B	2.00		N = 11 (3, 3, 3, 2, 3, 3)	
Very stiff dark brown sandy silty gravelly CLAY			3.40	AA165495	B	3.00		N = 50/150 mm (10, 10, 40, 10)	
Obstruction End of Borehole at 3.40 m									

Depth scale (m): 0, 1, 2, 3, 4, 5, 6, 7, 8, 9

HARD STRATA BORING/CHISELLING

From (m)	To (m)	Time (h)	Comments
3.30	3.40	1.5	

WATER STRIKE DETAILS

Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
					No water strike

INSTALLATION DETAILS

Date	Tip Depth	RZ Top	RZ Base	Type

GROUNDWATER PROGRESS

Date	Hole Depth	Casing Depth	Depth to Water	Comments

REMARKS 1hr Erecting Covid 19 Safe Working Area . CAT scanned location and hand dug inspection pit carried out

Sample Legend
D - Small Disturbed (tub)
B - Bulk Disturbed
LB - Large Bulk Disturbed
Env - Environmental Sample (Jar + Vial + Tub)
UT - Undisturbed 100mm Diameter Sample
P - Undisturbed Piston Sample
W - Water Sample

IGSL BH LOG 23927.GPJ IGSL.GDT 21/3/22

GEOTECHNICAL BORING RECORD

REPORT NUMBER 23927

CONTRACT	Dalguise House Development , Monkstown , Co.Dublin	**BOREHOLE NO.**	**BH02**
		SHEET	Sheet 1 of 1
CO-ORDINATES		**RIG TYPE**	Dando 2000
		BOREHOLE DIAMETER (mm)	200
GROUND LEVEL (mOD)		**BOREHOLE DEPTH (m)**	0.30
DATE COMMENCED	05/03/2022	**DATE COMPLETED**	05/03/2022
CLIENT	Greystar Ltd	**SPT HAMMER REF. NO.**	
ENGINEER	Byrne Looby	**ENERGY RATIO (%)**	
BORED BY	W.Cahill	**PROCESSED BY**	F.C

Depth (m)	Description	Legend	Elevation	Depth (m)	Samples: Ref. Number	Sample Type	Depth (m)	Recovery	Field Test Results	Standpipe Details
0	MADE GROUND (Comprised of fine gravel)			0.30						
	Obstruction - Steel plate noted End of Borehole at 0.30 m									

HARD STRATA BORING/CHISELLING

From (m)	To (m)	Time (h)	Comments
0.30		1	

WATER STRIKE DETAILS

Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
					No water strike

INSTALLATION DETAILS

Date	Tip Depth	RZ Top	RZ Base	Type

GROUNDWATER PROGRESS

Date	Hole Depth	Casing Depth	Depth to Water	Comments

REMARKS 1hr standing due to noise restrictions .1hr Erecting Covid 19 Safe Working Area . CAT scanned location and hand dug inspection pit carried out . Obstruction ecountered. Relocated 1m to BH02A and attempted rebore.

Sample Legend
D - Small Disturbed (tub)
B - Bulk Disturbed
LB - Large Bulk Disturbed
Env - Environmental Sample (Jar + Vial + Tub)
UT - Undisturbed 100mm Diameter Sample
P - Undisturbed Piston Sample
W - Water Sample

GEOTECHNICAL BORING RECORD

REPORT NUMBER 23927

CONTRACT	Dalguise House Development , Monkstown , Co.Dublin	**BOREHOLE NO.**	**BH02A**
		SHEET	Sheet 1 of 1
CO-ORDINATES		**RIG TYPE**	Dando 2000
		BOREHOLE DIAMETER (mm)	200
GROUND LEVEL (mOD)		**BOREHOLE DEPTH (m)**	10.00
DATE COMMENCED	05/03/2022	**DATE COMPLETED**	06/03/2022
CLIENT	Greystar Ltd	**SPT HAMMER REF. NO.**	
ENGINEER	Byrne Looby	**ENERGY RATIO (%)**	
BORED BY	W.Cahill	**PROCESSED BY**	F.C

Depth (m)	Description	Legend	Elevation	Depth (m)	Ref. Number	Sample Type	Depth (m)	Recovery	Field Test Results	Standpipe Details
0	MADE GROUND (Comprised of fine gravel)			0.40						
	Firm dark brown sandy SILT/CLAY with occasional gravel			1.30	AA161951	B	1.00		N = 11 (2, 3, 3, 2, 3, 3)	
	Stiff light brown sandy SILT/CLAY			3.80	AA161952	B	2.00		N = 27 (4, 5, 5, 6, 8, 8)	
					AA161953	B	3.00		N = 28 (5, 6, 6, 7, 7, 8)	
	Stiff dark grey sandy SILT/CLAY			9.20	AA161954	B	4.00		N = 28 (4, 6, 6, 7, 7, 8)	
					AA161955	B	5.00		N = 28 (5, 5, 6, 7, 7, 8)	
					AA161956	B	6.00		N = 29 (6, 6, 7, 7, 8, 7)	
					AA161957	B	7.00		N = 30 (6, 7, 7, 8, 8, 7)	
					AA161958	B	8.00		N = 33 (7, 8, 8, 8, 9, 8)	
					AA161959	B	9.00		N = 40 (8, 8, 9, 10, 10, 11)	
	Very stiff dark grey sandy gravelly SILT/CLAY			10.00						
	End of Borehole at 10.00 m									

HARD STRATA BORING/CHISELLING

From (m)	To (m)	Time (h)	Comments

WATER STRIKE DETAILS

Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
					No water strike

INSTALLATION DETAILS

Date	Tip Depth	RZ Top	RZ Base	Type

GROUNDWATER PROGRESS

Date	Hole Depth	Casing Depth	Depth to Water	Comments

REMARKS 1hr Erecting Covid 19 Safe Working Area . CAT scanned location and hand dug inspection pit carried out

Sample Legend
D - Small Disturbed (tub)
B - Bulk Disturbed
LB - Large Bulk Disturbed
Env - Environmental Sample (Jar + Vial + Tub)
UT - Undisturbed 100mm Diameter Sample
P - Undisturbed Piston Sample
W - Water Sample

GEOTECHNICAL BORING RECORD

REPORT NUMBER 23927

CONTRACT	Dalguise House Development , Monkstown , Co.Dublin	**BOREHOLE NO.**	**BH03**
		SHEET	Sheet 1 of 1
CO-ORDINATES		**RIG TYPE**	Dando 2000
		BOREHOLE DIAMETER (mm)	200
GROUND LEVEL (mOD)		**BOREHOLE DEPTH (m)**	5.50
DATE COMMENCED	03/03/2022	**DATE COMPLETED**	03/03/2022
CLIENT	Greystar Ltd	**SPT HAMMER REF. NO.**	
ENGINEER	Byrne Looby	**ENERGY RATIO (%)**	
BORED BY	W.Cahill	**PROCESSED BY**	F.C

Depth (m)	Description	Legend	Elevation	Depth (m)	Samples: Ref. Number	Samples: Sample Type	Samples: Depth (m)	Samples: Recovery	Field Test Results	Standpipe Details
0	Soft to firm dark brown sandy SILT/CLAY with occasional gravel									
1					AA165493	B	1.00		N = 9 (2, 3, 2, 2, 3, 2)	
2				2.30	AA165494	B	2.00		N = 14 (2, 3, 3, 4, 3, 4)	
	Firm light brown sandy SILT/CLAY with some gravel and occasional cobbles									
3				3.60	AA165495	B	3.00		N = 18 (3, 4, 4, 4, 5, 5)	
	Stiff to very stiff dark grey sandy silty gravelly CLAY with some cobbles and occasional boulders									
4									N = 34 (6, 6, 7, 9, 9, 9)	
5				5.50					N = 48 (7, 8, 10, 10, 13, 15)	
	Obstruction End of Borehole at 5.50 m									
6										
7										
8										
9										

HARD STRATA BORING/CHISELLING

From (m)	To (m)	Time (h)	Comments
5.20	5.50	1.5	

WATER STRIKE DETAILS

Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
					No water strike

INSTALLATION DETAILS

Date	Tip Depth	RZ Top	RZ Base	Type

GROUNDWATER PROGRESS

Date	Hole Depth	Casing Depth	Depth to Water	Comments

REMARKS 1hr Erecting Covid 19 Safe Working Area . CAT scanned location and hand dug inspection pit carried out

Sample Legend
D - Small Disturbed (tub)
B - Bulk Disturbed
LB - Large Bulk Disturbed
Env - Environmental Sample (Jar + Vial + Tub)
UT - Undisturbed 100mm Diameter Sample
P - Undisturbed Piston Sample
W - Water Sample

GEOTECHNICAL BORING RECORD

REPORT NUMBER	23927
CONTRACT	Dalguise House Development , Monkstown , Co.Dublin
BOREHOLE NO.	BH04
SHEET	Sheet 1 of 1
CO-ORDINATES	
GROUND LEVEL (mOD)	
RIG TYPE	Dando 2000
BOREHOLE DIAMETER (mm)	200
BOREHOLE DEPTH (m)	2.50
DATE COMMENCED	03/03/2022
DATE COMPLETED	03/03/2022
CLIENT	Greystar Ltd
ENGINEER	Byrne Looby
SPT HAMMER REF. NO.	
ENERGY RATIO (%)	
BORED BY	W.Cahill
PROCESSED BY	F.C

Depth (m)	Description	Legend	Elevation	Depth (m)	Samples: Ref. Number	Sample Type	Depth (m)	Recovery	Field Test Results	Standpipe Details
0	Dark brown sandy SILT/CLAY with occasional gravel			0.90						
1	Stiff to very stiff light brown sandy SILT/CLAY with some gravel and occasional cobbles				AA165491	B	1.00		N = 23 (4, 4, 5, 5, 6, 7)	
2				2.50	AA165492	B	2.00		N = 40 (6, 7, 7, 8, 10, 15)	
	Obstruction End of Borehole at 2.50 m									
3										
4										
5										
6										
7										
8										
9										

HARD STRATA BORING/CHISELLING

From (m)	To (m)	Time (h)	Comments
2.20	2.50	1.5	

WATER STRIKE DETAILS

Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
					No water strike

INSTALLATION DETAILS

Date	Tip Depth	RZ Top	RZ Base	Type

GROUNDWATER PROGRESS

Date	Hole Depth	Casing Depth	Depth to Water	Comments

REMARKS 1hr Erecting Covid 19 Safe Working Area . CAT scanned location and hand dug inspection pit carried out

Sample Legend
D - Small Disturbed (tub)
B - Bulk Disturbed
LB - Large Bulk Disturbed
Env - Environmental Sample (Jar + Vial + Tub)
UT - Undisturbed 100mm Diameter Sample
P - Undisturbed Piston Sample
W - Water Sample

GEOTECHNICAL BORING RECORD

REPORT NUMBER	23927
CONTRACT	Dalguise House Development , Monkstown , Co.Dublin
BOREHOLE NO.	BH05
SHEET	Sheet 1 of 1
CO-ORDINATES	
GROUND LEVEL (mOD)	
RIG TYPE	Dando 2000
BOREHOLE DIAMETER (mm)	200
BOREHOLE DEPTH (m)	4.20
DATE COMMENCED	07/03/2022
DATE COMPLETED	07/03/2022
CLIENT	Greystar Ltd
ENGINEER	Byrne Looby
SPT HAMMER REF. NO.	
ENERGY RATIO (%)	
BORED BY	W.Cahill
PROCESSED BY	F.C

Depth (m)	Description	Legend	Elevation	Depth (m)	Samples: Ref. Number	Sample Type	Depth (m)	Recovery	Field Test Results	Standpipe Details
0	Dark brown sandy SILT/CLAY with occasional gravel			0.70						
1	Firm to stiff light brown sandy SILT/CLAY with some gravel and occasional cobbles				AA162661	B	1.00		N = 12 (3, 3, 2, 3, 3, 4)	
2					AA162662	B	2.00		N = 20 (3, 4, 4, 5, 5, 6)	
3				3.90	AA162663	B	3.00		N = 24 (4, 4, 5, 6, 6, 7)	
4	Very stiff brown sandy gravelly silty CLAY with occasional cobbles			4.20	AA162664	B	4.00		N = 50/150 mm (16, 9, 33, 17)	
	Obstruction End of Borehole at 4.20 m									
5										
6										
7										
8										
9										

HARD STRATA BORING/CHISELLING

From (m)	To (m)	Time (h)	Comments
2.60	2.90	1	
4.00	4.20	1.5	

WATER STRIKE DETAILS

Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
					No water strike

INSTALLATION DETAILS

Date	Tip Depth	RZ Top	RZ Base	Type

GROUNDWATER PROGRESS

Date	Hole Depth	Casing Depth	Depth to Water	Comments

REMARKS 1hr Erecting Covid 19 Safe Working Area . CAT scanned location and hand dug inspection pit carried out

Sample Legend
D - Small Disturbed (tub)
B - Bulk Disturbed
LB - Large Bulk Disturbed
Env - Environmental Sample (Jar + Vial + Tub)
UT - Undisturbed 100mm Diameter Sample
P - Undisturbed Piston Sample
W - Water Sample

GEOTECHNICAL BORING RECORD

REPORT NUMBER	23927		
CONTRACT	Dalguise House Development , Monkstown , Co.Dublin	**BOREHOLE NO.**	**BH06**
		SHEET	Sheet 1 of 1
CO-ORDINATES		**RIG TYPE**	Dando 2000
		BOREHOLE DIAMETER (mm)	200
GROUND LEVEL (mOD)		**BOREHOLE DEPTH (m)**	2.60
DATE COMMENCED	08/03/2022	**DATE COMPLETED**	08/03/2022
CLIENT	Greystar Ltd	**SPT HAMMER REF. NO.**	
ENGINEER	Byrne Looby	**ENERGY RATIO (%)**	
BORED BY	W.Cahill	**PROCESSED BY**	F.C

Depth (m)	Description	Legend	Elevation	Depth (m)	Samples: Ref. Number	Samples: Sample Type	Samples: Depth (m)	Samples: Recovery	Field Test Results	Standpipe Details
0	Stiff dark brown sandy SILT/CLAY with occasional gravel			1.30	AA165497	B	1.00		N = 25 (3, 3, 4, 6, 6, 9)	
	Stiff to very stiff mottled light brown sandy SILT/CLAY with some gravel and occasional cobbles and large roots			2.60	AA165498	B	2.00		N = 27 (4, 4, 5, 6, 6, 10)	
	Obstruction End of Borehole at 2.60 m									

HARD STRATA BORING/CHISELLING

From (m)	To (m)	Time (h)	Comments
2.40	2.70	1.5	

WATER STRIKE DETAILS

Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
					No water strike

INSTALLATION DETAILS

Date	Tip Depth	RZ Top	RZ Base	Type

GROUNDWATER PROGRESS

Date	Hole Depth	Casing Depth	Depth to Water	Comments

REMARKS 1hr Erecting Covid 19 Safe Working Area . CAT scanned location and hand dug inspection pit carried out

Sample Legend
D - Small Disturbed (tub)
B - Bulk Disturbed
LB - Large Bulk Disturbed
Env - Environmental Sample (Jar + Vial + Tub)
UT - Undisturbed 100mm Diameter Sample
P - Undisturbed Piston Sample
W - Water Sample

TRIAL PIT RECORD

REPORT NUMBER: 23927

CONTRACT	Dalguise House Development , Monkstown , Co.Dublin	**TRIAL PIT NO.**	**TP21**
		SHEET	Sheet 1 of 1
LOGGED BY	S.Hannon	**DATE STARTED**	25/02/2022
CO-ORDINATES	722,790.09 E 728,426.07 N	**DATE COMPLETED**	25/02/2022
GROUND LEVEL (m)	27.87	**EXCAVATION METHOD**	16T Tracked excavator
CLIENT	Greystar Ltd		
ENGINEER	Byrne Looby		

Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Sample Ref	Type	Sample Depth	Vane Test (KPa)	Hand Penetrometer (KPa)
TOPSOIL		0.20	27.67						
Subsoil soft to firm brown slightly sandy gravelly CLAY.		0.40	27.47						
Firm to stiff greyish brown slightly sandy very gravelly CLAY with medium cobble content.		0.90	26.97		AA141843	B	0.75		
Stiff greyish brown slightly sandy very gravelly CLAY with medium cobble content and low boulder content.		2.00	25.87		AA141844	B	1.50		
Stiff to very stiff brown very gravelly CLAY with medium cobble content.		2.70	25.17						
Very stiff black gravelly CLAY with medium cobble content.		3.40	24.47		AA141845	B	3.00		
End of Trial Pit at 3.50m									

Depth scale: 0.0, 1.0, 2.0, 3.0, 4.0

Groundwater Conditions
Dry

Stability
Stable

General Remarks
CAT Scanned location for services

TRIAL PIT RECORD

REPORT NUMBER	23927
CONTRACT	Dalguise House Development , Monkstown , Co.Dublin
TRIAL PIT NO.	TP22
SHEET	Sheet 1 of 1
LOGGED BY	S.Hannon
CO-ORDINATES	722,816.49 E 728,413.39 N
GROUND LEVEL (m)	27.47
DATE STARTED	25/02/2022
DATE COMPLETED	25/02/2022
CLIENT	Greystar Ltd
ENGINEER	Byrne Looby
EXCAVATION METHOD	16T Tracked excavator

Scale	Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples: Sample Ref	Samples: Type	Samples: Depth	Vane Test (KPa)	Hand Penetrometer (KPa)
0.0	TOPSOIL									
	Soft to firm brown slightly sandy very gravelly CLAY.		0.20	27.27		AA141846	B	0.60		
	Firm grey slightly sandy very gravelly CLAY with low cobble content and low boulder content.		0.80	26.67						
1.0	Stiff greyish brown slightly sandy very gravelly CLAY with low cobble content and low boulder content.		1.20	26.27		AA141847	B	1.50-1.60		
2.0										
3.0	End of Trial Pit at 3.30m		3.30	24.17		AA141848	B	3.30		
4.0										

Groundwater Conditions
Seepage at 3 m.

Stability
Stable

General Remarks
CAT Scanned location for services

TRIAL PIT RECORD

REPORT NUMBER	23927
CONTRACT	Dalguise House Development , Monkstown , Co.Dublin
TRIAL PIT NO.	TP23
SHEET	Sheet 1 of 1
LOGGED BY	S.Hannon
CO-ORDINATES	722,843.55 E 728,455.72 N
GROUND LEVEL (m)	25.44
DATE STARTED	25/02/2022
DATE COMPLETED	25/02/2022
CLIENT	Greystar Ltd
ENGINEER	Byrne Looby
EXCAVATION METHOD	16T Tracked excavator

Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples: Sample Ref	Samples: Type	Samples: Depth	Vane Test (KPa)	Hand Penetrometer (KPa)
TOPSOIL		0.20	25.24						
MADE GROUND - Soft to firm slightly sandy gravelly CLAY with low cobble content and rare brick pieces.		0.70	24.74		AA141849	B	0.30		
MADE GROUND - Medium dense grey clayey gravelly sand with medium cobble content and old clay pipe and rare brick pieces.		1.40	24.04		AA141850	B	1.20		
Firm to stiff grey very sandy very gravelly CLAY with medium cobble content.		2.20	23.24						
Stiff to very stiff pale brown gravelly CLAY.		2.80	22.64		AA146801	B	2.40		
Very stiff black gravelly CLAY with medium cobble content.		3.50	21.94		AA146802	B	3.30		
End of Trial Pit at 3.50m									

Groundwater Conditions
Dry

Stability
Stable

General Remarks
CAT Scanned location for services

TRIAL PIT RECORD

REPORT NUMBER	23927
CONTRACT	Dalguise House Development , Monkstown , Co.Dublin
TRIAL PIT NO.	TP24
SHEET	Sheet 1 of 1
LOGGED BY	S.Hannon
CO-ORDINATES	722,818.50 E 728,486.63 N
GROUND LEVEL (m)	25.12
DATE STARTED	01/02/2022
DATE COMPLETED	01/02/2022
CLIENT	Greystar Ltd
ENGINEER	Byrne Looby
EXCAVATION METHOD	16T Tracked excavator

Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples: Sample Ref	Samples: Type	Samples: Depth	Vane Test (KPa)	Hand Penetrometer (KPa)
TOPSOIL		0.25	24.87						
Firm greyish brown slightly sandy very gravelly CLAY with medium cobble content and low boulder content.		0.90	24.22		AA146803	B	0.50-0.70		
Stiff pale brown gravelly CLAY.		1.80	23.32						
Stiff to very stiff pale brown very gravelly CLAY with medium cobble content and low boulder content.		3.00	22.12		AA146804	B	2.00		
Stiff to very stiff grey very gravelly CLAY with medium cobble content and low boulder content. Refusal on boulder in pit. Too little material recovered for a sample.		3.10	22.02						
End of Trial Pit at 3.10m									

Depth scale: 0.0, 1.0, 2.0, 3.0, 4.0

Groundwater Conditions
Dry

Stability
Stable

General Remarks
CAT Scanned location for services

IGSL TP LOG 23927.GPJ IGSL.GDT 5/5/22

TRIAL PIT RECORD

REPORT NUMBER	23927		
CONTRACT	Dalguise House Development , Monkstown , Co.Dublin	**TRIAL PIT NO.**	TP25
		SHEET	Sheet 1 of 1
LOGGED BY	S.Hannon	**DATE STARTED**	01/02/2022
CO-ORDINATES	722,818.50 E 728,486.63 N	**DATE COMPLETED**	01/02/2022
GROUND LEVEL (m)	25.12	**EXCAVATION METHOD**	16T Tracked excavator
CLIENT	Greystar Ltd		
ENGINEER	Byrne Looby		

Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples: Sample Ref	Samples: Type	Samples: Depth	Vane Test (KPa)	Hand Penetrometer (KPa)
TOPSOIL		0.20	24.92						
Soft to firm brown slightly sandy very gravelly CLAY.		0.50	24.62						
Firm to stiff brown slightly sandy gravelly CLAY with medium cobble content.		1.20	23.92		AA146807	B	0.60		
Stiff brown mottled grey slightly sandy gravelly CLAY with medium cobble content and low boulder content.		2.10	23.02		AA146808	B	1.50		
Medium dense moist brown sandy GRAVEL.		2.20	22.92						
Stiff to very stiff brown very gravelly CLAY with medium cobble content.		3.00	22.12						
End of Trial Pit at 2.50m									

Depth scale: 0.0, 1.0, 2.0, 3.0, 4.0

Groundwater Conditions
Dry

Stability
Stable

General Remarks
CAT Scanned location for services

TRIAL PIT RECORD

REPORT NUMBER	23927
CONTRACT	Dalguise House Development , Monkstown , Co.Dublin
TRIAL PIT NO.	TP26
SHEET	Sheet 1 of 1
LOGGED BY	S.Hannon
CO-ORDINATES	722,771.54 E 728,485.55 N
GROUND LEVEL (m)	26.26
DATE STARTED	01/02/2022
DATE COMPLETED	01/02/2022
CLIENT	Greystar Ltd
ENGINEER	Byrne Looby
EXCAVATION METHOD	16T Tracked excavator

Scale (m)	Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Sample Ref	Type	Depth	Vane Test (KPa)	Hand Penetrometer (KPa)
0.0	TOPSOIL									
	Firm brown slightly sandy gravelly CLAY.		0.20	26.06		AA146809	B	0.50		
1.0	Firm to stiff greyish brown slightly sandy very gravelly CLAY with medium cobble content and medium boulder content.		1.00	25.26		AA146810	B	1.60		
2.0										
	End of Trial Pit at 2.50m		2.70	23.56						
3.0										
4.0										

Groundwater Conditions
Dry

Stability
Stable

General Remarks
CAT Scanned location for services

TRIAL PIT RECORD

REPORT NUMBER	24651		
CONTRACT	Dalguise House Development , Monkstown , Co.Dublin	**TRIAL PIT NO.**	**TP12**
		SHEET	Sheet 1 of 1
LOGGED BY	I.Czernek	**DATE STARTED**	12/04/2023
CO-ORDINATES		**DATE COMPLETED**	12/04/2023
GROUND LEVEL (m)		**EXCAVATION METHOD**	1.7 T Tracked excavator
CLIENT	Greystar Ltd		
ENGINEER	DR Consulting		

Scale (m)	Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples: Sample Ref	Samples: Type	Samples: Depth	Vane Test (KPa)	Hand Penetrometer (KPa)
0.0	Brown TOPSOIL		0.20							
	Brown slightly sandy slightly gravelly CLAY with occasional cobbles and roots.		0.80							
	Grey/brown slightly sandy very gravelly CLAY with some cobbles.		1.00							
1.0	End of Trial Pit at 1.00m					AA198154	B	1.00		
2.0										
3.0										
4.0										

Groundwater Conditions
Dry

Stability
Stable

General Remarks
CAT Scanned location for services

TRIAL PIT RECORD

REPORT NUMBER	24651
CONTRACT	Dalguise House Development , Monkstown , Co.Dublin
TRIAL PIT NO.	TP13
SHEET	Sheet 1 of 1
LOGGED BY	I.Czernek
CO-ORDINATES	
GROUND LEVEL (m)	
DATE STARTED	12/04/2023
DATE COMPLETED	12/04/2023
CLIENT	Greystar Ltd
ENGINEER	DR Consulting
EXCAVATION METHOD	1.7 T Tracked excavator

Scale	Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples: Sample Ref	Samples: Type	Samples: Depth	Vane Test (KPa)	Hand Penetrometer (KPa)
0.0	Brown TOPSOIL									
	Grey/brown slightly sandy very gravelly CLAY with occasional cobbles and roots.		0.20			AA198161	B	0.60		
	Brown mottled pink slightly sandy slightly gravelly CLAY with some cobbles and boulders.		0.80		1 (Seepage)					
1.0	End of Trial Pit at 1.00m		1.00			AA198162	B	1.00		
2.0										
3.0										
4.0										

Groundwater Conditions
Seepage at 0.8 m.

Stability
Stable

General Remarks
CAT Scanned location for services

TRIAL PIT RECORD

REPORT NUMBER	24651
CONTRACT	Dalguise House Development , Monkstown , Co.Dublin
TRIAL PIT NO.	TP14
SHEET	Sheet 1 of 1
LOGGED BY	I.Czernek
CO-ORDINATES	
GROUND LEVEL (m)	
DATE STARTED	12/04/2023
DATE COMPLETED	12/04/2023
CLIENT	Greystar Ltd
ENGINEER	DR Consulting
EXCAVATION METHOD	1.7 T Tracked excavator

Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples: Sample Ref	Samples: Type	Samples: Depth	Vane Test (KPa)	Hand Penetrometer (KPa)
Brown TOPSOIL		0.25							
MADE GROUND (comprised of orangeish light brown slightly sandy slightly gravelly CLAY with rare cobbles ceramic pieces and roots).		0.90			AA198159	B	0.60		
Grey/brown slightly sandy very gravelly CLAY with some cobbles and boulders.		1.20			AA198160	B	1.20		
End of Trial Pit at 1.20m									

Groundwater Conditions
Dry

Stability
Stable

General Remarks
CAT Scanned location for services

IGSL TP LOG 24651.GPJ IGSL.GDT 14/4/23

TRIAL PIT RECORD

REPORT NUMBER	24651
CONTRACT	Dalguise House Development , Monkstown , Co.Dublin
TRIAL PIT NO.	TP15
SHEET	Sheet 1 of 1
LOGGED BY	I.Czernek
CO-ORDINATES	
GROUND LEVEL (m)	
DATE STARTED	12/04/2023
DATE COMPLETED	12/04/2023
CLIENT	Greystar Ltd
ENGINEER	DR Consulting
EXCAVATION METHOD	1.7 T Tracked excavator

Scale	Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Sample Ref	Type	Depth	Vane Test (KPa)	Hand Penetrometer (KPa)
0.0	Brown TOPSOIL									
	Orangeish brown slightly sandy slightly gravelly CLAY with rare cobbles and roots.		0.20			AA198155	B	0.50		
	Orange/brown mottled black slightly sandy gravelly CLAY with some cobbles.		0.70							
1.0	End of Trial Pit at 1.00m		1.00			AA198156	B	1.00		
2.0										
3.0										
4.0										

Groundwater Conditions
Dry

Stability
Stable

General Remarks
CAT Scanned location for services

TRIAL PIT RECORD

REPORT NUMBER	24651
CONTRACT	Dalguise House Development , Monkstown , Co.Dublin
TRIAL PIT NO.	TP16
SHEET	Sheet 1 of 1
LOGGED BY	I.Czernek
CO-ORDINATES	
GROUND LEVEL (m)	
DATE STARTED	12/04/2023
DATE COMPLETED	12/04/2023
CLIENT	Greystar Ltd
ENGINEER	DR Consulting
EXCAVATION METHOD	1.7 T Tracked excavator

Scale	Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples: Sample Ref	Samples: Type	Samples: Depth	Vane Test (KPa)	Hand Penetrometer (KPa)
0.0	Dark brown TOPSOIL		0.20							
	Orangeish dark brown slightly sandy slightly gravelly CLAY with occasional cobbles and roots.		0.90			AA198157	B	0.60		
1.0	Dark grey/brown mottled black slightly sandy gravelly CLAY with some cobbles.		1.10			AA198158	B	1.10		
	End of Trial Pit at 1.10m									
2.0										
3.0										
4.0										

Groundwater Conditions
Dry

Stability
Stable

General Remarks
CAT Scanned location for services

Appendix 2

Laboratory Reports

Eurofins Chemtest Ltd
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.com

UKAS TESTING 2183

Amended Report

Report No.:	22-12129-2		
Initial Date of Issue:	07-Apr-2022	**Date of Re-Issue:**	13-May-2022
Client	IGSL		
Client Address:	M7 Business Park Naas County Kildare Ireland		
Contact(s):	John Clancy		
Project	23927 Dalguise House Monkstown Dublin (David Rehill CE)		
Quotation No.:	Q20-19951	**Date Received:**	31-Mar-2022
Order No.:		**Date Instructed:**	31-Mar-2022
No. of Samples:	27		
Turnaround (Wkdays):	30	**Results Due:**	16-May-2022
Date Approved:	13-May-2022		

Approved By:

Details: Stuart Henderson, Technical Manager

Results - Leachate

Project: 23927 Dalguise House Monkstown Dublin (David Rehill CE)

Client: IGSL					**Chemtest Job No.:**	22-12129	22-12129	22-12129	22-12129	22-12129	22-12129	22-12129	22-12129	22-12129	22-12129	22-12129
Quotation No.: Q20-19951					**Chemtest Sample ID.:**	1402334	1402335	1402336	1402337	1402338	1402339	1402340	1402341	1402342	1402343	1402344
					Client Sample ID.:	AA165493	AA165494	AA161952	AA161953	AA165493	AA165495	AA165491	AA165492	AA162662	AA162663	AA165497
					Sample Location:	BH01	BH01	BH02A	BH02A	BH03	BH03	BH04	BH04	BH05	BH05	BH06
					Sample Type:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
					Top Depth (m):	1.0	2.0	2.0	3.0	1.0	3.0	1.0	2.0	2.0	3.0	1.0
Determinand	**Accred.**	**SOP**	**Type**	**Units**	**LOD**											
pH	U	1010	10:1		N/A	8.4	8.3	8.4	8.6	8.6	8.5	8.3	8.6	8.5	8.6	8.3
Ammonium	U	1220	10:1	mg/l	0.050	0.12	0.098	0.22	0.56	0.53	0.41	0.41	0.077	0.11	0.11	0.099
Ammonium	N	1220	10:1	mg/kg	0.10	1.4	1.1	2.5	6.8	6.5	4.9	4.6	0.96	1.3	1.3	1.1
Boron (Dissolved)	U	1455	10:1	mg/kg	0.01	< 0.01	< 0.01	< 0.01	0.19	0.16	0.20	0.14	< 0.01	< 0.01	< 0.01	< 0.01
Benzo[j]fluoranthene	N	1800	10:1	µg/l	0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010

Results - Leachate

Project: 23927 Dalguise House Monkstown Dublin (David Rehill CE)

Client: IGSL					**Chemtest Job No.:**	22-12129	22-12129	22-12129	22-12129	22-12129	22-12129	22-12129	22-12129	22-12129	22-12129	22-12129
Quotation No.: Q20-19951					**Chemtest Sample ID.:**	1402345	1402346	1402347	1402348	1402349	1402350	1402351	1402352	1402353	1402354	1402355
					Client Sample ID.:	AA165498	AA141843	AA141844	AA141845	AA141846	AA141847	AA141848	AA141849	AA141850	AA141801	AA146803
					Sample Location:	BH06	TP21	TP21	TP21	TP22	TP22	TP22	TP23	TP23	TP23	TP24
					Sample Type:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
					Top Depth (m):	2.0	0.75	1.5	3.0	0.6	1.5	3.3	0.3	1.2	2.4	0.5
Determinand	**Accred.**	**SOP**	**Type**	**Units**	**LOD**											
pH	U	1010	10:1		N/A	8.4	8.8	8.6	8.5	8.3	8.7	8.7	8.2	8.6	8.8	8.7
Ammonium	U	1220	10:1	mg/l	0.050	0.14	0.063	0.29	0.32	0.51	0.14	0.11	0.15	0.14	0.21	0.21
Ammonium	N	1220	10:1	mg/kg	0.10	1.6	0.84	3.6	3.8	5.6	1.8	1.4	1.6	1.7	2.8	2.7
Boron (Dissolved)	U	1455	10:1	mg/kg	0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo[j]fluoranthene	N	1800	10:1	µg/l	0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010

Results - Leachate

Project: 23927 Dalguise House Monkstown Dublin (David Rehill CE)

Client: IGSL	**Chemtest Job No.:**					22-12129	22-12129	22-12129	22-12129	22-12129
Quotation No.: Q20-19951	**Chemtest Sample ID.:**					1402356	1402357	1402358	1402359	1402360
	Client Sample ID.:					AA146804	AA146807	AA146808	AA146809	AA146810
	Sample Location:					TP24	TP25	TP25	TP26	TP26
	Sample Type:					SOIL	SOIL	SOIL	SOIL	SOIL
	Top Depth (m):					2.0	0.6	1.5	0.5	1.6
Determinand	**Accred.**	**SOP**	**Type**	**Units**	**LOD**					
pH	U	1010	10:1		N/A	8.7	8.3	8.9	8.4	9.0
Ammonium	U	1220	10:1	mg/l	0.050	0.20	0.22	0.16	0.33	0.061
Ammonium	N	1220	10:1	mg/kg	0.10	2.5	2.4	2.3	3.8	0.96
Boron (Dissolved)	U	1455	10:1	mg/kg	0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo[j]fluoranthene	N	1800	10:1	µg/l	0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010

Results - Soil

Project: 23927 Dalguise House Monkstown Dublin (David Rehill CE)

Client: IGSL				**Chemtest Job No.:**	22-12129	22-12129	22-12129	22-12129	22-12129	22-12129	22-12129	22-12129
Quotation No.: Q20-19951				**Chemtest Sample ID.:**	1402334	1402335	1402336	1402337	1402338	1402339	1402340	1402341
				Client Sample ID.:	AA165493	AA165494	AA161952	AA161953	AA165493	AA165495	AA165491	AA165492
				Sample Location:	BH01	BH01	BH02A	BH02A	BH03	BH03	BH04	BH04
				Sample Type:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
				Top Depth (m):	1.0	2.0	2.0	3.0	1.0	3.0	1.0	2.0
				Asbestos Lab:	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM
Determinand	**Accred.**	**SOP**	**Units**	**LOD**								
ACM Type	U	2192		N/A	-	-	-	-	-	-	-	-
Asbestos Identification	U	2192		N/A	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected
Moisture	N	2030	%	0.020	16	12	18	17	13	12	26	14
pH (2.5:1)	N	2010		4.0	[A] 8.6		[A] 8.5					
Boron (Hot Water Soluble)	U	2120	mg/kg	0.40	[A] 0.66	[A] 0.51	[A] 0.41	[A] 0.56	[A] < 0.40	[A] 0.58	[A] < 0.40	[A] < 0.40
Magnesium (Water Soluble)	N	2120	g/l	0.010	[A] < 0.010		[A] < 0.010					
Sulphate (2:1 Water Soluble) as SO4	U	2120	g/l	0.010	[A] 0.015		[A] 0.020					
Total Sulphur	U	2175	%	0.010	[A] 0.043		[A] 0.027					
Sulphur (Elemental)	U	2180	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] 2.3	[A] 11	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Chloride (Water Soluble)	U	2220	g/l	0.010	[A] 0.012		[A] 0.011					
Nitrate (Water Soluble)	N	2220	g/l	0.010	< 0.010		< 0.010					
Cyanide (Total)	U	2300	mg/kg	0.50	[A] < 0.50	[A] < 0.50	[A] < 0.50	[A] < 0.50	[A] < 0.50	[A] < 0.50	[A] < 0.50	[A] < 0.50
Sulphide (Easily Liberatable)	N	2325	mg/kg	0.50	[A] 3.9	[A] 6.5	[A] 8.8	[A] 8.8	[A] 5.9	[A] 5.9	[A] 5.6	[A] 4.1
Ammonium (Water Soluble)	U	2220	g/l	0.01	< 0.01		< 0.01					
Sulphate (Acid Soluble)	U	2430	%	0.010	[A] 0.028	[A] 0.012	[A] < 0.010	[A] < 0.010	[A] 0.014	[A] < 0.010	[A] 0.010	[A] 0.013
Arsenic	U	2450	mg/kg	1.0	14	14	11	5.1	13	9.9	13	12
Barium	U	2450	mg/kg	10	79	52	50	25	43	30	55	46
Cadmium	U	2450	mg/kg	0.10	1.1	1.4	0.47	0.25	1.6	1.0	1.7	1.8
Chromium	U	2450	mg/kg	1.0	14	13	27	10	13	9.9	23	12
Molybdenum	U	2450	mg/kg	2.0	2.7	3.1	< 2.0	< 2.0	2.6	< 2.0	2.0	3.2
Antimony	N	2450	mg/kg	2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Copper	U	2450	mg/kg	0.50	1200	52	19	7.0	21	14	22	21
Mercury	U	2450	mg/kg	0.10	0.11	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Nickel	U	2450	mg/kg	0.50	32	35	34	14	35	24	42	40
Lead	U	2450	mg/kg	0.50	130	51	22	7.2	13	11	18	11
Selenium	U	2450	mg/kg	0.20	0.37	0.56	< 0.20	< 0.20	0.22	0.34	< 0.20	1.2
Zinc	U	2450	mg/kg	0.50	290	110	55	29	64	43	86	61
Chromium (Trivalent)	N	2490	mg/kg	1.0	14	13	27	10	13	9.9	23	12
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Mineral Oil (TPH Calculation)	N	2670	mg/kg	10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Aliphatic TPH >C5-C6	N	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[AC] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aliphatic TPH >C6-C8	N	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[AC] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aliphatic TPH >C8-C10	U	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[AC] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aliphatic TPH >C10-C12	U	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[AC] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aliphatic TPH >C12-C16	U	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[AC] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aliphatic TPH >C16-C21	U	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[AC] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aliphatic TPH >C21-C35	U	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[AC] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0

Results - Soil

Project: 23927 Dalguise House Monkstown Dublin (David Rehill CE)

Client: IGSL				**Chemtest Job No.:**	22-12129	22-12129	22-12129	22-12129	22-12129	22-12129	22-12129	22-12129
Quotation No.: Q20-19951				**Chemtest Sample ID.:**	1402334	1402335	1402336	1402337	1402338	1402339	1402340	1402341
				Client Sample ID.:	AA165493	AA165494	AA161952	AA161953	AA165493	AA165495	AA165491	AA165492
				Sample Location:	BH01	BH01	BH02A	BH02A	BH03	BH03	BH04	BH04
				Sample Type:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
				Top Depth (m):	1.0	2.0	2.0	3.0	1.0	3.0	1.0	2.0
				Asbestos Lab:	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM
Determinand	**Accred.**	**SOP**	**Units**	**LOD**								
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[AC] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0	[A] < 5.0	[A] < 5.0	[AC] < 5.0	[A] < 5.0	[A] < 5.0	[A] < 5.0	[A] < 5.0	[A] < 5.0
Aromatic TPH >C5-C7	N	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[AC] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aromatic TPH >C7-C8	N	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[AC] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aromatic TPH >C8-C10	U	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[AC] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aromatic TPH >C10-C12	U	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[AC] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aromatic TPH >C12-C16	U	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[AC] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[AC] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aromatic TPH >C21-C35	U	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[AC] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[AC] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0	[A] < 5.0	[A] < 5.0	[AC] < 5.0	[A] < 5.0	[A] < 5.0	[A] < 5.0	[A] < 5.0	[A] < 5.0
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0	[A] < 10	[A] < 10	[AC] < 10	[A] < 10	[A] < 10	[A] < 10	[A] < 10	[A] < 10
Benzene	U	2760	µg/kg	1.0	[A] < 1.0	[A] < 1.0	[AC] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Toluene	U	2760	µg/kg	1.0	[A] < 1.0	[A] < 1.0	[AC] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Ethylbenzene	U	2760	µg/kg	1.0	[A] < 1.0	[A] < 1.0	[AC] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
m & p-Xylene	U	2760	µg/kg	1.0	[A] < 1.0	[A] < 1.0	[AC] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
o-Xylene	U	2760	µg/kg	1.0	[A] < 1.0	[A] < 1.0	[AC] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Methyl Tert-Butyl Ether	U	2760	µg/kg	1.0	[A] < 1.0	[A] < 1.0	[AC] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Naphthalene	N	2800	mg/kg	0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010
Acenaphthylene	N	2800	mg/kg	0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010
Acenaphthene	N	2800	mg/kg	0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010
Fluorene	N	2800	mg/kg	0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010
Phenanthrene	N	2800	mg/kg	0.010	[A] 0.11	[A] 0.11	[A] 0.14	[A] 0.096	[A] < 0.010	[A] 0.24	[A] < 0.010	[A] < 0.010
Anthracene	N	2800	mg/kg	0.010	[A] 0.060	[A] 0.089	[A] 0.036	[A] 0.010	[A] < 0.010	[A] 0.069	[A] < 0.010	[A] < 0.010
Fluoranthene	N	2800	mg/kg	0.010	[A] 0.13	[A] 0.12	[A] 0.10	[A] 0.18	[A] < 0.010	[A] 0.23	[A] < 0.010	[A] < 0.010
Pyrene	N	2800	mg/kg	0.010	[A] 0.12	[A] 0.15	[A] 0.19	[A] 0.13	[A] < 0.010	[A] 0.19	[A] < 0.010	[A] < 0.010
Benzo[a]anthracene	N	2800	mg/kg	0.010	[A] 0.10	[A] 0.14	[A] 0.13	[A] 0.089	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010
Chrysene	N	2800	mg/kg	0.010	[A] 0.11	[A] 0.17	[A] 0.21	[A] 0.077	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010
Benzo[b]fluoranthene	N	2800	mg/kg	0.010	[A] 0.13	[A] 0.15	[A] 0.24	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010
Benzo[k]fluoranthene	N	2800	mg/kg	0.010	[A] 0.13	[A] 0.093	[A] 0.074	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010
Benzo[a]pyrene	N	2800	mg/kg	0.010	[A] 0.18	[A] 0.11	[A] 0.18	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010
Indeno(1,2,3-c,d)Pyrene	N	2800	mg/kg	0.010	[A] 0.11	[A] < 0.010	[A] 0.11	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010
Dibenz(a,h)Anthracene	N	2800	mg/kg	0.010	[A] 0.11	[A] < 0.010	[A] 0.058	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010
Benzo[g,h,i]perylene	N	2800	mg/kg	0.010	[A] 0.13	[A] < 0.010	[A] 0.20	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010
Coronene	N	2800	mg/kg	0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010
Total Of 17 PAH's	N	2800	mg/kg	0.20	[A] 1.4	[A] 1.1	[A] 1.7	[A] 0.58	[A] < 0.20	[A] 0.73	[A] < 0.20	[A] < 0.20
PCB 28	N	2815	mg/kg	0.0010	[A] < 0.0010	[A] < 0.0010	[AC] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010
PCB 52	N	2815	mg/kg	0.0010	[A] < 0.0010	[A] < 0.0010	[AC] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010

Results - Soil

Project: 23927 Dalguise House Monkstown Dublin (David Rehill CE)

Client: IGSL				**Chemtest Job No.:**	22-12129	22-12129	22-12129	22-12129	22-12129	22-12129	22-12129	22-12129
Quotation No.: Q20-19951				**Chemtest Sample ID.:**	1402334	1402335	1402336	1402337	1402338	1402339	1402340	1402341
				Client Sample ID.:	AA165493	AA165494	AA161952	AA161953	AA165493	AA165495	AA165491	AA165492
				Sample Location:	BH01	BH01	BH02A	BH02A	BH03	BH03	BH04	BH04
				Sample Type:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
				Top Depth (m):	1.0	2.0	2.0	3.0	1.0	3.0	1.0	2.0
				Asbestos Lab:	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM
Determinand	**Accred.**	**SOP**	**Units**	**LOD**								
PCB 90+101	N	2815	mg/kg	0.0010	[A] < 0.0010	[A] < 0.0010	[AC] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010
PCB 118	N	2815	mg/kg	0.0010	[A] < 0.0010	[A] < 0.0010	[AC] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010
PCB 153	N	2815	mg/kg	0.0010	[A] < 0.0010	[A] < 0.0010	[AC] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010
PCB 138	N	2815	mg/kg	0.0010	[A] < 0.0010	[A] < 0.0010	[AC] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010
PCB 180	N	2815	mg/kg	0.0010	[A] < 0.0010	[A] < 0.0010	[AC] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010
Total PCBs (7 congeners)	N	2815	mg/kg	0.0010	[A] < 0.0010	[A] < 0.0010	[AC] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010
Total Phenols	U	2920	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10

Results - Soil

Project: 23927 Dalguise House Monkstown Dublin (David Rehill CE)

Client: IGSL				**Chemtest Job No.:**	22-12129	22-12129	22-12129	22-12129	22-12129	22-12129	22-12129	22-12129	22-12129
Quotation No.: Q20-19951				**Chemtest Sample ID.:**	1402342	1402343	1402344	1402345	1402346	1402347	1402348	1402349	1402350
				Client Sample ID.:	AA162662	AA162663	AA165497	AA165498	AA141843	AA141844	AA141845	AA141846	AA141847
				Sample Location:	BH05	BH05	BH06	BH06	TP21	TP21	TP21	TP22	TP22
				Sample Type:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
				Top Depth (m):	2.0	3.0	1.0	2.0	0.75	1.5	3.0	0.6	1.5
				Asbestos Lab:	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM
Determinand	**Accred.**	**SOP**	**Units**	**LOD**									
ACM Type	U	2192		N/A	-	-	-	-	-	-	-	-	-
Asbestos Identification	U	2192		N/A	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected
Moisture	N	2030	%	0.020	15	14	18	16	15	5.0	7.9	16	10
pH (2.5:1)	N	2010		4.0									[A] 8.6
Boron (Hot Water Soluble)	U	2120	mg/kg	0.40	[A] < 0.40	[A] < 0.40	[A] < 0.40	[A] 0.73	[A] 0.69	[A] 0.42	[A] < 0.40	[A] 0.68	[A] < 0.40
Magnesium (Water Soluble)	N	2120	g/l	0.010									[A] < 0.010
Sulphate (2:1 Water Soluble) as SO4	U	2120	g/l	0.010									[A] < 0.010
Total Sulphur	U	2175	%	0.010									[A] 0.040
Sulphur (Elemental)	U	2180	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] 1.3	[A] < 1.0	[A] 1.3	[A] 4.1	[A] < 1.0	[A] < 1.0
Chloride (Water Soluble)	U	2220	g/l	0.010									[A] < 0.010
Nitrate (Water Soluble)	N	2220	g/l	0.010									< 0.010
Cyanide (Total)	U	2300	mg/kg	0.50	[A] < 0.50	[A] < 0.50	[A] < 0.50	[A] < 0.50	[A] < 0.50	[A] < 0.50	[A] < 0.50	[A] < 0.50	[A] < 0.50
Sulphide (Easily Liberatable)	N	2325	mg/kg	0.50	[A] 3.8	[A] 3.2	[A] 5.4	[A] 6.7	[A] 5.0	[A] 3.3	[A] 5.1	[A] 6.8	[A] 8.6
Ammonium (Water Soluble)	U	2220	g/l	0.01									< 0.01
Sulphate (Acid Soluble)	U	2430	%	0.010	[A] 0.011	[A] < 0.010	[A] < 0.010	[A] 0.010	[A] 0.023	[A] 0.017	[A] 0.032	[A] 0.023	[A] < 0.010
Arsenic	U	2450	mg/kg	1.0	10	12	12	9.8	11	5.7	12	9.9	12
Barium	U	2450	mg/kg	10	64	56	50	49	51	23	62	51	40
Cadmium	U	2450	mg/kg	0.10	0.84	1.6	1.3	0.75	0.97	0.85	1.7	1.4	1.5
Chromium	U	2450	mg/kg	1.0	18	13	21	26	20	5.6	10	16	9.7
Molybdenum	U	2450	mg/kg	2.0	< 2.0	3.2	2.1	< 2.0	< 2.0	< 2.0	3.5	< 2.0	2.8
Antimony	N	2450	mg/kg	2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Copper	U	2450	mg/kg	0.50	14	20	23	18	24	11	22	22	18
Mercury	U	2450	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Nickel	U	2450	mg/kg	0.50	30	35	43	37	36	19	42	37	34
Lead	U	2450	mg/kg	0.50	10	12	19	15	39	5.5	13	17	11
Selenium	U	2450	mg/kg	0.20	< 0.20	0.53	0.42	< 0.20	0.46	0.20	3.1	0.30	0.34
Zinc	U	2450	mg/kg	0.50	52	56	74	53	84	31	63	78	57
Chromium (Trivalent)	N	2490	mg/kg	1.0	18	13	21	26	20	5.6	10	16	9.7
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Mineral Oil (TPH Calculation)	N	2670	mg/kg	10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Aliphatic TPH >C5-C6	N	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aliphatic TPH >C6-C8	N	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aliphatic TPH >C8-C10	U	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aliphatic TPH >C10-C12	U	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aliphatic TPH >C12-C16	U	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aliphatic TPH >C16-C21	U	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aliphatic TPH >C21-C35	U	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0

Results - Soil

Project: 23927 Dalguise House Monkstown Dublin (David Rehill CE)

Client: IGSL				**Chemtest Job No.:**	22-12129	22-12129	22-12129	22-12129	22-12129	22-12129	22-12129	22-12129	22-12129
Quotation No.: Q20-19951				**Chemtest Sample ID.:**	1402342	1402343	1402344	1402345	1402346	1402347	1402348	1402349	1402350
				Client Sample ID.:	AA162662	AA162663	AA165497	AA165498	AA141843	AA141844	AA141845	AA141846	AA141847
				Sample Location:	BH05	BH05	BH06	BH06	TP21	TP21	TP21	TP22	TP22
				Sample Type:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
				Top Depth (m):	2.0	3.0	1.0	2.0	0.75	1.5	3.0	0.6	1.5
				Asbestos Lab:	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM
Determinand	**Accred.**	**SOP**	**Units**	**LOD**									
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0	[A] < 5.0	[A] < 5.0	[A] < 5.0	[A] < 5.0	[A] < 5.0	[A] < 5.0	[A] < 5.0	[A] < 5.0	[A] < 5.0
Aromatic TPH >C5-C7	N	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aromatic TPH >C7-C8	N	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aromatic TPH >C8-C10	U	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aromatic TPH >C10-C12	U	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aromatic TPH >C12-C16	U	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aromatic TPH >C21-C35	U	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0	[A] < 5.0	[A] < 5.0	[A] < 5.0	[A] < 5.0	[A] < 5.0	[A] < 5.0	[A] < 5.0	[A] < 5.0	[A] < 5.0
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0	[A] < 10	[A] < 10	[A] < 10	[A] < 10	[A] < 10	[A] < 10	[A] < 10	[A] < 10	[A] < 10
Benzene	U	2760	µg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Toluene	U	2760	µg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Ethylbenzene	U	2760	µg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
m & p-Xylene	U	2760	µg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
o-Xylene	U	2760	µg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Methyl Tert-Butyl Ether	U	2760	µg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Naphthalene	N	2800	mg/kg	0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010
Acenaphthylene	N	2800	mg/kg	0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010
Acenaphthene	N	2800	mg/kg	0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010
Fluorene	N	2800	mg/kg	0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010
Phenanthrene	N	2800	mg/kg	0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010
Anthracene	N	2800	mg/kg	0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010
Fluoranthene	N	2800	mg/kg	0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010
Pyrene	N	2800	mg/kg	0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010
Benzo[a]anthracene	N	2800	mg/kg	0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010
Chrysene	N	2800	mg/kg	0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010
Benzo[b]fluoranthene	N	2800	mg/kg	0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010
Benzo[k]fluoranthene	N	2800	mg/kg	0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010
Benzo[a]pyrene	N	2800	mg/kg	0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010
Indeno(1,2,3-c,d)Pyrene	N	2800	mg/kg	0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010
Dibenz(a,h)Anthracene	N	2800	mg/kg	0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010
Benzo[g,h,i]perylene	N	2800	mg/kg	0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010
Coronene	N	2800	mg/kg	0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010
Total Of 17 PAH's	N	2800	mg/kg	0.20	[A] < 0.20	[A] < 0.20	[A] < 0.20	[A] < 0.20	[A] < 0.20	[A] < 0.20	[A] < 0.20	[A] < 0.20	[A] < 0.20
PCB 28	N	2815	mg/kg	0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010
PCB 52	N	2815	mg/kg	0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010

Results - Soil

Project: 23927 Dalguise House Monkstown Dublin (David Rehill CE)

Client: IGSL				**Chemtest Job No.:**	22-12129	22-12129	22-12129	22-12129	22-12129	22-12129	22-12129	22-12129	22-12129
Quotation No.: Q20-19951				**Chemtest Sample ID.:**	1402342	1402343	1402344	1402345	1402346	1402347	1402348	1402349	1402350
				Client Sample ID.:	AA162662	AA162663	AA165497	AA165498	AA141843	AA141844	AA141845	AA141846	AA141847
				Sample Location:	BH05	BH05	BH06	BH06	TP21	TP21	TP21	TP22	TP22
				Sample Type:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
				Top Depth (m):	2.0	3.0	1.0	2.0	0.75	1.5	3.0	0.6	1.5
				Asbestos Lab:	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM
Determinand	**Accred.**	**SOP**	**Units**	**LOD**									
PCB 90+101	N	2815	mg/kg	0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010
PCB 118	N	2815	mg/kg	0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010
PCB 153	N	2815	mg/kg	0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010
PCB 138	N	2815	mg/kg	0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010
PCB 180	N	2815	mg/kg	0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010
Total PCBs (7 congeners)	N	2815	mg/kg	0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010
Total Phenols	U	2920	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10

Results - Soil

Project: 23927 Dalguise House Monkstown Dublin (David Rehill CE)

Client: IGSL				**Chemtest Job No.:**	22-12129	22-12129	22-12129	22-12129	22-12129	22-12129	22-12129	22-12129	22-12129
Quotation No.: Q20-19951				**Chemtest Sample ID.:**	1402351	1402352	1402353	1402354	1402355	1402356	1402357	1402358	1402359
				Client Sample ID.:	AA141848	AA141849	AA141850	AA141801	AA146803	AA146804	AA146807	AA146808	AA146809
				Sample Location:	TP22	TP23	TP23	TP23	TP24	TP24	TP25	TP25	TP26
				Sample Type:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
				Top Depth (m):	3.3	0.3	1.2	2.4	0.5	2.0	0.6	1.5	0.5
				Asbestos Lab:	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM
Determinand	**Accred.**	**SOP**	**Units**	**LOD**									
ACM Type	U	2192		N/A	-	-	-	-	-	-	-	-	-
Asbestos Identification	U	2192		N/A	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected
Moisture	N	2030	%	0.020	9.9	16	12	13	13	14	14	13	19
pH (2.5:1)	N	2010		4.0						[A] 8.6			[A] 8.5
Boron (Hot Water Soluble)	U	2120	mg/kg	0.40	[A] 0.44	[A] 0.75	[A] < 0.40	[A] < 0.40	[A] 0.47	[A] < 0.40	[A] 1.1	[A] < 0.40	[A] 0.58
Magnesium (Water Soluble)	N	2120	g/l	0.010						[A] < 0.010			[A] < 0.010
Sulphate (2:1 Water Soluble) as SO4	U	2120	g/l	0.010						[A] < 0.010			[A] 0.015
Total Sulphur	U	2175	%	0.010						[A] 0.020			[A] 0.025
Sulphur (Elemental)	U	2180	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] 1.3	[A] < 1.0	[A] 3.7	[A] < 1.0
Chloride (Water Soluble)	U	2220	g/l	0.010						[A] < 0.010			[A] 0.054
Nitrate (Water Soluble)	N	2220	g/l	0.010						< 0.010			< 0.010
Cyanide (Total)	U	2300	mg/kg	0.50	[A] < 0.50	[A] < 0.50	[A] < 0.50	[A] < 0.50	[A] < 0.50	[A] < 0.50	[A] < 0.50	[A] < 0.50	[A] < 0.50
Sulphide (Easily Liberatable)	N	2325	mg/kg	0.50	[A] 10	[A] 3.6	[A] 2.1	[A] 3.9	[A] 2.2	[A] 5.1	[A] < 0.50	[A] 3.7	[A] 1.8
Ammonium (Water Soluble)	U	2220	g/l	0.01						< 0.01			< 0.01
Sulphate (Acid Soluble)	U	2430	%	0.010	[A] 0.013	[A] 0.017	[A] 0.013	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010
Arsenic	U	2450	mg/kg	1.0	5.8	9.4	12	8.2	6.2	4.4	4.2	4.1	2.9
Barium	U	2450	mg/kg	10	30	41	33	39	18	23	21	25	27
Cadmium	U	2450	mg/kg	0.10	0.81	0.88	1.5	0.36	0.60	0.15	0.51	0.33	0.29
Chromium	U	2450	mg/kg	1.0	5.5	16	12	25	7.8	16	8.5	9.8	8.0
Molybdenum	U	2450	mg/kg	2.0	< 2.0	< 2.0	2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Antimony	N	2450	mg/kg	2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Copper	U	2450	mg/kg	0.50	10	24	16	15	12	9.4	8.2	7.8	7.7
Mercury	U	2450	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Nickel	U	2450	mg/kg	0.50	19	29	27	34	20	20	15	15	14
Lead	U	2450	mg/kg	0.50	9.8	44	13	11	9.5	5.7	6.5	8.3	9.9
Selenium	U	2450	mg/kg	0.20	0.51	0.37	0.23	< 0.20	0.78	< 0.20	0.23	< 0.20	< 0.20
Zinc	U	2450	mg/kg	0.50	37	88	61	47	31	28	37	21	24
Chromium (Trivalent)	N	2490	mg/kg	1.0	5.5	16	12	25	7.8	16	8.5	9.8	8.0
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Mineral Oil (TPH Calculation)	N	2670	mg/kg	10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Aliphatic TPH >C5-C6	N	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aliphatic TPH >C6-C8	N	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aliphatic TPH >C8-C10	U	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aliphatic TPH >C10-C12	U	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aliphatic TPH >C12-C16	U	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aliphatic TPH >C16-C21	U	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aliphatic TPH >C21-C35	U	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0

Results - Soil

Project: 23927 Dalguise House Monkstown Dublin (David Rehill CE)

Client: IGSL				**Chemtest Job No.:**	22-12129	22-12129	22-12129	22-12129	22-12129	22-12129	22-12129	22-12129	22-12129
Quotation No.: Q20-19951				**Chemtest Sample ID.:**	1402351	1402352	1402353	1402354	1402355	1402356	1402357	1402358	1402359
				Client Sample ID.:	AA141848	AA141849	AA141850	AA141801	AA146803	AA146804	AA146807	AA146808	AA146809
				Sample Location:	TP22	TP23	TP23	TP23	TP24	TP24	TP25	TP25	TP26
				Sample Type:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
				Top Depth (m):	3.3	0.3	1.2	2.4	0.5	2.0	0.6	1.5	0.5
				Asbestos Lab:	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM
Determinand	**Accred.**	**SOP**	**Units**	**LOD**									
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0	[A] < 5.0	[A] < 5.0	[A] < 5.0	[A] < 5.0	[A] < 5.0	[A] < 5.0	[A] < 5.0	[A] < 5.0	[A] < 5.0
Aromatic TPH >C5-C7	N	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aromatic TPH >C7-C8	N	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aromatic TPH >C8-C10	U	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aromatic TPH >C10-C12	U	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aromatic TPH >C12-C16	U	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aromatic TPH >C21-C35	U	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0	[A] < 5.0	[A] < 5.0	[A] < 5.0	[A] < 5.0	[A] < 5.0	[A] < 5.0	[A] < 5.0	[A] < 5.0	[A] < 5.0
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0	[A] < 10	[A] < 10	[A] < 10	[A] < 10	[A] < 10	[A] < 10	[A] < 10	[A] < 10	[A] < 10
Benzene	U	2760	µg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Toluene	U	2760	µg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Ethylbenzene	U	2760	µg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
m & p-Xylene	U	2760	µg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
o-Xylene	U	2760	µg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Methyl Tert-Butyl Ether	U	2760	µg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Naphthalene	N	2800	mg/kg	0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010
Acenaphthylene	N	2800	mg/kg	0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010
Acenaphthene	N	2800	mg/kg	0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010
Fluorene	N	2800	mg/kg	0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010
Phenanthrene	N	2800	mg/kg	0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010
Anthracene	N	2800	mg/kg	0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010
Fluoranthene	N	2800	mg/kg	0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010
Pyrene	N	2800	mg/kg	0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010
Benzo[a]anthracene	N	2800	mg/kg	0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010
Chrysene	N	2800	mg/kg	0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010
Benzo[b]fluoranthene	N	2800	mg/kg	0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010
Benzo[k]fluoranthene	N	2800	mg/kg	0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010
Benzo[a]pyrene	N	2800	mg/kg	0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010
Indeno(1,2,3-c,d)Pyrene	N	2800	mg/kg	0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010
Dibenz(a,h)Anthracene	N	2800	mg/kg	0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010
Benzo[g,h,i]perylene	N	2800	mg/kg	0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010
Coronene	N	2800	mg/kg	0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010
Total Of 17 PAH's	N	2800	mg/kg	0.20	[A] < 0.20	[A] < 0.20	[A] < 0.20	[A] < 0.20	[A] < 0.20	[A] < 0.20	[A] < 0.20	[A] < 0.20	[A] < 0.20
PCB 28	N	2815	mg/kg	0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010
PCB 52	N	2815	mg/kg	0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010

Results - Soil

Project: 23927 Dalguise House Monkstown Dublin (David Rehill CE)

Client: IGSL				**Chemtest Job No.:**	22-12129	22-12129	22-12129	22-12129	22-12129	22-12129	22-12129	22-12129	22-12129
Quotation No.: Q20-19951				**Chemtest Sample ID.:**	1402351	1402352	1402353	1402354	1402355	1402356	1402357	1402358	1402359
				Client Sample ID.:	AA141848	AA141849	AA141850	AA141801	AA146803	AA146804	AA146807	AA146808	AA146809
				Sample Location:	TP22	TP23	TP23	TP23	TP24	TP24	TP25	TP25	TP26
				Sample Type:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
				Top Depth (m):	3.3	0.3	1.2	2.4	0.5	2.0	0.6	1.5	0.5
				Asbestos Lab:	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM
Determinand	**Accred.**	**SOP**	**Units**	**LOD**									
PCB 90+101	N	2815	mg/kg	0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010
PCB 118	N	2815	mg/kg	0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010
PCB 153	N	2815	mg/kg	0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010
PCB 138	N	2815	mg/kg	0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010
PCB 180	N	2815	mg/kg	0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010
Total PCBs (7 congeners)	N	2815	mg/kg	0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010
Total Phenols	U	2920	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10

Results - Soil

Project: 23927 Dalguise House Monkstown Dublin (David Rehill CE)

Client: IGSL				**Chemtest Job No.:**	22-12129
Quotation No.: Q20-19951				**Chemtest Sample ID.:**	1402360
				Client Sample ID.:	AA146810
				Sample Location:	TP26
				Sample Type:	SOIL
				Top Depth (m):	1.6
				Asbestos Lab:	DURHAM
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
ACM Type	U	2192		N/A	-
Asbestos Identification	U	2192		N/A	No Asbestos Detected
Moisture	N	2030	%	0.020	13
pH (2.5:1)	N	2010		4.0	
Boron (Hot Water Soluble)	U	2120	mg/kg	0.40	[A] < 0.40
Magnesium (Water Soluble)	N	2120	g/l	0.010	
Sulphate (2:1 Water Soluble) as SO4	U	2120	g/l	0.010	
Total Sulphur	U	2175	%	0.010	
Sulphur (Elemental)	U	2180	mg/kg	1.0	[A] < 1.0
Chloride (Water Soluble)	U	2220	g/l	0.010	
Nitrate (Water Soluble)	N	2220	g/l	0.010	
Cyanide (Total)	U	2300	mg/kg	0.50	[A] < 0.50
Sulphide (Easily Liberatable)	N	2325	mg/kg	0.50	[A] 4.3
Ammonium (Water Soluble)	U	2220	g/l	0.01	
Sulphate (Acid Soluble)	U	2430	%	0.010	[A] < 0.010
Arsenic	U	2450	mg/kg	1.0	8.5
Barium	U	2450	mg/kg	10	34
Cadmium	U	2450	mg/kg	0.10	1.3
Chromium	U	2450	mg/kg	1.0	11
Molybdenum	U	2450	mg/kg	2.0	2.0
Antimony	N	2450	mg/kg	2.0	< 2.0
Copper	U	2450	mg/kg	0.50	20
Mercury	U	2450	mg/kg	0.10	< 0.10
Nickel	U	2450	mg/kg	0.50	33
Lead	U	2450	mg/kg	0.50	12
Selenium	U	2450	mg/kg	0.20	0.33
Zinc	U	2450	mg/kg	0.50	66
Chromium (Trivalent)	N	2490	mg/kg	1.0	11
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50
Mineral Oil (TPH Calculation)	N	2670	mg/kg	10	< 10
Aliphatic TPH >C5-C6	N	2680	mg/kg	1.0	[A] < 1.0
Aliphatic TPH >C6-C8	N	2680	mg/kg	1.0	[A] < 1.0
Aliphatic TPH >C8-C10	U	2680	mg/kg	1.0	[A] < 1.0
Aliphatic TPH >C10-C12	U	2680	mg/kg	1.0	[A] < 1.0
Aliphatic TPH >C12-C16	U	2680	mg/kg	1.0	[A] < 1.0
Aliphatic TPH >C16-C21	U	2680	mg/kg	1.0	[A] < 1.0
Aliphatic TPH >C21-C35	U	2680	mg/kg	1.0	[A] < 1.0

Results - Soil

Project: 23927 Dalguise House Monkstown Dublin (David Rehill CE)

Client: IGSL				**Chemtest Job No.:**	22-12129
Quotation No.: Q20-19951				**Chemtest Sample ID.:**	1402360
				Client Sample ID.:	AA146810
				Sample Location:	TP26
				Sample Type:	SOIL
				Top Depth (m):	1.6
				Asbestos Lab:	DURHAM
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0	[A] < 1.0
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0	[A] < 5.0
Aromatic TPH >C5-C7	N	2680	mg/kg	1.0	[A] < 1.0
Aromatic TPH >C7-C8	N	2680	mg/kg	1.0	[A] < 1.0
Aromatic TPH >C8-C10	U	2680	mg/kg	1.0	[A] < 1.0
Aromatic TPH >C10-C12	U	2680	mg/kg	1.0	[A] < 1.0
Aromatic TPH >C12-C16	U	2680	mg/kg	1.0	[A] < 1.0
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0	[A] < 1.0
Aromatic TPH >C21-C35	U	2680	mg/kg	1.0	[A] < 1.0
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0	[A] < 1.0
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0	[A] < 5.0
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0	[A] < 10
Benzene	U	2760	µg/kg	1.0	[A] < 1.0
Toluene	U	2760	µg/kg	1.0	[A] < 1.0
Ethylbenzene	U	2760	µg/kg	1.0	[A] < 1.0
m & p-Xylene	U	2760	µg/kg	1.0	[A] < 1.0
o-Xylene	U	2760	µg/kg	1.0	[A] < 1.0
Methyl Tert-Butyl Ether	U	2760	µg/kg	1.0	[A] < 1.0
Naphthalene	N	2800	mg/kg	0.010	[A] < 0.010
Acenaphthylene	N	2800	mg/kg	0.010	[A] < 0.010
Acenaphthene	N	2800	mg/kg	0.010	[A] < 0.010
Fluorene	N	2800	mg/kg	0.010	[A] < 0.010
Phenanthrene	N	2800	mg/kg	0.010	[A] < 0.010
Anthracene	N	2800	mg/kg	0.010	[A] < 0.010
Fluoranthene	N	2800	mg/kg	0.010	[A] < 0.010
Pyrene	N	2800	mg/kg	0.010	[A] < 0.010
Benzo[a]anthracene	N	2800	mg/kg	0.010	[A] < 0.010
Chrysene	N	2800	mg/kg	0.010	[A] < 0.010
Benzo[b]fluoranthene	N	2800	mg/kg	0.010	[A] < 0.010
Benzo[k]fluoranthene	N	2800	mg/kg	0.010	[A] < 0.010
Benzo[a]pyrene	N	2800	mg/kg	0.010	[A] < 0.010
Indeno(1,2,3-c,d)Pyrene	N	2800	mg/kg	0.010	[A] < 0.010
Dibenz(a,h)Anthracene	N	2800	mg/kg	0.010	[A] < 0.010
Benzo[g,h,i]perylene	N	2800	mg/kg	0.010	[A] < 0.010
Coronene	N	2800	mg/kg	0.010	[A] < 0.010
Total Of 17 PAH's	N	2800	mg/kg	0.20	[A] < 0.20
PCB 28	N	2815	mg/kg	0.0010	[A] < 0.0010
PCB 52	N	2815	mg/kg	0.0010	[A] < 0.0010

Results - Soil

Project: 23927 Dalguise House Monkstown Dublin (David Rehill CE)

Client: IGSL				**Chemtest Job No.:**	22-12129
Quotation No.: Q20-19951				**Chemtest Sample ID.:**	1402360
				Client Sample ID.:	AA146810
				Sample Location:	TP26
				Sample Type:	SOIL
				Top Depth (m):	1.6
				Asbestos Lab:	DURHAM
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
PCB 90+101	N	2815	mg/kg	0.0010	[A] < 0.0010
PCB 118	N	2815	mg/kg	0.0010	[A] < 0.0010
PCB 153	N	2815	mg/kg	0.0010	[A] < 0.0010
PCB 138	N	2815	mg/kg	0.0010	[A] < 0.0010
PCB 180	N	2815	mg/kg	0.0010	[A] < 0.0010
Total PCBs (7 congeners)	N	2815	mg/kg	0.0010	[A] < 0.0010
Total Phenols	U	2920	mg/kg	0.10	< 0.10

Results - Single Stage WAC

Project: 23927 Dalguise House Monkstown Dublin (David Rehill CE)

					Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	22-12129						
Chemtest Sample ID:	1402334						
Sample Ref:							
Sample ID:	AA165493						
Sample Location:	BH01						
Top Depth(m):	1.0						
Bottom Depth(m):							
Sampling Date:					**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Determinand	**SOP**	**Accred.**	**Units**				
Total Organic Carbon	2625	U	%	[A] 1.8	3	5	6
Loss On Ignition	2610	U	%	3.8	--	--	10
Total BTEX	2760	U	mg/kg	[A] < 0.010	6	--	--
Total PCBs (7 congeners)	2815	N	mg/kg	[A] < 0.0010	1	--	--
TPH Total WAC	2670	U	mg/kg	[A] < 10	500	--	--
Total Of 17 PAH's	2800	N	mg/kg	[A] 1.4	100	--	--
pH	2010	U		8.4	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.0080	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455	U	0.0068	0.068	0.5	2	25
Barium	1455	U	< 0.005	< 0.0005	20	100	300
Cadmium	1455	U	< 0.00011	< 0.00011	0.04	1	5
Chromium	1455	U	< 0.0005	< 0.0005	0.5	10	70
Copper	1455	U	0.0064	0.064	2	50	100
Mercury	1455	U	< 0.00005	< 0.00005	0.01	0.2	2
Molybdenum	1455	U	0.019	0.18	0.5	10	30
Nickel	1455	U	0.0006	0.0063	0.4	10	40
Lead	1455	U	< 0.0005	< 0.0005	0.5	10	50
Antimony	1455	U	0.0016	0.016	0.06	0.7	5
Selenium	1455	U	< 0.0005	< 0.0005	0.1	0.5	7
Zinc	1455	U	< 0.003	< 0.003	4	50	200
Chloride	1220	U	1.2	12	800	15000	25000
Fluoride	1220	U	0.16	1.6	10	150	500
Sulphate	1220	U	1.6	16	1000	20000	50000
Total Dissolved Solids	1020	N	78	780	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	20	200	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	16

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: 23927 Dalguise House Monkstown Dublin (David Rehill CE)

					Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	22-12129						
Chemtest Sample ID:	1402335						
Sample Ref:					Inert Waste Landfill	Stable, Non-reactive hazardous waste in non-hazardous Landfill	Hazardous Waste Landfill
Sample ID:	AA165494						
Sample Location:	BH01						
Top Depth(m):	2.0						
Bottom Depth(m):							
Sampling Date:							
Determinand	**SOP**	**Accred.**	**Units**				
Total Organic Carbon	2625	U	%	[A] 0.84	3	5	6
Loss On Ignition	2610	U	%	3.2	--	--	10
Total BTEX	2760	U	mg/kg	[A] < 0.010	6	--	--
Total PCBs (7 congeners)	2815	N	mg/kg	[A] < 0.0010	1	--	--
TPH Total WAC	2670	U	mg/kg	[A] < 10	500	--	--
Total Of 17 PAH's	2800	N	mg/kg	[A] 1.1	100	--	--
pH	2010	U		8.5	--	>6	--
Acid Neutralisation Capacity					--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455	U	0.0044	0.044	0.5	2	25
Barium	1455	U	0.007	0.070	20	100	300
Cadmium	1455	U	< 0.00011	< 0.00011	0.04	1	5
Chromium	1455	U	0.0007	0.0067	0.5	10	70
Copper	1455	U	0.0067	0.067	2	50	100
Mercury	1455	U	< 0.00005	< 0.00005	0.01	0.2	2
Molybdenum	1455	U	0.020	0.20	0.5	10	30
Nickel	1455	U	0.0009	0.0093	0.4	10	40
Lead	1455	U	< 0.0005	< 0.0005	0.5	10	50
Antimony	1455	U	0.0014	0.014	0.06	0.7	5
Selenium	1455	U	< 0.0005	< 0.0005	0.1	0.5	7
Zinc	1455	U	< 0.003	< 0.003	4	50	200
Chloride	1220	U	1.2	12	800	15000	25000
Fluoride	1220	U	0.18	1.8	10	150	500
Sulphate	1220	U	2.8	28	1000	20000	50000
Total Dissolved Solids	1020	N	98	970	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	21	210	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	12

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: 23927 Dalguise House Monkstown Dublin (David Rehill CE)

					Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	22-12129						
Chemtest Sample ID:	1402336						
Sample Ref:							
Sample ID:	AA161952						
Sample Location:	BH02A						
Top Depth(m):	2.0						
Bottom Depth(m):							
Sampling Date:					**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Determinand	**SOP**	**Accred.**	**Units**				
Total Organic Carbon	2625	U	%	[A] 0.54	3	5	6
Loss On Ignition	2610	U	%	2.0	--	--	10
Total BTEX	2760	U	mg/kg	[AC] < 0.010	6	--	--
Total PCBs (7 congeners)	2815	N	mg/kg	[AC] < 0.0010	1	--	--
TPH Total WAC	2670	U	mg/kg	[AC] < 10	500	--	--
Total Of 17 PAH's	2800	N	mg/kg	[A] 1.7	100	--	--
pH	2010	U		8.5	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.0090	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455	U	0.0004	0.0041	0.5	2	25
Barium	1455	U	0.007	0.065	20	100	300
Cadmium	1455	U	< 0.00011	< 0.00011	0.04	1	5
Chromium	1455	U	0.0012	0.012	0.5	10	70
Copper	1455	U	0.0012	0.012	2	50	100
Mercury	1455	U	< 0.00005	< 0.00005	0.01	0.2	2
Molybdenum	1455	U	0.0077	0.077	0.5	10	30
Nickel	1455	U	< 0.0005	< 0.0005	0.4	10	40
Lead	1455	U	< 0.0005	< 0.0005	0.5	10	50
Antimony	1455	U	< 0.0005	< 0.0005	0.06	0.7	5
Selenium	1455	U	< 0.0005	< 0.0005	0.1	0.5	7
Zinc	1455	U	< 0.003	< 0.003	4	50	200
Chloride	1220	U	< 1.0	< 10	800	15000	25000
Fluoride	1220	U	0.37	3.7	10	150	500
Sulphate	1220	U	3.1	31	1000	20000	50000
Total Dissolved Solids	1020	N	78	780	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	2.5	< 50	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	18

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: 23927 Dalguise House Monkstown Dublin (David Rehill CE)

Chemtest Job No:	22-12129				**Landfill Waste Acceptance Criteria Limits**		
Chemtest Sample ID:	1402337						
Sample Ref:					**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Sample ID:	AA161953						
Sample Location:	BH02A						
Top Depth(m):	3.0						
Bottom Depth(m):							
Sampling Date:							
Determinand	**SOP**	**Accred.**	**Units**				
Total Organic Carbon	2625	U	%	[A] 0.39	3	5	6
Loss On Ignition	2610	U	%	2.3	--	--	10
Total BTEX	2760	U	mg/kg	[A] < 0.010	6	--	--
Total PCBs (7 congeners)	2815	N	mg/kg	[A] < 0.0010	1	--	--
TPH Total WAC	2670	U	mg/kg	[A] < 10	500	--	--
Total Of 17 PAH's	2800	N	mg/kg	[A] 0.58	100	--	--
pH	2010	U		8.5	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.016	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455	U	0.0003	0.0025	0.5	2	25
Barium	1455	U	< 0.005	< 0.0005	20	100	300
Cadmium	1455	U	< 0.00011	< 0.00011	0.04	1	5
Chromium	1455	U	0.0006	0.0056	0.5	10	70
Copper	1455	U	0.0010	0.0098	2	50	100
Mercury	1455	U	< 0.00005	< 0.00005	0.01	0.2	2
Molybdenum	1455	U	0.0045	0.046	0.5	10	30
Nickel	1455	U	< 0.0005	< 0.0005	0.4	10	40
Lead	1455	U	< 0.0005	< 0.0005	0.5	10	50
Antimony	1455	U	< 0.0005	< 0.0005	0.06	0.7	5
Selenium	1455	U	< 0.0005	< 0.0005	0.1	0.5	7
Zinc	1455	U	< 0.003	< 0.003	4	50	200
Chloride	1220	U	< 1.0	< 10	800	15000	25000
Fluoride	1220	U	0.22	2.2	10	150	500
Sulphate	1220	U	1.2	12	1000	20000	50000
Total Dissolved Solids	1020	N	59	580	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	4.0	< 50	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	17

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: 23927 Dalguise House Monkstown Dublin (David Rehill CE)

					Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	22-12129						
Chemtest Sample ID:	1402338						
Sample Ref:					Inert Waste Landfill	Stable, Non-reactive hazardous waste in non-hazardous Landfill	Hazardous Waste Landfill
Sample ID:	AA165493						
Sample Location:	BH03						
Top Depth(m):	1.0						
Bottom Depth(m):							
Sampling Date:							
Determinand	**SOP**	**Accred.**	**Units**				
Total Organic Carbon	2625	U	%	[A] 0.47	3	5	6
Loss On Ignition	2610	U	%	1.7	--	--	10
Total BTEX	2760	U	mg/kg	[A] < 0.010	6	--	--
Total PCBs (7 congeners)	2815	N	mg/kg	[A] < 0.0010	1	--	--
TPH Total WAC	2670	U	mg/kg	[A] < 10	500	--	--
Total Of 17 PAH's	2800	N	mg/kg	[A] < 0.20	100	--	--
pH	2010	U		8.6	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.079	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455	U	< 0.0002	< 0.0002	0.5	2	25
Barium	1455	U	< 0.005	< 0.0005	20	100	300
Cadmium	1455	U	< 0.00011	< 0.00011	0.04	1	5
Chromium	1455	U	0.0007	0.0074	0.5	10	70
Copper	1455	U	0.0010	0.0096	2	50	100
Mercury	1455	U	< 0.00005	< 0.00005	0.01	0.2	2
Molybdenum	1455	U	0.0056	0.056	0.5	10	30
Nickel	1455	U	< 0.0005	< 0.0005	0.4	10	40
Lead	1455	U	< 0.0005	< 0.0005	0.5	10	50
Antimony	1455	U	< 0.0005	< 0.0005	0.06	0.7	5
Selenium	1455	U	< 0.0005	< 0.0005	0.1	0.5	7
Zinc	1455	U	< 0.003	< 0.003	4	50	200
Chloride	1220	U	15	150	800	15000	25000
Fluoride	1220	U	0.32	3.2	10	150	500
Sulphate	1220	U	12	120	1000	20000	50000
Total Dissolved Solids	1020	N	59	580	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	2.8	< 50	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	13

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: 23927 Dalguise House Monkstown Dublin (David Rehill CE)

					Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	22-12129						
Chemtest Sample ID:	1402339						
Sample Ref:							
Sample ID:	AA165495						
Sample Location:	BH03						
Top Depth(m):	3.0						
Bottom Depth(m):							
Sampling Date:					**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Determinand	**SOP**	**Accred.**	**Units**				
Total Organic Carbon	2625	U	%	[A] 0.39	3	5	6
Loss On Ignition	2610	U	%	1.8	--	--	10
Total BTEX	2760	U	mg/kg	[A] < 0.010	6	--	--
Total PCBs (7 congeners)	2815	N	mg/kg	[A] < 0.0010	1	--	--
TPH Total WAC	2670	U	mg/kg	[A] < 10	500	--	--
Total Of 17 PAH's	2800	N	mg/kg	[A] 0.73	100	--	--
pH	2010	U		8.5	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.017	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455	U	0.0002	0.0021	0.5	2	25
Barium	1455	U	0.006	0.064	20	100	300
Cadmium	1455	U	< 0.00011	< 0.00011	0.04	1	5
Chromium	1455	U	0.0007	0.0071	0.5	10	70
Copper	1455	U	0.0009	0.0089	2	50	100
Mercury	1455	U	< 0.00005	< 0.00005	0.01	0.2	2
Molybdenum	1455	U	0.021	0.21	0.5	10	30
Nickel	1455	U	< 0.0005	< 0.0005	0.4	10	40
Lead	1455	U	< 0.0005	< 0.0005	0.5	10	50
Antimony	1455	U	< 0.0005	< 0.0005	0.06	0.7	5
Selenium	1455	U	< 0.0005	< 0.0005	0.1	0.5	7
Zinc	1455	U	< 0.003	< 0.003	4	50	200
Chloride	1220	U	1.8	18	800	15000	25000
Fluoride	1220	U	0.34	3.4	10	150	500
Sulphate	1220	U	2.6	26	1000	20000	50000
Total Dissolved Solids	1020	N	65	650	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	3.3	< 50	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	12

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: 23927 Dalguise House Monkstown Dublin (David Rehill CE)

					Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	22-12129						
Chemtest Sample ID:	1402340						
Sample Ref:							
Sample ID:	AA165491						
Sample Location:	BH04						
Top Depth(m):	1.0						
Bottom Depth(m):							
Sampling Date:							
Determinand	**SOP**	**Accred.**	**Units**		**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Total Organic Carbon	2625	U	%	[A] 1.2	3	5	6
Loss On Ignition	2610	U	%	4.1	--	--	10
Total BTEX	2760	U	mg/kg	[A] < 0.010	6	--	--
Total PCBs (7 congeners)	2815	N	mg/kg	[A] < 0.0010	1	--	--
TPH Total WAC	2670	U	mg/kg	[A] < 10	500	--	--
Total Of 17 PAH's	2800	N	mg/kg	[A] < 0.20	100	--	--
pH	2010	U		8.6	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.013	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455	U	< 0.0002	< 0.0002	0.5	2	25
Barium	1455	U	< 0.005	< 0.0005	20	100	300
Cadmium	1455	U	< 0.00011	< 0.00011	0.04	1	5
Chromium	1455	U	0.0009	0.0095	0.5	10	70
Copper	1455	U	0.0012	0.012	2	50	100
Mercury	1455	U	< 0.00005	< 0.00005	0.01	0.2	2
Molybdenum	1455	U	0.0056	0.056	0.5	10	30
Nickel	1455	U	< 0.0005	< 0.0005	0.4	10	40
Lead	1455	U	< 0.0005	< 0.0005	0.5	10	50
Antimony	1455	U	< 0.0005	< 0.0005	0.06	0.7	5
Selenium	1455	U	< 0.0005	< 0.0005	0.1	0.5	7
Zinc	1455	U	< 0.003	< 0.003	4	50	200
Chloride	1220	U	2.2	22	800	15000	25000
Fluoride	1220	U	0.39	3.9	10	150	500
Sulphate	1220	U	2.9	29	1000	20000	50000
Total Dissolved Solids	1020	N	91	900	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	2.7	< 50	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	26

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: 23927 Dalguise House Monkstown Dublin (David Rehill CE)

					Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	22-12129						
Chemtest Sample ID:	1402341						
Sample Ref:							
Sample ID:	AA165492						
Sample Location:	BH04						
Top Depth(m):	2.0						
Bottom Depth(m):							
Sampling Date:					**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Determinand	**SOP**	**Accred.**	**Units**				
Total Organic Carbon	2625	U	%	[A] 0.39	3	5	6
Loss On Ignition	2610	U	%	2.5	--	--	10
Total BTEX	2760	U	mg/kg	[A] < 0.010	6	--	--
Total PCBs (7 congeners)	2815	N	mg/kg	[A] < 0.0010	1	--	--
TPH Total WAC	2670	U	mg/kg	[A] < 10	500	--	--
Total Of 17 PAH's	2800	N	mg/kg	[A] < 0.20	100	--	--
pH	2010	U		8.5	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.078	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455	U	< 0.0002	< 0.0002	0.5	2	25
Barium	1455	U	< 0.005	< 0.0005	20	100	300
Cadmium	1455	U	< 0.00011	< 0.00011	0.04	1	5
Chromium	1455	U	< 0.0005	< 0.0005	0.5	10	70
Copper	1455	U	0.0007	0.0068	2	50	100
Mercury	1455	U	< 0.00005	< 0.00005	0.01	0.2	2
Molybdenum	1455	U	0.032	0.32	0.5	10	30
Nickel	1455	U	< 0.0005	< 0.0005	0.4	10	40
Lead	1455	U	< 0.0005	< 0.0005	0.5	10	50
Antimony	1455	U	< 0.0005	< 0.0005	0.06	0.7	5
Selenium	1455	U	< 0.0005	< 0.0005	0.1	0.5	7
Zinc	1455	U	< 0.003	< 0.003	4	50	200
Chloride	1220	U	< 1.0	< 10	800	15000	25000
Fluoride	1220	U	0.30	3.0	10	150	500
Sulphate	1220	U	1.7	17	1000	20000	50000
Total Dissolved Solids	1020	N	65	650	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	2.9	< 50	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	14

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: 23927 Dalguise House Monkstown Dublin (David Rehill CE)

					Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	22-12129						
Chemtest Sample ID:	1402342						
Sample Ref:							
Sample ID:	AA162662						
Sample Location:	BH05						
Top Depth(m):	2.0						
Bottom Depth(m):							
Sampling Date:					**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Determinand	**SOP**	**Accred.**	**Units**				
Total Organic Carbon	2625	U	%	[A] 0.33	3	5	6
Loss On Ignition	2610	U	%	3.2	--	--	10
Total BTEX	2760	U	mg/kg	[A] < 0.010	6	--	--
Total PCBs (7 congeners)	2815	N	mg/kg	[A] < 0.0010	1	--	--
TPH Total WAC	2670	U	mg/kg	[A] < 10	500	--	--
Total Of 17 PAH's	2800	N	mg/kg	[A] < 0.20	100	--	--
pH	2010	U		8.7	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.075	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455	U	0.0002	0.0020	0.5	2	25
Barium	1455	U	0.006	0.064	20	100	300
Cadmium	1455	U	< 0.00011	< 0.00011	0.04	1	5
Chromium	1455	U	0.0005	0.0052	0.5	10	70
Copper	1455	U	0.0010	0.0096	2	50	100
Mercury	1455	U	< 0.00005	< 0.00005	0.01	0.2	2
Molybdenum	1455	U	0.0093	0.093	0.5	10	30
Nickel	1455	U	< 0.0005	< 0.0005	0.4	10	40
Lead	1455	U	< 0.0005	< 0.0005	0.5	10	50
Antimony	1455	U	< 0.0005	< 0.0005	0.06	0.7	5
Selenium	1455	U	< 0.0005	< 0.0005	0.1	0.5	7
Zinc	1455	U	< 0.003	< 0.003	4	50	200
Chloride	1220	U	< 1.0	< 10	800	15000	25000
Fluoride	1220	U	0.42	4.2	10	150	500
Sulphate	1220	U	1.8	18	1000	20000	50000
Total Dissolved Solids	1020	N	65	650	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	< 2.5	< 50	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	15

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: 23927 Dalguise House Monkstown Dublin (David Rehill CE)

					Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	22-12129						
Chemtest Sample ID:	1402343						
Sample Ref:							
Sample ID:	AA162663						
Sample Location:	BH05						
Top Depth(m):	3.0						
Bottom Depth(m):							
Sampling Date:					Inert Waste Landfill	Stable, Non-reactive hazardous waste in non-hazardous Landfill	Hazardous Waste Landfill
Determinand	**SOP**	**Accred.**	**Units**				
Total Organic Carbon	2625	U	%	[A] 0.46	3	5	6
Loss On Ignition	2610	U	%	2.2	--	--	10
Total BTEX	2760	U	mg/kg	[A] < 0.010	6	--	--
Total PCBs (7 congeners)	2815	N	mg/kg	[A] < 0.0010	1	--	--
TPH Total WAC	2670	U	mg/kg	[A] < 10	500	--	--
Total Of 17 PAH's	2800	N	mg/kg	[A] < 0.20	100	--	--
pH	2010	U		8.6	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.023	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455	U	0.0003	0.0028	0.5	2	25
Barium	1455	U	0.006	0.056	20	100	300
Cadmium	1455	U	< 0.00011	< 0.00011	0.04	1	5
Chromium	1455	U	< 0.0005	< 0.0005	0.5	10	70
Copper	1455	U	0.0019	0.019	2	50	100
Mercury	1455	U	< 0.00005	< 0.00005	0.01	0.2	2
Molybdenum	1455	U	0.016	0.16	0.5	10	30
Nickel	1455	U	< 0.0005	< 0.0005	0.4	10	40
Lead	1455	U	< 0.0005	< 0.0005	0.5	10	50
Antimony	1455	U	< 0.0005	< 0.0005	0.06	0.7	5
Selenium	1455	U	< 0.0005	< 0.0005	0.1	0.5	7
Zinc	1455	U	< 0.003	< 0.003	4	50	200
Chloride	1220	U	1.1	11	800	15000	25000
Fluoride	1220	U	0.32	3.2	10	150	500
Sulphate	1220	U	2.7	27	1000	20000	50000
Total Dissolved Solids	1020	N	72	710	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	2.8	< 50	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	14

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: 23927 Dalguise House Monkstown Dublin (David Rehill CE)

					Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	22-12129						
Chemtest Sample ID:	1402344						
Sample Ref:							
Sample ID:	AA165497						
Sample Location:	BH06						
Top Depth(m):	1.0						
Bottom Depth(m):							
Sampling Date:					**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Determinand	**SOP**	**Accred.**	**Units**				
Total Organic Carbon	2625	U	%	[A] 0.76	3	5	6
Loss On Ignition	2610	U	%	3.2	--	--	10
Total BTEX	2760	U	mg/kg	[A] < 0.010	6	--	--
Total PCBs (7 congeners)	2815	N	mg/kg	[A] < 0.0010	1	--	--
TPH Total WAC	2670	U	mg/kg	[A] < 10	500	--	--
Total Of 17 PAH's	2800	N	mg/kg	[A] < 0.20	100	--	--
pH	2010	U		8.3	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.042	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455	U	0.0002	0.0022	0.5	2	25
Barium	1455	U	< 0.005	< 0.0005	20	100	300
Cadmium	1455	U	< 0.00011	< 0.00011	0.04	1	5
Chromium	1455	U	0.0007	0.0072	0.5	10	70
Copper	1455	U	0.0015	0.015	2	50	100
Mercury	1455	U	< 0.00005	< 0.00005	0.01	0.2	2
Molybdenum	1455	U	0.0044	0.044	0.5	10	30
Nickel	1455	U	< 0.0005	< 0.0005	0.4	10	40
Lead	1455	U	< 0.0005	< 0.0005	0.5	10	50
Antimony	1455	U	< 0.0005	< 0.0005	0.06	0.7	5
Selenium	1455	U	< 0.0005	< 0.0005	0.1	0.5	7
Zinc	1455	U	< 0.003	< 0.003	4	50	200
Chloride	1220	U	< 1.0	< 10	800	15000	25000
Fluoride	1220	U	0.33	3.3	10	150	500
Sulphate	1220	U	2.3	23	1000	20000	50000
Total Dissolved Solids	1020	N	100	1000	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	4.6	< 50	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	18

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: 23927 Dalguise House Monkstown Dublin (David Rehill CE)

					Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	22-12129						
Chemtest Sample ID:	1402345						
Sample Ref:							
Sample ID:	AA165498						
Sample Location:	BH06						
Top Depth(m):	2.0						
Bottom Depth(m):							
Sampling Date:					**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Determinand	**SOP**	**Accred.**	**Units**				
Total Organic Carbon	2625	U	%	[A] 0.66	3	5	6
Loss On Ignition	2610	U	%	4.5	--	--	10
Total BTEX	2760	U	mg/kg	[A] < 0.010	6	--	--
Total PCBs (7 congeners)	2815	N	mg/kg	[A] < 0.0010	1	--	--
TPH Total WAC	2670	U	mg/kg	[A] < 10	500	--	--
Total Of 17 PAH's	2800	N	mg/kg	[A] < 0.20	100	--	--
pH	2010	U		8.5	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.021	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455	U	< 0.0002	< 0.0002	0.5	2	25
Barium	1455	U	< 0.005	< 0.0005	20	100	300
Cadmium	1455	U	< 0.00011	< 0.00011	0.04	1	5
Chromium	1455	U	< 0.0005	< 0.0005	0.5	10	70
Copper	1455	U	0.0010	0.0097	2	50	100
Mercury	1455	U	< 0.00005	< 0.00005	0.01	0.2	2
Molybdenum	1455	U	0.0042	0.042	0.5	10	30
Nickel	1455	U	< 0.0005	< 0.0005	0.4	10	40
Lead	1455	U	< 0.0005	< 0.0005	0.5	10	50
Antimony	1455	U	< 0.0005	< 0.0005	0.06	0.7	5
Selenium	1455	U	< 0.0005	< 0.0005	0.1	0.5	7
Zinc	1455	U	< 0.003	< 0.003	4	50	200
Chloride	1220	U	< 1.0	< 10	800	15000	25000
Fluoride	1220	U	0.32	3.2	10	150	500
Sulphate	1220	U	2.0	20	1000	20000	50000
Total Dissolved Solids	1020	N	78	780	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	2.9	< 50	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	16

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: 23927 Dalguise House Monkstown Dublin (David Rehill CE)

					Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	22-12129						
Chemtest Sample ID:	1402346						
Sample Ref:							
Sample ID:	AA141843						
Sample Location:	TP21						
Top Depth(m):	0.75						
Bottom Depth(m):							
Sampling Date:					**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Determinand	**SOP**	**Accred.**	**Units**				
Total Organic Carbon	2625	U	%	[A] 1.8	3	5	6
Loss On Ignition	2610	U	%	4.3	--	--	10
Total BTEX	2760	U	mg/kg	[A] < 0.010	6	--	--
Total PCBs (7 congeners)	2815	N	mg/kg	[A] < 0.0010	1	--	--
TPH Total WAC	2670	U	mg/kg	[A] < 10	500	--	--
Total Of 17 PAH's	2800	N	mg/kg	[A] < 0.20	100	--	--
pH	2010	U		8.4	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.0080	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455	U	< 0.0002	< 0.0002	0.5	2	25
Barium	1455	U	< 0.005	< 0.0005	20	100	300
Cadmium	1455	U	< 0.00011	< 0.00011	0.04	1	5
Chromium	1455	U	0.0005	0.0051	0.5	10	70
Copper	1455	U	0.0005	0.0051	2	50	100
Mercury	1455	U	< 0.00005	< 0.00005	0.01	0.2	2
Molybdenum	1455	U	0.0092	0.092	0.5	10	30
Nickel	1455	U	< 0.0005	< 0.0005	0.4	10	40
Lead	1455	U	< 0.0005	< 0.0005	0.5	10	50
Antimony	1455	U	< 0.0005	< 0.0005	0.06	0.7	5
Selenium	1455	U	< 0.0005	< 0.0005	0.1	0.5	7
Zinc	1455	U	< 0.003	< 0.003	4	50	200
Chloride	1220	U	< 1.0	< 10	800	15000	25000
Fluoride	1220	U	0.34	3.4	10	150	500
Sulphate	1220	U	< 1.0	< 10	1000	20000	50000
Total Dissolved Solids	1020	N	46	450	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	4.5	< 50	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	15

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: 23927 Dalguise House Monkstown Dublin (David Rehill CE)

					Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	22-12129						
Chemtest Sample ID:	1402347						
Sample Ref:							
Sample ID:	AA141844						
Sample Location:	TP21						
Top Depth(m):	1.5						
Bottom Depth(m):							
Sampling Date:					**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Determinand	**SOP**	**Accred.**	**Units**				
Total Organic Carbon	2625	U	%	[A] 0.30	3	5	6
Loss On Ignition	2610	U	%	3.0	--	--	10
Total BTEX	2760	U	mg/kg	[A] < 0.010	6	--	--
Total PCBs (7 congeners)	2815	N	mg/kg	[A] < 0.0010	1	--	--
TPH Total WAC	2670	U	mg/kg	[A] < 10	500	--	--
Total Of 17 PAH's	2800	N	mg/kg	[A] < 0.20	100	--	--
pH	2010	U		8.6	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.023	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455	U	< 0.0002	< 0.0002	0.5	2	25
Barium	1455	U	< 0.005	< 0.0005	20	100	300
Cadmium	1455	U	< 0.00011	< 0.00011	0.04	1	5
Chromium	1455	U	0.0006	0.0061	0.5	10	70
Copper	1455	U	0.0008	0.0078	2	50	100
Mercury	1455	U	< 0.00005	< 0.00005	0.01	0.2	2
Molybdenum	1455	U	0.011	0.11	0.5	10	30
Nickel	1455	U	< 0.0005	< 0.0005	0.4	10	40
Lead	1455	U	< 0.0005	< 0.0005	0.5	10	50
Antimony	1455	U	< 0.0005	< 0.0005	0.06	0.7	5
Selenium	1455	U	< 0.0005	< 0.0005	0.1	0.5	7
Zinc	1455	U	< 0.003	< 0.003	4	50	200
Chloride	1220	U	< 1.0	< 10	800	15000	25000
Fluoride	1220	U	0.27	2.7	10	150	500
Sulphate	1220	U	1.0	10	1000	20000	50000
Total Dissolved Solids	1020	N	52	520	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	2.5	< 50	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	5.0

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: 23927 Dalguise House Monkstown Dublin (David Rehill CE)

					Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	22-12129						
Chemtest Sample ID:	1402348						
Sample Ref:							
Sample ID:	AA141845						
Sample Location:	TP21						
Top Depth(m):	3.0						
Bottom Depth(m):							
Sampling Date:					**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Determinand	**SOP**	**Accred.**	**Units**				
Total Organic Carbon	2625	U	%	[A] 0.56	3	5	6
Loss On Ignition	2610	U	%	2.2	--	--	10
Total BTEX	2760	U	mg/kg	[A] < 0.010	6	--	--
Total PCBs (7 congeners)	2815	N	mg/kg	[A] < 0.0010	1	--	--
TPH Total WAC	2670	U	mg/kg	[A] < 10	500	--	--
Total Of 17 PAH's	2800	N	mg/kg	[A] < 0.20	100	--	--
pH	2010	U		8.6	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.039	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455	U	< 0.0002	< 0.0002	0.5	2	25
Barium	1455	U	< 0.005	< 0.0005	20	100	300
Cadmium	1455	U	< 0.00011	< 0.00011	0.04	1	5
Chromium	1455	U	< 0.0005	< 0.0005	0.5	10	70
Copper	1455	U	0.0009	0.0092	2	50	100
Mercury	1455	U	< 0.00005	< 0.00005	0.01	0.2	2
Molybdenum	1455	U	0.029	0.29	0.5	10	30
Nickel	1455	U	< 0.0005	< 0.0005	0.4	10	40
Lead	1455	U	< 0.0005	< 0.0005	0.5	10	50
Antimony	1455	U	< 0.0005	< 0.0005	0.06	0.7	5
Selenium	1455	U	0.0053	0.053	0.1	0.5	7
Zinc	1455	U	< 0.003	< 0.003	4	50	200
Chloride	1220	U	3.1	31	800	15000	25000
Fluoride	1220	U	0.35	3.5	10	150	500
Sulphate	1220	U	9.1	91	1000	20000	50000
Total Dissolved Solids	1020	N	72	720	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	< 2.5	< 50	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	7.9

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: 23927 Dalguise House Monkstown Dublin (David Rehill CE)

Chemtest Job No:	22-12129				**Landfill Waste Acceptance Criteria Limits**		
Chemtest Sample ID:	1402349						
Sample Ref:					**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Sample ID:	AA141846						
Sample Location:	TP22						
Top Depth(m):	0.6						
Bottom Depth(m):							
Sampling Date:							
Determinand	**SOP**	**Accred.**	**Units**				
Total Organic Carbon	2625	U	%	[A] 1.0	3	5	6
Loss On Ignition	2610	U	%	5.4	--	--	10
Total BTEX	2760	U	mg/kg	[A] < 0.010	6	--	--
Total PCBs (7 congeners)	2815	N	mg/kg	[A] < 0.0010	1	--	--
TPH Total WAC	2670	U	mg/kg	[A] < 10	500	--	--
Total Of 17 PAH's	2800	N	mg/kg	[A] < 0.20	100	--	--
pH	2010	U		8.6	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.012	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455	U	< 0.0002	< 0.0002	0.5	2	25
Barium	1455	U	< 0.005	< 0.0005	20	100	300
Cadmium	1455	U	< 0.00011	< 0.00011	0.04	1	5
Chromium	1455	U	0.0007	0.0070	0.5	10	70
Copper	1455	U	0.0012	0.012	2	50	100
Mercury	1455	U	< 0.00005	< 0.00005	0.01	0.2	2
Molybdenum	1455	U	0.0017	0.017	0.5	10	30
Nickel	1455	U	< 0.0005	< 0.0005	0.4	10	40
Lead	1455	U	< 0.0005	< 0.0005	0.5	10	50
Antimony	1455	U	< 0.0005	< 0.0005	0.06	0.7	5
Selenium	1455	U	< 0.0005	< 0.0005	0.1	0.5	7
Zinc	1455	U	< 0.003	< 0.003	4	50	200
Chloride	1220	U	< 1.0	< 10	800	15000	25000
Fluoride	1220	U	0.39	3.9	10	150	500
Sulphate	1220	U	< 1.0	< 10	1000	20000	50000
Total Dissolved Solids	1020	N	65	650	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	7.5	75	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	16

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: 23927 Dalguise House Monkstown Dublin (David Rehill CE)

					Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	22-12129						
Chemtest Sample ID:	1402350						
Sample Ref:							
Sample ID:	AA141847						
Sample Location:	TP22						
Top Depth(m):	1.5						
Bottom Depth(m):							
Sampling Date:					**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Determinand	**SOP**	**Accred.**	**Units**				
Total Organic Carbon	2625	U	%	[A] 0.21	3	5	6
Loss On Ignition	2610	U	%	2.7	--	--	10
Total BTEX	2760	U	mg/kg	[A] < 0.010	6	--	--
Total PCBs (7 congeners)	2815	N	mg/kg	[A] < 0.0010	1	--	--
TPH Total WAC	2670	U	mg/kg	[A] < 10	500	--	--
Total Of 17 PAH's	2800	N	mg/kg	[A] < 0.20	100	--	--
pH	2010	U		8.6	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.48	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455	U	< 0.0002	< 0.0002	0.5	2	25
Barium	1455	U	< 0.005	< 0.0005	20	100	300
Cadmium	1455	U	< 0.00011	< 0.00011	0.04	1	5
Chromium	1455	U	0.0007	0.0073	0.5	10	70
Copper	1455	U	0.0006	0.0063	2	50	100
Mercury	1455	U	< 0.00005	< 0.00005	0.01	0.2	2
Molybdenum	1455	U	0.0083	0.083	0.5	10	30
Nickel	1455	U	< 0.0005	< 0.0005	0.4	10	40
Lead	1455	U	< 0.0005	< 0.0005	0.5	10	50
Antimony	1455	U	< 0.0005	< 0.0005	0.06	0.7	5
Selenium	1455	U	< 0.0005	< 0.0005	0.1	0.5	7
Zinc	1455	U	< 0.003	< 0.003	4	50	200
Chloride	1220	U	< 1.0	< 10	800	15000	25000
Fluoride	1220	U	0.26	2.6	10	150	500
Sulphate	1220	U	< 1.0	< 10	1000	20000	50000
Total Dissolved Solids	1020	N	59	580	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	2.5	< 50	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	10

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: 23927 Dalguise House Monkstown Dublin (David Rehill CE)

					Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	22-12129						
Chemtest Sample ID:	1402351						
Sample Ref:							
Sample ID:	AA141848						
Sample Location:	TP22						
Top Depth(m):	3.3						
Bottom Depth(m):							
Sampling Date:					**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Determinand	**SOP**	**Accred.**	**Units**				
Total Organic Carbon	2625	U	%	[A] 0.85	3	5	6
Loss On Ignition	2610	U	%	2.9	--	--	10
Total BTEX	2760	U	mg/kg	[A] < 0.010	6	--	--
Total PCBs (7 congeners)	2815	N	mg/kg	[A] < 0.0010	1	--	--
TPH Total WAC	2670	U	mg/kg	[A] < 10	500	--	--
Total Of 17 PAH's	2800	N	mg/kg	[A] < 0.20	100	--	--
pH	2010	U		8.3	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.014	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455	U	< 0.0002	< 0.0002	0.5	2	25
Barium	1455	U	< 0.005	< 0.0005	20	100	300
Cadmium	1455	U	< 0.00011	< 0.00011	0.04	1	5
Chromium	1455	U	0.0005	0.0053	0.5	10	70
Copper	1455	U	0.0008	0.0075	2	50	100
Mercury	1455	U	< 0.00005	< 0.00005	0.01	0.2	2
Molybdenum	1455	U	0.015	0.15	0.5	10	30
Nickel	1455	U	< 0.0005	< 0.0005	0.4	10	40
Lead	1455	U	< 0.0005	< 0.0005	0.5	10	50
Antimony	1455	U	< 0.0005	< 0.0005	0.06	0.7	5
Selenium	1455	U	< 0.0005	< 0.0005	0.1	0.5	7
Zinc	1455	U	< 0.003	< 0.003	4	50	200
Chloride	1220	U	< 1.0	< 10	800	15000	25000
Fluoride	1220	U	0.26	2.6	10	150	500
Sulphate	1220	U	< 1.0	< 10	1000	20000	50000
Total Dissolved Solids	1020	N	59	580	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	8.1	81	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	9.9

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: 23927 Dalguise House Monkstown Dublin (David Rehill CE)

					Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	22-12129						
Chemtest Sample ID:	1402352						
Sample Ref:							
Sample ID:	AA141849						
Sample Location:	TP23						
Top Depth(m):	0.3						
Bottom Depth(m):							
Sampling Date:					**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Determinand	**SOP**	**Accred.**	**Units**				
Total Organic Carbon	2625	U	%	[A] 1.9	3	5	6
Loss On Ignition	2610	U	%	4.9	--	--	10
Total BTEX	2760	U	mg/kg	[A] < 0.010	6	--	--
Total PCBs (7 congeners)	2815	N	mg/kg	[A] < 0.0010	1	--	--
TPH Total WAC	2670	U	mg/kg	[A] < 10	500	--	--
Total Of 17 PAH's	2800	N	mg/kg	[A] < 0.20	100	--	--
pH	2010	U		8.5	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.015	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455	U	0.0003	0.0029	0.5	2	25
Barium	1455	U	< 0.005	< 0.0005	20	100	300
Cadmium	1455	U	< 0.00011	< 0.00011	0.04	1	5
Chromium	1455	U	< 0.0005	< 0.0005	0.5	10	70
Copper	1455	U	0.0012	0.012	2	50	100
Mercury	1455	U	< 0.00005	< 0.00005	0.01	0.2	2
Molybdenum	1455	U	0.0004	0.0039	0.5	10	30
Nickel	1455	U	< 0.0005	< 0.0005	0.4	10	40
Lead	1455	U	< 0.0005	< 0.0005	0.5	10	50
Antimony	1455	U	< 0.0005	< 0.0005	0.06	0.7	5
Selenium	1455	U	< 0.0005	< 0.0005	0.1	0.5	7
Zinc	1455	U	0.003	0.025	4	50	200
Chloride	1220	U	1.1	11	800	15000	25000
Fluoride	1220	U	0.33	3.3	10	150	500
Sulphate	1220	U	< 1.0	< 10	1000	20000	50000
Total Dissolved Solids	1020	N	26	260	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	3.2	< 50	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	16

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: 23927 Dalguise House Monkstown Dublin (David Rehill CE)

					Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	22-12129						
Chemtest Sample ID:	1402353						
Sample Ref:							
Sample ID:	AA141850						
Sample Location:	TP23						
Top Depth(m):	1.2						
Bottom Depth(m):							
Sampling Date:					**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Determinand	**SOP**	**Accred.**	**Units**				
Total Organic Carbon	2625	U	%	[A] 0.40	3	5	6
Loss On Ignition	2610	U	%	1.8	--	--	10
Total BTEX	2760	U	mg/kg	[A] < 0.010	6	--	--
Total PCBs (7 congeners)	2815	N	mg/kg	[A] < 0.0010	1	--	--
TPH Total WAC	2670	U	mg/kg	[A] < 10	500	--	--
Total Of 17 PAH's	2800	N	mg/kg	[A] < 0.20	100	--	--
pH	2010	U		8.7	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.0070	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455	U	< 0.0002	< 0.0002	0.5	2	25
Barium	1455	U	< 0.005	< 0.0005	20	100	300
Cadmium	1455	U	< 0.00011	< 0.00011	0.04	1	5
Chromium	1455	U	< 0.0005	< 0.0005	0.5	10	70
Copper	1455	U	0.0007	0.0075	2	50	100
Mercury	1455	U	< 0.00005	< 0.00005	0.01	0.2	2
Molybdenum	1455	U	0.0007	0.0068	0.5	10	30
Nickel	1455	U	< 0.0005	< 0.0005	0.4	10	40
Lead	1455	U	< 0.0005	< 0.0005	0.5	10	50
Antimony	1455	U	< 0.0005	< 0.0005	0.06	0.7	5
Selenium	1455	U	< 0.0005	< 0.0005	0.1	0.5	7
Zinc	1455	U	< 0.003	< 0.003	4	50	200
Chloride	1220	U	< 1.0	< 10	800	15000	25000
Fluoride	1220	U	0.095	< 1.0	10	150	500
Sulphate	1220	U	< 1.0	< 10	1000	20000	50000
Total Dissolved Solids	1020	N	26	260	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	3.3	< 50	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	12

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: 23927 Dalguise House Monkstown Dublin (David Rehill CE)

					Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	22-12129						
Chemtest Sample ID:	1402354						
Sample Ref:					**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Sample ID:	AA141801						
Sample Location:	TP23						
Top Depth(m):	2.4						
Bottom Depth(m):							
Sampling Date:							
Determinand	**SOP**	**Accred.**	**Units**				
Total Organic Carbon	2625	U	%	[A] 0.30	3	5	6
Loss On Ignition	2610	U	%	20	--	--	10
Total BTEX	2760	U	mg/kg	[A] < 0.010	6	--	--
Total PCBs (7 congeners)	2815	N	mg/kg	[A] < 0.0010	1	--	--
TPH Total WAC	2670	U	mg/kg	[A] < 10	500	--	--
Total Of 17 PAH's	2800	N	mg/kg	[A] < 0.20	100	--	--
pH	2010	U		8.6	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.038	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455	U	< 0.0002	< 0.0002	0.5	2	25
Barium	1455	U	< 0.005	< 0.0005	20	100	300
Cadmium	1455	U	< 0.00011	< 0.00011	0.04	1	5
Chromium	1455	U	< 0.0005	< 0.0005	0.5	10	70
Copper	1455	U	0.0006	0.0056	2	50	100
Mercury	1455	U	< 0.00005	< 0.00005	0.01	0.2	2
Molybdenum	1455	U	0.0003	0.0025	0.5	10	30
Nickel	1455	U	< 0.0005	< 0.0005	0.4	10	40
Lead	1455	U	< 0.0005	< 0.0005	0.5	10	50
Antimony	1455	U	< 0.0005	< 0.0005	0.06	0.7	5
Selenium	1455	U	< 0.0005	< 0.0005	0.1	0.5	7
Zinc	1455	U	< 0.003	< 0.003	4	50	200
Chloride	1220	U	< 1.0	< 10	800	15000	25000
Fluoride	1220	U	0.087	< 1.0	10	150	500
Sulphate	1220	U	< 1.0	< 10	1000	20000	50000
Total Dissolved Solids	1020	N	20	200	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	< 2.5	< 50	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	13

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: 23927 Dalguise House Monkstown Dublin (David Rehill CE)

					Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	22-12129						
Chemtest Sample ID:	1402355						
Sample Ref:							
Sample ID:	AA146803						
Sample Location:	TP24						
Top Depth(m):	0.5						
Bottom Depth(m):							
Sampling Date:					**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Determinand	**SOP**	**Accred.**	**Units**				
Total Organic Carbon	2625	U	%	[A] 0.74	3	5	6
Loss On Ignition	2610	U	%	3.6	--	--	10
Total BTEX	2760	U	mg/kg	[A] < 0.010	6	--	--
Total PCBs (7 congeners)	2815	N	mg/kg	[A] < 0.0010	1	--	--
TPH Total WAC	2670	U	mg/kg	[A] < 10	500	--	--
Total Of 17 PAH's	2800	N	mg/kg	[A] < 0.20	100	--	--
pH	2010	U		9.3	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.0040	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455	U	0.0003	0.0029	0.5	2	25
Barium	1455	U	< 0.005	< 0.0005	20	100	300
Cadmium	1455	U	< 0.00011	< 0.00011	0.04	1	5
Chromium	1455	U	< 0.0005	< 0.0005	0.5	10	70
Copper	1455	U	0.0009	0.0094	2	50	100
Mercury	1455	U	< 0.00005	< 0.00005	0.01	0.2	2
Molybdenum	1455	U	0.0006	0.0057	0.5	10	30
Nickel	1455	U	< 0.0005	< 0.0005	0.4	10	40
Lead	1455	U	< 0.0005	< 0.0005	0.5	10	50
Antimony	1455	U	< 0.0005	< 0.0005	0.06	0.7	5
Selenium	1455	U	< 0.0005	< 0.0005	0.1	0.5	7
Zinc	1455	U	< 0.003	< 0.003	4	50	200
Chloride	1220	U	< 1.0	< 10	800	15000	25000
Fluoride	1220	U	0.12	1.2	10	150	500
Sulphate	1220	U	< 1.0	< 10	1000	20000	50000
Total Dissolved Solids	1020	N	33	320	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	3.7	< 50	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	13

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: 23927 Dalguise House Monkstown Dublin (David Rehill CE)

					Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	22-12129						
Chemtest Sample ID:	1402356						
Sample Ref:					Inert Waste Landfill	Stable, Non-reactive hazardous waste in non-hazardous Landfill	Hazardous Waste Landfill
Sample ID:	AA146804						
Sample Location:	TP24						
Top Depth(m):	2.0						
Bottom Depth(m):							
Sampling Date:							
Determinand	**SOP**	**Accred.**	**Units**				
Total Organic Carbon	2625	U	%	[A] 0.33	3	5	6
Loss On Ignition	2610	U	%	3.9	--	--	10
Total BTEX	2760	U	mg/kg	[A] < 0.010	6	--	--
Total PCBs (7 congeners)	2815	N	mg/kg	[A] < 0.0010	1	--	--
TPH Total WAC	2670	U	mg/kg	[A] < 10	500	--	--
Total Of 17 PAH's	2800	N	mg/kg	[A] < 0.20	100	--	--
pH	2010	U		8.6	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.017	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455	U	< 0.0002	< 0.0002	0.5	2	25
Barium	1455	U	< 0.005	< 0.0005	20	100	300
Cadmium	1455	U	< 0.00011	< 0.00011	0.04	1	5
Chromium	1455	U	< 0.0005	< 0.0005	0.5	10	70
Copper	1455	U	0.0013	0.013	2	50	100
Mercury	1455	U	< 0.00005	< 0.00005	0.01	0.2	2
Molybdenum	1455	U	< 0.0002	< 0.0002	0.5	10	30
Nickel	1455	U	< 0.0005	< 0.0005	0.4	10	40
Lead	1455	U	< 0.0005	< 0.0005	0.5	10	50
Antimony	1455	U	< 0.0005	< 0.0005	0.06	0.7	5
Selenium	1455	U	< 0.0005	< 0.0005	0.1	0.5	7
Zinc	1455	U	< 0.003	< 0.003	4	50	200
Chloride	1220	U	< 1.0	< 10	800	15000	25000
Fluoride	1220	U	0.085	< 1.0	10	150	500
Sulphate	1220	U	< 1.0	< 10	1000	20000	50000
Total Dissolved Solids	1020	N	20	200	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	< 2.5	< 50	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	14

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: 23927 Dalguise House Monkstown Dublin (David Rehill CE)

Chemtest Job No:	22-12129				**Landfill Waste Acceptance Criteria Limits**		
Chemtest Sample ID:	1402357						
Sample Ref:					**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Sample ID:	AA146807						
Sample Location:	TP25						
Top Depth(m):	0.6						
Bottom Depth(m):							
Sampling Date:							
Determinand	**SOP**	**Accred.**	**Units**				
Total Organic Carbon	2625	U	%	[A] 0.49	3	5	6
Loss On Ignition	2610	U	%	3.0	--	--	10
Total BTEX	2760	U	mg/kg	[A] < 0.010	6	--	--
Total PCBs (7 congeners)	2815	N	mg/kg	[A] < 0.0010	1	--	--
TPH Total WAC	2670	U	mg/kg	[A] < 10	500	--	--
Total Of 17 PAH's	2800	N	mg/kg	[A] < 0.20	100	--	--
pH	2010	U		8.3	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.0040	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455	U	< 0.0002	< 0.0002	0.5	2	25
Barium	1455	U	< 0.005	< 0.0005	20	100	300
Cadmium	1455	U	< 0.00011	< 0.00011	0.04	1	5
Chromium	1455	U	< 0.0005	< 0.0005	0.5	10	70
Copper	1455	U	0.0008	0.0080	2	50	100
Mercury	1455	U	< 0.00005	< 0.00005	0.01	0.2	2
Molybdenum	1455	U	0.0003	0.0026	0.5	10	30
Nickel	1455	U	< 0.0005	< 0.0005	0.4	10	40
Lead	1455	U	< 0.0005	< 0.0005	0.5	10	50
Antimony	1455	U	< 0.0005	< 0.0005	0.06	0.7	5
Selenium	1455	U	< 0.0005	< 0.0005	0.1	0.5	7
Zinc	1455	U	< 0.003	< 0.003	4	50	200
Chloride	1220	U	< 1.0	< 10	800	15000	25000
Fluoride	1220	U	0.10	1.0	10	150	500
Sulphate	1220	U	< 1.0	< 10	1000	20000	50000
Total Dissolved Solids	1020	N	20	200	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	3.2	< 50	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	14

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: 23927 Dalguise House Monkstown Dublin (David Rehill CE)

					Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	22-12129						
Chemtest Sample ID:	1402358						
Sample Ref:							
Sample ID:	AA146808						
Sample Location:	TP25						
Top Depth(m):	1.5						
Bottom Depth(m):							
Sampling Date:					Inert Waste Landfill	Stable, Non-reactive hazardous waste in non-hazardous Landfill	Hazardous Waste Landfill
Determinand	**SOP**	**Accred.**	**Units**				
Total Organic Carbon	2625	U	%	[A] 0.29	3	5	6
Loss On Ignition	2610	U	%	2.9	--	--	10
Total BTEX	2760	U	mg/kg	[A] < 0.010	6	--	--
Total PCBs (7 congeners)	2815	N	mg/kg	[A] < 0.0010	1	--	--
TPH Total WAC	2670	U	mg/kg	[A] < 10	500	--	--
Total Of 17 PAH's	2800	N	mg/kg	[A] < 0.20	100	--	--
pH	2010	U		8.5	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.015	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455	U	< 0.0002	< 0.0002	0.5	2	25
Barium	1455	U	< 0.005	< 0.0005	20	100	300
Cadmium	1455	U	< 0.00011	< 0.00011	0.04	1	5
Chromium	1455	U	< 0.0005	< 0.0005	0.5	10	70
Copper	1455	U	< 0.0005	< 0.0005	2	50	100
Mercury	1455	U	< 0.00005	< 0.00005	0.01	0.2	2
Molybdenum	1455	U	< 0.0002	< 0.0002	0.5	10	30
Nickel	1455	U	< 0.0005	< 0.0005	0.4	10	40
Lead	1455	U	< 0.0005	< 0.0005	0.5	10	50
Antimony	1455	U	< 0.0005	< 0.0005	0.06	0.7	5
Selenium	1455	U	< 0.0005	< 0.0005	0.1	0.5	7
Zinc	1455	U	< 0.003	< 0.003	4	50	200
Chloride	1220	U	< 1.0	< 10	800	15000	25000
Fluoride	1220	U	0.087	< 1.0	10	150	500
Sulphate	1220	U	< 1.0	< 10	1000	20000	50000
Total Dissolved Solids	1020	N	20	200	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	< 2.5	< 50	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	13

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: 23927 Dalguise House Monkstown Dublin (David Rehill CE)

					Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	22-12129						
Chemtest Sample ID:	1402359						
Sample Ref:							
Sample ID:	AA146809						
Sample Location:	TP26						
Top Depth(m):	0.5						
Bottom Depth(m):							
Sampling Date:					**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Determinand	**SOP**	**Accred.**	**Units**				
Total Organic Carbon	2625	U	%	[A] 0.99	3	5	6
Loss On Ignition	2610	U	%	3.8	--	--	10
Total BTEX	2760	U	mg/kg	[A] < 0.010	6	--	--
Total PCBs (7 congeners)	2815	N	mg/kg	[A] < 0.0010	1	--	--
TPH Total WAC	2670	U	mg/kg	[A] < 10	500	--	--
Total Of 17 PAH's	2800	N	mg/kg	[A] < 0.20	100	--	--
pH	2010	U		8.4	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.030	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455	U	< 0.0002	< 0.0002	0.5	2	25
Barium	1455	U	< 0.005	< 0.0005	20	100	300
Cadmium	1455	U	< 0.00011	< 0.00011	0.04	1	5
Chromium	1455	U	< 0.0005	< 0.0005	0.5	10	70
Copper	1455	U	< 0.0005	< 0.0005	2	50	100
Mercury	1455	U	< 0.00005	< 0.00005	0.01	0.2	2
Molybdenum	1455	U	< 0.0002	< 0.0002	0.5	10	30
Nickel	1455	U	< 0.0005	< 0.0005	0.4	10	40
Lead	1455	U	< 0.0005	< 0.0005	0.5	10	50
Antimony	1455	U	< 0.0005	< 0.0005	0.06	0.7	5
Selenium	1455	U	< 0.0005	< 0.0005	0.1	0.5	7
Zinc	1455	U	< 0.003	< 0.003	4	50	200
Chloride	1220	U	< 1.0	< 10	800	15000	25000
Fluoride	1220	U	0.092	< 1.0	10	150	500
Sulphate	1220	U	< 1.0	< 10	1000	20000	50000
Total Dissolved Solids	1020	N	6.5	65	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	3.0	< 50	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	19

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: 23927 Dalguise House Monkstown Dublin (David Rehill CE)

					Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	22-12129						
Chemtest Sample ID:	1402360						
Sample Ref:							
Sample ID:	AA146810						
Sample Location:	TP26						
Top Depth(m):	1.6						
Bottom Depth(m):							
Sampling Date:					**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Determinand	**SOP**	**Accred.**	**Units**				
Total Organic Carbon	2625	U	%	[A] 0.27	3	5	6
Loss On Ignition	2610	U	%	2.7	--	--	10
Total BTEX	2760	U	mg/kg	[A] < 0.010	6	--	--
Total PCBs (7 congeners)	2815	N	mg/kg	[A] < 0.0010	1	--	--
TPH Total WAC	2670	U	mg/kg	[A] < 10	500	--	--
Total Of 17 PAH's	2800	N	mg/kg	[A] < 0.20	100	--	--
pH	2010	U		8.6	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.067	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455	U	0.0002	0.0024	0.5	2	25
Barium	1455	U	< 0.005	< 0.0005	20	100	300
Cadmium	1455	U	< 0.00011	< 0.00011	0.04	1	5
Chromium	1455	U	< 0.0005	< 0.0005	0.5	10	70
Copper	1455	U	0.0009	0.0088	2	50	100
Mercury	1455	U	< 0.00005	< 0.00005	0.01	0.2	2
Molybdenum	1455	U	< 0.0002	< 0.0002	0.5	10	30
Nickel	1455	U	< 0.0005	< 0.0005	0.4	10	40
Lead	1455	U	< 0.0005	< 0.0005	0.5	10	50
Antimony	1455	U	< 0.0005	< 0.0005	0.06	0.7	5
Selenium	1455	U	< 0.0005	< 0.0005	0.1	0.5	7
Zinc	1455	U	< 0.003	< 0.003	4	50	200
Chloride	1220	U	< 1.0	< 10	800	15000	25000
Fluoride	1220	U	0.085	< 1.0	10	150	500
Sulphate	1220	U	< 1.0	< 10	1000	20000	50000
Total Dissolved Solids	1020	N	26	260	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	2.7	< 50	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	13

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Test Methods

SOP	Title	Parameters included	Method summary
1010	pH Value of Waters	pH	pH Meter
1020	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Conductivity Meter
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.
1455	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).
1610	Total/Dissolved Organic Carbon in Waters	Organic Carbon	TOC Analyser using Catalytic Oxidation
1800	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Waters by GC-MS	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Pentane extraction / GCMS detection
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.
2010	pH Value of Soils	pH	pH Meter
2015	Acid Neutralisation Capacity	Acid Reserve	Titration
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2175	Total Sulphur in Soils	Total Sulphur	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2180	Sulphur (Elemental) in Soils by HPLC	Sulphur	Dichloromethane extraction / HPLC with UV detection
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry
2220	Water soluble Chloride in Soils	Chloride	Aqueous extraction and measuremernt by 'Aquakem 600' Discrete Analyser using ferric nitrate / mercuric thiocyanate.
2300	Cyanides & Thiocyanate in Soils	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Allkaline extraction followed by colorimetric determination using Automated Flow Injection Analyser.
2325	Sulphide in Soils	Sulphide	Steam distillation with sulphuric acid / analysis by 'Aquakem 600' Discrete Analyser, using N,N–dimethyl-p-phenylenediamine.
2430	Total Sulphate in soils	Total Sulphate	Acid digestion followed by determination of sulphate in extract by ICP-OES.
2450	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.
2490	Hexavalent Chromium in Soils	Chromium [VI]	Soil extracts are prepared by extracting dried and ground soil samples into boiling water. Chromium [VI] is determined by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.

Test Methods

SOP	Title	Parameters included	Method summary
2610	Loss on Ignition	loss on ignition (LOI)	Determination of the proportion by mass that is lost from a soil by ignition at 550°C.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2670	Total Petroleum Hydrocarbons (TPH) in Soils by GC-FID	TPH (C6–C40); optional carbon banding, e.g. 3-band – GRO, DRO & LRO*TPH C8–C40	Dichloromethane extraction / GC-FID
2680	TPH A/A Split	Aliphatics: >C5–C6, >C6–C8,>C8–C10, >C10–C12, >C12–C16, >C16–C21, >C21–C35, >C35– C44Aromatics: >C5–C7, >C7–C8, >C8– C10, >C10–C12, >C12–C16, >C16– C21, >C21– C35, >C35– C44	Dichloromethane extraction / GCxGC FID detection
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2800	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-MS	Acenaphthene*; Acenaphthylene; Anthracene*; Benzo[a]Anthracene*; Benzo[a]Pyrene*; Benzo[b]Fluoranthene*; Benzo[ghi]Perylene*; Benzo[k]Fluoranthene; Chrysene*; Dibenz[ah]Anthracene; Fluoranthene*; Fluorene*; Indeno[123cd]Pyrene*; Naphthalene*; Phenanthrene*; Pyrene*	Dichloromethane extraction / GC-MS
2815	Polychlorinated Biphenyls (PCB) ICES7Congeners in Soils by GC-MS	ICES7 PCB congeners	Acetone/Hexane extraction / GC-MS
2920	Phenols in Soils by HPLC	Phenolic compounds including Resorcinol, Phenol, Methylphenols, Dimethylphenols, 1-Naphthol and TrimethylphenolsNote: chlorophenols are excluded.	60:40 methanol/water mixture extraction, followed by HPLC determination using electrochemical detection.
640	Characterisation of Waste (Leaching C10)	Waste material including soil, sludges and granular waste	ComplianceTest for Leaching of Granular Waste Material and Sludge

Report Information

Key

U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"
SOP	Standard operating procedure
LOD	Limit of detection

Comments or interpretations are beyond the scope of UKAS accreditation
The results relate only to the items tested
Uncertainty of measurement for the determinands tested are available upon request
None of the results in this report have been recovery corrected
All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis
All Asbestos testing is performed at the indicated laboratory
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied
B - Sample age exceeds stability time (sampling to extraction)
C - Sample not received in appropriate containers
D - Broken Container
E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 30 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.com

UKAS TESTING 2183

eurofins Chemtest

Eurofins Chemtest Ltd
Depot Road
Newmarket
CB8 0AL
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Email: info@chemtest.com

Amended Report

Report No.:	22-12698-2		
Initial Date of Issue:	12-Apr-2022		
Client	IGSL		
Client Address:	M7 Business Park Naas County Kildare Ireland		
Contact(s):	Darren Keogh		
Project	23927 Dalguise House Monkstown Dublin (David Rehill CE)		
Quotation No.:	Q20-19951	**Date Received:**	04-Apr-2022
Order No.:		**Date Instructed:**	04-Apr-2022
No. of Samples:	3		
Turnaround (Wkdays):	7	**Results Due:**	12-Apr-2022
Date Approved:	12-Apr-2022		
Approved By:			

A.C. Drinkwater

Details: Alison Drinkwater, Specalist Chemist

Results - Leachate

Project: 23927 Dalguise House Monkstown Dublin (David Rehill CE)

Client: IGSL					**Chemtest Job No.:**	22-12698	22-12698	22-12698
Quotation No.: Q20-19951					**Chemtest Sample ID.:**	1405028	1405032	1405036
					Client Sample ID.:	AA161951	AA165494	AA162661
					Sample Location:	BH02A	BH03	BH05
					Sample Type:	SOIL	SOIL	SOIL
					Top Depth (m):	1.00	2.00	1.00
Determinand	**Accred.**	**SOP**	**Type**	**Units**	**LOD**			
pH	U	1010	10:1		N/A	8.4	8.6	8.4
Ammonium	U	1220	10:1	mg/l	0.050	< 0.050	0.098	< 0.050
Ammonium	N	1220	10:1	mg/kg	0.10	0.34	1.2	0.15
Boron (Dissolved)	U	1455	10:1	mg/kg	0.01	< 0.01	< 0.01	< 0.01
Benzo[j]fluoranthene	N	1800	10:1	µg/l	0.010	< 0.010	< 0.010	< 0.010

Results - Soil

Project: 23927 Dalguise House Monkstown Dublin (David Rehill CE)

Client: IGSL				**Chemtest Job No.:**	22-12698	22-12698	22-12698
Quotation No.: Q20-19951				**Chemtest Sample ID.:**	1405028	1405032	1405036
				Client Sample ID.:	AA161951	AA165494	AA162661
				Sample Location:	BH02A	BH03	BH05
				Sample Type:	SOIL	SOIL	SOIL
				Top Depth (m):	1.00	2.00	1.00
				Asbestos Lab:	COVENTRY	COVENTRY	COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**			
ACM Type	U	2192		N/A	-	-	-
Asbestos Identification	U	2192		N/A	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected
Moisture	N	2030	%	0.020	18	14	10
Boron (Hot Water Soluble)	U	2120	mg/kg	0.40	0.67	< 0.40	< 0.40
Sulphur (Elemental)	U	2180	mg/kg	1.0	4.3	< 1.0	1.4
Cyanide (Total)	U	2300	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Sulphide (Easily Liberatable)	N	2325	mg/kg	0.50	7.2	3.9	6.7
Sulphate (Acid Soluble)	U	2430	%	0.010	0.02	0.018	0.027
Arsenic	U	2450	mg/kg	1.0	6.0	8.1	11
Barium	U	2450	mg/kg	10	41	27	49
Cadmium	U	2450	mg/kg	0.10	0.60	1.0	1.3
Chromium	U	2450	mg/kg	1.0	9.8	7.2	9.2
Molybdenum	U	2450	mg/kg	2.0	< 2.0	< 2.0	< 2.0
Antimony	N	2450	mg/kg	2.0	< 2.0	< 2.0	< 2.0
Copper	U	2450	mg/kg	0.50	15	14	21
Mercury	U	2450	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Nickel	U	2450	mg/kg	0.50	21	22	29
Lead	U	2450	mg/kg	0.50	26	8.0	22
Selenium	U	2450	mg/kg	0.20	0.20	0.54	0.43
Zinc	U	2450	mg/kg	0.50	37	40	87
Chromium (Trivalent)	N	2490	mg/kg	1.0	9.8	7.2	10.2
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Mineral Oil (TPH Calculation)	N	2670	mg/kg	10	< 10	< 10	< 10
Aliphatic TPH >C5-C6	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C6-C8	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C8-C10	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C10-C12	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C12-C16	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C16-C21	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C21-C35	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0	< 5.0	< 5.0	< 5.0
Aromatic TPH >C5-C7	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C7-C8	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C8-C10	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C10-C12	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C12-C16	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0

Results - Soil

Project: 23927 Dalguise House Monkstown Dublin (David Rehill CE)

Client: IGSL				**Chemtest Job No.:**	22-12698	22-12698	22-12698
Quotation No.: Q20-19951				**Chemtest Sample ID.:**	1405028	1405032	1405036
				Client Sample ID.:	AA161951	AA165494	AA162661
				Sample Location:	BH02A	BH03	BH05
				Sample Type:	SOIL	SOIL	SOIL
				Top Depth (m):	1.00	2.00	1.00
				Asbestos Lab:	COVENTRY	COVENTRY	COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**			
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C21-C35	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0	< 5.0	< 5.0	< 5.0
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0	< 10	< 10	< 10
Benzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Toluene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
m & p-Xylene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
o-Xylene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Methyl Tert-Butyl Ether	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Naphthalene	N	2800	mg/kg	0.010	0.43	< 0.010	< 0.010
Acenaphthylene	N	2800	mg/kg	0.010	0.048	< 0.010	< 0.010
Acenaphthene	N	2800	mg/kg	0.010	0.092	< 0.010	< 0.010
Fluorene	N	2800	mg/kg	0.010	0.04	< 0.010	< 0.010
Phenanthrene	N	2800	mg/kg	0.010	0.2	< 0.010	< 0.010
Anthracene	N	2800	mg/kg	0.010	0.038	< 0.010	< 0.010
Fluoranthene	N	2800	mg/kg	0.010	0.31	< 0.010	< 0.010
Pyrene	N	2800	mg/kg	0.010	0.34	< 0.010	< 0.010
Benzoanthracene	N	2800	mg/kg	0.010	0.31	< 0.010	< 0.010
Chrysene	N	2800	mg/kg	0.010	0.3	< 0.010	< 0.010
Benzo[b]fluoranthene	N	2800	mg/kg	0.010	0.6	< 0.010	< 0.010
Benzo[k]fluoranthene	N	2800	mg/kg	0.010	0.24	< 0.010	< 0.010
Benzopyrene	N	2800	mg/kg	0.010	0.58	< 0.010	< 0.010
Indeno(1,2,3-c,d)Pyrene	N	2800	mg/kg	0.010	0.46	< 0.010	< 0.010
Dibenz(a,h)Anthracene	N	2800	mg/kg	0.010	0.13	< 0.010	< 0.010
Benzo[g,h,i]perylene	N	2800	mg/kg	0.010	0.55	< 0.010	< 0.010
Coronene	N	2800	mg/kg	0.010	< 0.010	< 0.010	< 0.010
Total Of 17 PAH's	N	2800	mg/kg	0.20	4.7	< 0.20	< 0.20
PCB 28	N	2815	mg/kg	0.0010	< 0.0010	< 0.0010	< 0.0010
PCB 52	N	2815	mg/kg	0.0010	< 0.0010	< 0.0010	< 0.0010
PCB 90+101	N	2815	mg/kg	0.0010	< 0.0010	< 0.0010	< 0.0010
PCB 118	N	2815	mg/kg	0.0010	< 0.0010	< 0.0010	< 0.0010
PCB 153	N	2815	mg/kg	0.0010	< 0.0010	< 0.0010	< 0.0010
PCB 138	N	2815	mg/kg	0.0010	< 0.0010	< 0.0010	< 0.0010
PCB 180	N	2815	mg/kg	0.0010	< 0.0010	< 0.0010	< 0.0010
Total PCBs (7 congeners)	N	2815	mg/kg	0.0010	< 0.0010	< 0.0010	< 0.0010
Total Phenols	U	2920	mg/kg	0.10	< 0.10	< 0.10	< 0.10

Results - Single Stage WAC

Project: 23927 Dalguise House Monkstown Dublin (David Rehill CE)

					Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	22-12698						
Chemtest Sample ID:	1405028						
Sample Ref:							
Sample ID:	AA161951						
Sample Location:	BH02A						
Top Depth(m):	1.00						
Bottom Depth(m):							
Sampling Date:							
Determinand	**SOP**	**Accred.**	**Units**		**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Total Organic Carbon	2625	U	%	0.55	3	5	6
Loss On Ignition	2610	U	%	3.5	--	--	10
Total BTEX	2760	U	mg/kg	< 0.010	6	--	--
Total PCBs (7 congeners)	2815	N	mg/kg	< 0.0010	1	--	--
TPH Total WAC	2670	U	mg/kg	< 10	500	--	--
Total Of 17 PAH's	2800	N	mg/kg	4.7	100	--	--
pH	2010	U		9.9	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.015	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455	U	0.0004	0.0038	0.5	2	25
Barium	1455	U	0.006	0.061	20	100	300
Cadmium	1455	U	< 0.00011	< 0.00011	0.04	1	5
Chromium	1455	U	< 0.0005	< 0.0005	0.5	10	70
Copper	1455	U	0.0006	0.0063	2	50	100
Mercury	1455	U	< 0.00005	< 0.00005	0.01	0.2	2
Molybdenum	1455	U	0.0091	0.091	0.5	10	30
Nickel	1455	U	0.0007	0.0067	0.4	10	40
Lead	1455	U	< 0.0005	< 0.0005	0.5	10	50
Antimony	1455	U	< 0.0005	< 0.0005	0.06	0.7	5
Selenium	1455	U	< 0.0005	< 0.0005	0.1	0.5	7
Zinc	1455	U	< 0.003	< 0.003	4	50	200
Chloride	1220	U	< 1.0	< 10	800	15000	25000
Fluoride	1220	U	0.7	7	10	150	500
Sulphate	1220	U	3.3	33	1000	20000	50000
Total Dissolved Solids	1020	N	72	710	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	< 2.5	< 50	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	18

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: 23927 Dalguise House Monkstown Dublin (David Rehill CE)

Chemtest Job No:	22-12698				Landfill Waste Acceptance Criteria Limits		
Chemtest Sample ID:	1405032				Inert Waste Landfill	Stable, Non-reactive hazardous waste in non-hazardous Landfill	Hazardous Waste Landfill
Sample Ref:							
Sample ID:	AA165494						
Sample Location:	BH03						
Top Depth(m):	2.00						
Bottom Depth(m):							
Sampling Date:							
Determinand	**SOP**	**Accred.**	**Units**				
Total Organic Carbon	2625	U	%	0.63	3	5	6
Loss On Ignition	2610	U	%	2.2	--	--	10
Total BTEX	2760	U	mg/kg	< 0.010	6	--	--
Total PCBs (7 congeners)	2815	N	mg/kg	< 0.0010	1	--	--
TPH Total WAC	2670	U	mg/kg	< 10	500	--	--
Total Of 17 PAH's	2800	N	mg/kg	< 0.20	100	--	--
pH	2010	U		9.3	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.073	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455	U	< 0.0002	< 0.0002	0.5	2	25
Barium	1455	U	< 0.005	< 0.0005	20	100	300
Cadmium	1455	U	< 0.00011	< 0.00011	0.04	1	5
Chromium	1455	U	< 0.0005	< 0.0005	0.5	10	70
Copper	1455	U	< 0.0005	< 0.0005	2	50	100
Mercury	1455	U	< 0.00005	< 0.00005	0.01	0.2	2
Molybdenum	1455	U	0.0081	0.081	0.5	10	30
Nickel	1455	U	0.0008	0.0080	0.4	10	40
Lead	1455	U	< 0.0005	< 0.0005	0.5	10	50
Antimony	1455	U	< 0.0005	< 0.0005	0.06	0.7	5
Selenium	1455	U	< 0.0005	< 0.0005	0.1	0.5	7
Zinc	1455	U	< 0.003	< 0.003	4	50	200
Chloride	1220	U	< 1.0	< 10	800	15000	25000
Fluoride	1220	U	0.19	1.9	10	150	500
Sulphate	1220	U	< 1.0	< 10	1000	20000	50000
Total Dissolved Solids	1020	N	39	390	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	< 2.5	< 50	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	14

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: 23927 Dalguise House Monkstown Dublin (David Rehill CE)

					Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	22-12698						
Chemtest Sample ID:	1405036						
Sample Ref:							
Sample ID:	AA162661						
Sample Location:	BH05						
Top Depth(m):	1.00						
Bottom Depth(m):							
Sampling Date:							
Determinand	**SOP**	**Accred.**	**Units**		**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Total Organic Carbon	2625	U	%	0.3	3	5	6
Loss On Ignition	2610	U	%	2.6	--	--	10
Total BTEX	2760	U	mg/kg	< 0.010	6	--	--
Total PCBs (7 congeners)	2815	N	mg/kg	< 0.0010	1	--	--
TPH Total WAC	2670	U	mg/kg	< 10	500	--	--
Total Of 17 PAH's	2800	N	mg/kg	< 0.20	100	--	--
pH	2010	U		8.7	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.016	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455	U	< 0.0002	< 0.0002	0.5	2	25
Barium	1455	U	< 0.005	< 0.0005	20	100	300
Cadmium	1455	U	< 0.00011	< 0.00011	0.04	1	5
Chromium	1455	U	< 0.0005	< 0.0005	0.5	10	70
Copper	1455	U	0.0007	0.0070	2	50	100
Mercury	1455	U	< 0.00005	< 0.00005	0.01	0.2	2
Molybdenum	1455	U	0.0094	0.094	0.5	10	30
Nickel	1455	U	< 0.0005	< 0.0005	0.4	10	40
Lead	1455	U	< 0.0005	< 0.0005	0.5	10	50
Antimony	1455	U	< 0.0005	< 0.0005	0.06	0.7	5
Selenium	1455	U	< 0.0005	< 0.0005	0.1	0.5	7
Zinc	1455	U	< 0.003	< 0.003	4	50	200
Chloride	1220	U	< 1.0	< 10	800	15000	25000
Fluoride	1220	U	0.35	3.5	10	150	500
Sulphate	1220	U	< 1.0	< 10	1000	20000	50000
Total Dissolved Solids	1020	N	55	550	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	15	150	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	10

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Test Methods

SOP	Title	Parameters included	Method summary
1010	pH Value of Waters	pH	pH Meter
1020	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Conductivity Meter
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.
1455	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).
1610	Total/Dissolved Organic Carbon in Waters	Organic Carbon	TOC Analyser using Catalytic Oxidation
1800	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Waters by GC-MS	Acenaphthene; Acenaphthylene; Anthracene; BenzoAnthracene; BenzoPyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Pentane extraction / GCMS detection
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.
2010	pH Value of Soils	pH	pH Meter
2015	Acid Neutralisation Capacity	Acid Reserve	Titration
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2180	Sulphur (Elemental) in Soils by HPLC	Sulphur	Dichloromethane extraction / HPLC with UV detection
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry
2300	Cyanides & Thiocyanate in Soils	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Allkaline extraction followed by colorimetric determination using Automated Flow Injection Analyser.
2325	Sulphide in Soils	Sulphide	Steam distillation with sulphuric acid / analysis by 'Aquakem 600' Discrete Analyser, using N,N–dimethyl-p-phenylenediamine.
2430	Total Sulphate in soils	Total Sulphate	Acid digestion followed by determination of sulphate in extract by ICP-OES.
2450	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.
2490	Hexavalent Chromium in Soils	Chromium [VI]	Soil extracts are prepared by extracting dried and ground soil samples into boiling water. Chromium [VI] is determined by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
2610	Loss on Ignition	loss on ignition (LOI)	Determination of the proportion by mass that is lost from a soil by ignition at 550°C.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.

Test Methods

SOP	Title	Parameters included	Method summary
2670	Total Petroleum Hydrocarbons (TPH) in Soils by GC-FID	TPH (C6–C40); optional carbon banding, e.g. 3-band – GRO, DRO & LRO*TPH C8–C40	Dichloromethane extraction / GC-FID
2680	TPH A/A Split	Aliphatics: >C5–C6, >C6–C8,>C8–C10, >C10–C12, >C12–C16, >C16–C21, >C21–C35, >C35– C44Aromatics: >C5–C7, >C7–C8, >C8– C10, >C10–C12, >C12–C16, >C16– C21, >C21– C35, >C35– C44	Dichloromethane extraction / GCxGC FID detection
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2800	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-MS	Acenaphthene*; Acenaphthylene; Anthracene*; BenzoAnthracene*; BenzoPyrene*; Benzo[b]Fluoranthene*; Benzo[ghi]Perylene*; Benzo[k]Fluoranthene; Chrysene*; Dibenz[ah]Anthracene; Fluoranthene*; Fluorene*; Indeno[123cd]Pyrene*; Naphthalene*; Phenanthrene*; Pyrene*	Dichloromethane extraction / GC-MS
2815	Polychlorinated Biphenyls (PCB) ICES7Congeners in Soils by GC-MS	ICES7 PCB congeners	Acetone/Hexane extraction / GC-MS
2920	Phenols in Soils by HPLC	Phenolic compounds including Resorcinol, Phenol, Methylphenols, Dimethylphenols, 1-Naphthol and TrimethylphenolsNote: chlorophenols are excluded.	60:40 methanol/water mixture extraction, followed by HPLC determination using electrochemical detection.
640	Characterisation of Waste (Leaching C10)	Waste material including soil, sludges and granular waste	ComplianceTest for Leaching of Granular Waste Material and Sludge

Report Information

Key	
U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"
SOP	Standard operating procedure
LOD	Limit of detection

Comments or interpretations are beyond the scope of UKAS accreditation
The results relate only to the items tested
Uncertainty of measurement for the determinands tested are available upon request
None of the results in this report have been recovery corrected
All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis
All Asbestos testing is performed at the indicated laboratory
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied
B - Sample age exceeds stability time (sampling to extraction)
C - Sample not received in appropriate containers
D - Broken Container
E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 30 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.com

UKAS TESTING
2183

Eurofins Chemtest

Eurofins Chemtest Ltd
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.com

Final Report

Report No.:	22-13843-1		
Initial Date of Issue:	21-Apr-2022		
Client	IGSL		
Client Address:	M7 Business Park Naas County Kildare Ireland		
Contact(s):	Darren Keogh		
Project	23927 Dalguise House Monkstown Dublin		
Quotation No.:	Q20-19951	**Date Received:**	12-Apr-2022
Order No.:		**Date Instructed:**	12-Apr-2022
No. of Samples:	12		
Turnaround (Wkdays):	7	**Results Due:**	22-Apr-2022
Date Approved:	21-Apr-2022		
Approved By:			
Details:	Stuart Henderson, Technical Manager		

Results - Leachate

Project: Dalguise House Monkstown Dublin

Client: IGSL					**Chemtest Job No.:**	22-13843	22-13843	22-13843	22-13843	22-13843	22-13843	22-13843	22-13843	22-13843
Quotation No.: Q20-19951					**Chemtest Sample ID.:**	1410301	1410302	1410303	1410304	1410305	1410306	1410307	1410308	1410309
					Sample Location:	WS01	WS01	WS02	WS02	WS03	WS03	WS03	WS04	WS04
					Sample Type:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
					Top Depth (m):	0.0	1.0	0.0	1.0	0.0	1.0	2.0	0.0	1.0
					Bottom Depth (m):	1.0	2.0	1.0	2.0	1.0	2.0	3.0	1.0	2.0
					Date Sampled:	07-Apr-2022	07-Apr-2022	07-Apr-2022	07-Apr-2022	07-Apr-2022	07-Apr-2022	07-Apr-2022	07-Apr-2022	07-Apr-2022
Determinand	**Accred.**	**SOP**	**Type**	**Units**	**LOD**									
pH	U	1010	10:1		N/A	8.2	8.5	8.1	8.2	8.6	9.0	9.2	9.1	9.2
Ammonium	U	1220	10:1	mg/l	0.050	0.11	0.10	0.074	0.092	0.083	0.052	< 0.050	0.051	0.052
Ammonium	N	1220	10:1	mg/kg	0.10	1.2	1.2	0.79	1.0	1.0	0.80	0.93	0.90	1.0
Boron (Dissolved)	U	1455	10:1	mg/kg	0.01	0.16	0.13	0.16	0.16	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo[j]fluoranthene	N	1800	10:1	µg/l	0.010	< 0.010	0.082	0.038	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010

Results - Leachate

Project: Dalguise House Monkstown Dublin

Client: IGSL					**Chemtest Job No.:**	22-13843	22-13843	22-13843
Quotation No.: Q20-19951					**Chemtest Sample ID.:**	1410310	1410311	1410312
					Sample Location:	WS05	WS05	WS05
					Sample Type:	SOIL	SOIL	SOIL
					Top Depth (m):	0.0	1.0	2.0
					Bottom Depth (m):	1.0	2.0	3.0
					Date Sampled:	07-Apr-2022	07-Apr-2022	07-Apr-2022
Determinand	**Accred.**	**SOP**	**Type**	**Units**	**LOD**			
pH	U	1010	10:1		N/A	8.6	9.0	9.0
Ammonium	U	1220	10:1	mg/l	0.050	0.12	0.058	0.058
Ammonium	N	1220	10:1	mg/kg	0.10	1.5	0.89	0.91
Boron (Dissolved)	U	1455	10:1	mg/kg	0.01	< 0.01	< 0.01	< 0.01
Benzo[j]fluoranthene	N	1800	10:1	µg/l	0.010	< 0.010	< 0.010	< 0.010

Results - Soil

Project: Dalguise House Monkstown Dublin

Client: IGSL				**Chemtest Job No.:**	22-13843	22-13843	22-13843	22-13843	22-13843	22-13843	22-13843	22-13843	22-13843
Quotation No.: Q20-19951				**Chemtest Sample ID.:**	1410301	1410302	1410303	1410304	1410305	1410306	1410307	1410308	1410309
				Sample Location:	WS01	WS01	WS02	WS02	WS03	WS03	WS03	WS04	WS04
				Sample Type:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
				Top Depth (m):	0.0	1.0	0.0	1.0	0.0	1.0	2.0	0.0	1.0
				Bottom Depth (m):	1.0	2.0	1.0	2.0	1.0	2.0	3.0	1.0	2.0
				Date Sampled:	07-Apr-2022	07-Apr-2022	07-Apr-2022	07-Apr-2022	07-Apr-2022	07-Apr-2022	07-Apr-2022	07-Apr-2022	07-Apr-2022
				Asbestos Lab:	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM
Determinand	**Accred.**	**SOP**	**Units**	**LOD**									
ACM Type	U	2192		N/A	-	-	-	-	-	-	-	-	-
Asbestos Identification	U	2192		N/A	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected
Moisture	N	2030	%	0.020	18	16	18	17	12	12	9.6	11	9.5
Boron (Hot Water Soluble)	U	2120	mg/kg	0.40	0.76	< 0.40	0.97	2.8	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40
Sulphur (Elemental)	U	2180	mg/kg	1.0	< 1.0	< 1.0	3.2	23	< 1.0	19	< 1.0	< 1.0	1.8
Cyanide (Total)	U	2300	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Sulphide (Easily Liberatable)	N	2325	mg/kg	0.50	2.2	1.9	1.7	3.9	6.0	5.4	6.1	6.0	6.3
Sulphate (Acid Soluble)	U	2430	%	0.010	0.042	0.022	0.024	0.014	0.017	0.069	0.022	0.029	0.016
Arsenic	U	2450	mg/kg	1.0	21	17	18	15	14	18	17	31	24
Barium	U	2450	mg/kg	10	110	59	100	820	59	70	81	75	70
Cadmium	U	2450	mg/kg	0.10	1.7	1.2	1.6	< 0.10	1.2	1.6	1.8	2.2	2.0
Chromium	U	2450	mg/kg	1.0	29	23	25	13	15	13	16	25	26
Molybdenum	U	2450	mg/kg	2.0	4.5	2.6	3.9	< 2.0	< 2.0	2.3	2.9	3.2	3.3
Antimony	N	2450	mg/kg	2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Copper	U	2450	mg/kg	0.50	40	31	38	3.9	21	24	27	36	31
Mercury	U	2450	mg/kg	0.10	0.22	0.10	0.21	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Nickel	U	2450	mg/kg	0.50	54	45	46	10	32	37	43	50	53
Lead	U	2450	mg/kg	0.50	87	32	100	6.4	30	15	45	32	19
Selenium	U	2450	mg/kg	0.20	0.90	0.32	0.79	< 0.20	0.64	0.33	0.86	0.53	0.32
Zinc	U	2450	mg/kg	0.50	160	94	150	12	54	57	75	97	89
Chromium (Trivalent)	N	2490	mg/kg	1.0	29	23	25	13	15	13	16	25	26
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Mineral Oil (TPH Calculation)	N	2670	mg/kg	10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Aliphatic TPH >C5-C6	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C6-C8	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C8-C10	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C10-C12	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C12-C16	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C16-C21	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C21-C35	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Aromatic TPH >C5-C7	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C7-C8	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C8-C10	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C10-C12	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C12-C16	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0

Results - Soil

Project: Dalguise House Monkstown Dublin

Client: IGSL	Chemtest Job No.:				22-13843	22-13843	22-13843	22-13843	22-13843	22-13843	22-13843	22-13843	22-13843
Quotation No.: Q20-19951	Chemtest Sample ID.:				1410301	1410302	1410303	1410304	1410305	1410306	1410307	1410308	1410309
	Sample Location:				WS01	WS01	WS02	WS02	WS03	WS03	WS03	WS04	WS04
	Sample Type:				SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	Top Depth (m):				0.0	1.0	0.0	1.0	0.0	1.0	2.0	0.0	1.0
	Bottom Depth (m):				1.0	2.0	1.0	2.0	1.0	2.0	3.0	1.0	2.0
	Date Sampled:				07-Apr-2022	07-Apr-2022	07-Apr-2022	07-Apr-2022	07-Apr-2022	07-Apr-2022	07-Apr-2022	07-Apr-2022	07-Apr-2022
	Asbestos Lab:				DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM
Determinand	**Accred.**	**SOP**	**Units**	**LOD**									
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C21-C35	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Benzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
m & p-Xylene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-Xylene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Methyl Tert-Butyl Ether	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Naphthalene	N	2800	mg/kg	0.010	< 0.010	< 0.010	0.35	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Acenaphthylene	N	2800	mg/kg	0.010	< 0.010	< 0.010	0.070	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Acenaphthene	N	2800	mg/kg	0.010	< 0.010	< 0.010	0.040	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Fluorene	N	2800	mg/kg	0.010	< 0.010	< 0.010	0.050	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Phenanthrene	N	2800	mg/kg	0.010	0.080	0.060	0.12	< 0.010	< 0.010	< 0.010	< 0.010	0.16	< 0.010
Anthracene	N	2800	mg/kg	0.010	0.030	0.020	0.030	< 0.010	< 0.010	< 0.010	< 0.010	0.064	< 0.010
Fluoranthene	N	2800	mg/kg	0.010	0.070	0.16	0.10	< 0.010	< 0.010	< 0.010	< 0.010	0.25	< 0.010
Pyrene	N	2800	mg/kg	0.010	0.090	0.17	0.10	< 0.010	< 0.010	< 0.010	< 0.010	0.23	< 0.010
Benzo[a]anthracene	N	2800	mg/kg	0.010	< 0.010	0.090	0.040	< 0.010	< 0.010	< 0.010	< 0.010	0.13	< 0.010
Chrysene	N	2800	mg/kg	0.010	< 0.010	0.060	0.050	< 0.010	< 0.010	< 0.010	< 0.010	0.11	< 0.010
Benzo[b]fluoranthene	N	2800	mg/kg	0.010	< 0.010	0.15	0.060	< 0.010	< 0.010	< 0.010	< 0.010	0.14	< 0.010
Benzo[k]fluoranthene	N	2800	mg/kg	0.010	< 0.010	0.10	0.050	< 0.010	< 0.010	< 0.010	< 0.010	0.065	< 0.010
Benzo[a]pyrene	N	2800	mg/kg	0.010	< 0.010	0.13	0.080	< 0.010	< 0.010	< 0.010	< 0.010	0.12	< 0.010
Indeno(1,2,3-c,d)Pyrene	N	2800	mg/kg	0.010	< 0.010	0.070	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	0.061	< 0.010
Dibenz(a,h)Anthracene	N	2800	mg/kg	0.010	< 0.010	0.040	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	0.049	< 0.010
Benzo[g,h,i]perylene	N	2800	mg/kg	0.010	< 0.010	0.11	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	0.085	< 0.010
Coronene	N	2800	mg/kg	0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Total Of 17 PAH's	N	2800	mg/kg	0.20	0.27	1.2	1.1	< 0.20	< 0.20	< 0.20	< 0.20	1.5	< 0.20
PCB 28	N	2815	mg/kg	0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010
PCB 52	N	2815	mg/kg	0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010
PCB 90+101	N	2815	mg/kg	0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010
PCB 118	N	2815	mg/kg	0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010
PCB 153	N	2815	mg/kg	0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010
PCB 138	N	2815	mg/kg	0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010
PCB 180	N	2815	mg/kg	0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010
Total PCBs (7 congeners)	N	2815	mg/kg	0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010
Total Phenols	U	2920	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10

Results - Soil

Project: Dalguise House Monkstown Dublin

Client: IGSL	**Chemtest Job No.:**				22-13843	22-13843	22-13843
Quotation No.: Q20-19951	**Chemtest Sample ID.:**				1410310	1410311	1410312
	Sample Location:				WS05	WS05	WS05
	Sample Type:				SOIL	SOIL	SOIL
	Top Depth (m):				0.0	1.0	2.0
	Bottom Depth (m):				1.0	2.0	3.0
	Date Sampled:				07-Apr-2022	07-Apr-2022	07-Apr-2022
	Asbestos Lab:				DURHAM	DURHAM	DURHAM
Determinand	**Accred.**	**SOP**	**Units**	**LOD**			
ACM Type	U	2192		N/A	-	-	-
Asbestos Identification	U	2192		N/A	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected
Moisture	N	2030	%	0.020	15	11	9.4
Boron (Hot Water Soluble)	U	2120	mg/kg	0.40	< 0.40	< 0.40	< 0.40
Sulphur (Elemental)	U	2180	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Cyanide (Total)	U	2300	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Sulphide (Easily Liberatable)	N	2325	mg/kg	0.50	6.3	7.3	6.7
Sulphate (Acid Soluble)	U	2430	%	0.010	0.031	0.021	0.051
Arsenic	U	2450	mg/kg	1.0	28	38	55
Barium	U	2450	mg/kg	10	68	55	68
Cadmium	U	2450	mg/kg	0.10	1.8	1.7	1.9
Chromium	U	2450	mg/kg	1.0	23	24	24
Molybdenum	U	2450	mg/kg	2.0	2.8	3.0	2.6
Antimony	N	2450	mg/kg	2.0	< 2.0	< 2.0	< 2.0
Copper	U	2450	mg/kg	0.50	35	29	36
Mercury	U	2450	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Nickel	U	2450	mg/kg	0.50	48	45	51
Lead	U	2450	mg/kg	0.50	29	17	29
Selenium	U	2450	mg/kg	0.20	0.50	0.44	0.54
Zinc	U	2450	mg/kg	0.50	110	75	100
Chromium (Trivalent)	N	2490	mg/kg	1.0	23	24	24
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Mineral Oil (TPH Calculation)	N	2670	mg/kg	10	< 10	< 10	< 10
Aliphatic TPH >C5-C6	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C6-C8	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C8-C10	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C10-C12	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C12-C16	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C16-C21	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C21-C35	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0	< 5.0	< 5.0	< 5.0
Aromatic TPH >C5-C7	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C7-C8	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C8-C10	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C10-C12	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C12-C16	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0

Results - Soil

Project: Dalguise House Monkstown Dublin

Client: IGSL	Chemtest Job No.:				22-13843	22-13843	22-13843
Quotation No.: Q20-19951	Chemtest Sample ID.:				1410310	1410311	1410312
	Sample Location:				WS05	WS05	WS05
	Sample Type:				SOIL	SOIL	SOIL
	Top Depth (m):				0.0	1.0	2.0
	Bottom Depth (m):				1.0	2.0	3.0
	Date Sampled:				07-Apr-2022	07-Apr-2022	07-Apr-2022
	Asbestos Lab:				DURHAM	DURHAM	DURHAM
Determinand	**Accred.**	**SOP**	**Units**	**LOD**			
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C21-C35	U	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0	< 5.0	< 5.0	< 5.0
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0	< 10	< 10	< 10
Benzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Toluene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
m & p-Xylene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
o-Xylene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Methyl Tert-Butyl Ether	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Naphthalene	N	2800	mg/kg	0.010	< 0.010	< 0.010	< 0.010
Acenaphthylene	N	2800	mg/kg	0.010	< 0.010	< 0.010	< 0.010
Acenaphthene	N	2800	mg/kg	0.010	< 0.010	< 0.010	< 0.010
Fluorene	N	2800	mg/kg	0.010	< 0.010	< 0.010	< 0.010
Phenanthrene	N	2800	mg/kg	0.010	< 0.010	< 0.010	< 0.010
Anthracene	N	2800	mg/kg	0.010	< 0.010	< 0.010	< 0.010
Fluoranthene	N	2800	mg/kg	0.010	0.050	< 0.010	< 0.010
Pyrene	N	2800	mg/kg	0.010	0.078	< 0.010	< 0.010
Benzo[a]anthracene	N	2800	mg/kg	0.010	< 0.010	< 0.010	< 0.010
Chrysene	N	2800	mg/kg	0.010	< 0.010	< 0.010	< 0.010
Benzo[b]fluoranthene	N	2800	mg/kg	0.010	< 0.010	< 0.010	< 0.010
Benzo[k]fluoranthene	N	2800	mg/kg	0.010	< 0.010	< 0.010	< 0.010
Benzo[a]pyrene	N	2800	mg/kg	0.010	< 0.010	< 0.010	< 0.010
Indeno(1,2,3-c,d)Pyrene	N	2800	mg/kg	0.010	< 0.010	< 0.010	< 0.010
Dibenz(a,h)Anthracene	N	2800	mg/kg	0.010	< 0.010	< 0.010	< 0.010
Benzo[g,h,i]perylene	N	2800	mg/kg	0.010	< 0.010	< 0.010	< 0.010
Coronene	N	2800	mg/kg	0.010	< 0.010	< 0.010	< 0.010
Total Of 17 PAH's	N	2800	mg/kg	0.20	< 0.20	< 0.20	< 0.20
PCB 28	N	2815	mg/kg	0.0010	< 0.0010	< 0.0010	< 0.0010
PCB 52	N	2815	mg/kg	0.0010	< 0.0010	< 0.0010	< 0.0010
PCB 90+101	N	2815	mg/kg	0.0010	< 0.0010	< 0.0010	< 0.0010
PCB 118	N	2815	mg/kg	0.0010	< 0.0010	< 0.0010	< 0.0010
PCB 153	N	2815	mg/kg	0.0010	< 0.0010	< 0.0010	< 0.0010
PCB 138	N	2815	mg/kg	0.0010	< 0.0010	< 0.0010	< 0.0010
PCB 180	N	2815	mg/kg	0.0010	< 0.0010	< 0.0010	< 0.0010
Total PCBs (7 congeners)	N	2815	mg/kg	0.0010	< 0.0010	< 0.0010	< 0.0010
Total Phenols	U	2920	mg/kg	0.10	< 0.10	< 0.10	< 0.10

Results - Single Stage WAC

Project: Dalguise House Monkstown Dublin

Chemtest Job No:	22-13843				**Landfilll Waste Acceptance Criteria Limits**		
Chemtest Sample ID:	1410301						
Sample Ref:					**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Sample ID:							
Sample Location:	WS01						
Top Depth(m):	0.0						
Bottom Depth(m):	1.0						
Sampling Date:	07-Apr-2022						
Determinand	**SOP**	**Accred.**	**Units**				
Total Organic Carbon	2625	U	%	1.2	3	5	6
Loss On Ignition	2610	U	%	4.5	--	--	10
Total BTEX	2760	U	mg/kg	< 0.010	6	--	--
Total PCBs (7 congeners)	2815	N	mg/kg	< 0.0010	1	--	--
TPH Total WAC	2670	U	mg/kg	< 10	500	--	--
Total Of 17 PAH's	2800	N	mg/kg	0.27	100	--	--
pH	2010	U		8.5	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.0040	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455	U	0.0042	0.042	0.5	2	25
Barium	1455	U	< 0.005	< 0.0005	20	100	300
Cadmium	1455	U	< 0.00011	< 0.00011	0.04	1	5
Chromium	1455	U	0.0052	0.052	0.5	10	70
Copper	1455	U	0.0029	0.029	2	50	100
Mercury	1455	U	< 0.00005	< 0.00005	0.01	0.2	2
Molybdenum	1455	U	0.012	0.12	0.5	10	30
Nickel	1455	U	0.0037	0.037	0.4	10	40
Lead	1455	U	< 0.0005	< 0.0005	0.5	10	50
Antimony	1455	U	0.0005	0.0054	0.06	0.7	5
Selenium	1455	U	< 0.0005	< 0.0005	0.1	0.5	7
Zinc	1455	U	0.003	0.031	4	50	200
Chloride	1220	U	< 1.0	< 10	800	15000	25000
Fluoride	1220	U	0.13	1.3	10	150	500
Sulphate	1220	U	< 1.0	< 10	1000	20000	50000
Total Dissolved Solids	1020	N	130	1300	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	18	180	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	18

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: Dalguise House Monkstown Dublin

Chemtest Job No:	22-13843				**Landflll Waste Acceptance Criteria Limits**		
Chemtest Sample ID:	1410302						
Sample Ref:					**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Sample ID:							
Sample Location:	WS01						
Top Depth(m):	1.0						
Bottom Depth(m):	2.0						
Sampling Date:	07-Apr-2022						
Determinand	**SOP**	**Accred.**	**Units**				
Total Organic Carbon	2625	U	%	0.63	3	5	6
Loss On Ignition	2610	U	%	3.6	--	--	10
Total BTEX	2760	U	mg/kg	< 0.010	6	--	--
Total PCBs (7 congeners)	2815	N	mg/kg	< 0.0010	1	--	--
TPH Total WAC	2670	U	mg/kg	< 10	500	--	--
Total Of 17 PAH's	2800	N	mg/kg	1.2	100	--	--
pH	2010	U		8.6	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.019	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455	U	0.0008	0.0083	0.5	2	25
Barium	1455	U	0.005	0.053	20	100	300
Cadmium	1455	U	< 0.00011	< 0.00011	0.04	1	5
Chromium	1455	U	0.0055	0.055	0.5	10	70
Copper	1455	U	0.0028	0.028	2	50	100
Mercury	1455	U	< 0.00005	< 0.00005	0.01	0.2	2
Molybdenum	1455	U	0.013	0.13	0.5	10	30
Nickel	1455	U	0.0039	0.039	0.4	10	40
Lead	1455	U	0.0006	0.0059	0.5	10	50
Antimony	1455	U	< 0.0005	< 0.0005	0.06	0.7	5
Selenium	1455	U	< 0.0005	< 0.0005	0.1	0.5	7
Zinc	1455	U	0.004	0.037	4	50	200
Chloride	1220	U	1.2	12	800	15000	25000
Fluoride	1220	U	0.20	2.0	10	150	500
Sulphate	1220	U	< 1.0	< 10	1000	20000	50000
Total Dissolved Solids	1020	N	72	710	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	15	150	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	16

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: Dalguise House Monkstown Dublin

Chemtest Job No:	22-13843				**Landfill Waste Acceptance Criteria Limits**		
Chemtest Sample ID:	1410303						
Sample Ref:					**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Sample ID:							
Sample Location:	WS02						
Top Depth(m):	0.0						
Bottom Depth(m):	1.0						
Sampling Date:	07-Apr-2022						
Determinand	**SOP**	**Accred.**	**Units**				
Total Organic Carbon	2625	U	%	2.2	3	5	6
Loss On Ignition	2610	U	%	5.0	--	--	10
Total BTEX	2760	U	mg/kg	< 0.010	6	--	--
Total PCBs (7 congeners)	2815	N	mg/kg	< 0.0010	1	--	--
TPH Total WAC	2670	U	mg/kg	< 10	500	--	--
Total Of 17 PAH's	2800	N	mg/kg	1.1	100	--	--
pH	2010	U		8.4	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.0070	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455	U	0.013	0.13	0.5	2	25
Barium	1455	U	< 0.005	< 0.0005	20	100	300
Cadmium	1455	U	< 0.00011	< 0.00011	0.04	1	5
Chromium	1455	U	0.0050	0.049	0.5	10	70
Copper	1455	U	0.0043	0.043	2	50	100
Mercury	1455	U	< 0.00005	< 0.00005	0.01	0.2	2
Molybdenum	1455	U	0.0061	0.061	0.5	10	30
Nickel	1455	U	0.0043	0.043	0.4	10	40
Lead	1455	U	< 0.0005	< 0.0005	0.5	10	50
Antimony	1455	U	0.0015	0.015	0.06	0.7	5
Selenium	1455	U	< 0.0005	< 0.0005	0.1	0.5	7
Zinc	1455	U	< 0.003	< 0.003	4	50	200
Chloride	1220	U	< 1.0	< 10	800	15000	25000
Fluoride	1220	U	0.084	< 1.0	10	150	500
Sulphate	1220	U	< 1.0	< 10	1000	20000	50000
Total Dissolved Solids	1020	N	72	710	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	12	120	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	18

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: Dalguise House Monkstown Dublin

Chemtest Job No:	22-13843				**Landfill Waste Acceptance Criteria Limits**		
Chemtest Sample ID:	1410304						
Sample Ref:					**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Sample ID:							
Sample Location:	WS02						
Top Depth(m):	1.0						
Bottom Depth(m):	2.0						
Sampling Date:	07-Apr-2022						
Determinand	**SOP**	**Accred.**	**Units**				
Total Organic Carbon	2625	U	%	1.3	3	5	6
Loss On Ignition	2610	U	%	2.2	--	--	10
Total BTEX	2760	U	mg/kg	< 0.010	6	--	--
Total PCBs (7 congeners)	2815	N	mg/kg	< 0.0010	1	--	--
TPH Total WAC	2670	U	mg/kg	< 10	500	--	--
Total Of 17 PAH's	2800	N	mg/kg	< 0.20	100	--	--
pH	2010	U		8.6	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.029	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455	U	0.0068	0.068	0.5	2	25
Barium	1455	U	< 0.005	< 0.0005	20	100	300
Cadmium	1455	U	< 0.00011	< 0.00011	0.04	1	5
Chromium	1455	U	0.0047	0.047	0.5	10	70
Copper	1455	U	0.0042	0.042	2	50	100
Mercury	1455	U	< 0.00005	< 0.00005	0.01	0.2	2
Molybdenum	1455	U	0.018	0.18	0.5	10	30
Nickel	1455	U	0.0040	0.040	0.4	10	40
Lead	1455	U	< 0.0005	< 0.0005	0.5	10	50
Antimony	1455	U	< 0.0005	< 0.0005	0.06	0.7	5
Selenium	1455	U	< 0.0005	< 0.0005	0.1	0.5	7
Zinc	1455	U	< 0.003	< 0.003	4	50	200
Chloride	1220	U	< 1.0	< 10	800	15000	25000
Fluoride	1220	U	0.12	1.2	10	150	500
Sulphate	1220	U	< 1.0	< 10	1000	20000	50000
Total Dissolved Solids	1020	N	65	650	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	19	190	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	17

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: Dalguise House Monkstown Dublin

Chemtest Job No:	22-13843				**Landfill Waste Acceptance Criteria Limits**		
Chemtest Sample ID:	1410305						
Sample Ref:					**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Sample ID:							
Sample Location:	WS03						
Top Depth(m):	0.0						
Bottom Depth(m):	1.0						
Sampling Date:	07-Apr-2022						
Determinand	**SOP**	**Accred.**	**Units**				
Total Organic Carbon	2625	U	%	0.79	3	5	6
Loss On Ignition	2610	U	%	2.7	--	--	10
Total BTEX	2760	U	mg/kg	< 0.010	6	--	--
Total PCBs (7 congeners)	2815	N	mg/kg	< 0.0010	1	--	--
TPH Total WAC	2670	U	mg/kg	< 10	500	--	--
Total Of 17 PAH's	2800	N	mg/kg	< 0.20	100	--	--
pH	2010	U		9.1	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.025	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455	U	0.0009	0.0093	0.5	2	25
Barium	1455	U	0.006	0.057	20	100	300
Cadmium	1455	U	< 0.00011	< 0.00011	0.04	1	5
Chromium	1455	U	0.0052	0.052	0.5	10	70
Copper	1455	U	0.0035	0.035	2	50	100
Mercury	1455	U	< 0.00005	< 0.00005	0.01	0.2	2
Molybdenum	1455	U	0.0049	0.049	0.5	10	30
Nickel	1455	U	0.0041	0.041	0.4	10	40
Lead	1455	U	0.0006	0.0062	0.5	10	50
Antimony	1455	U	< 0.0005	< 0.0005	0.06	0.7	5
Selenium	1455	U	< 0.0005	< 0.0005	0.1	0.5	7
Zinc	1455	U	0.008	0.081	4	50	200
Chloride	1220	U	< 1.0	< 10	800	15000	25000
Fluoride	1220	U	0.47	4.7	10	150	500
Sulphate	1220	U	< 1.0	< 10	1000	20000	50000
Total Dissolved Solids	1020	N	59	580	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	12	120	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	12

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: Dalguise House Monkstown Dublin

Chemtest Job No:	22-13843				**Landfill Waste Acceptance Criteria Limits**		
Chemtest Sample ID:	1410306						
Sample Ref:					**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Sample ID:							
Sample Location:	WS03						
Top Depth(m):	1.0						
Bottom Depth(m):	2.0						
Sampling Date:	07-Apr-2022						
Determinand	**SOP**	**Accred.**	**Units**				
Total Organic Carbon	2625	U	%	0.21	3	5	6
Loss On Ignition	2610	U	%	2.4	--	--	10
Total BTEX	2760	U	mg/kg	< 0.010	6	--	--
Total PCBs (7 congeners)	2815	N	mg/kg	< 0.0010	1	--	--
TPH Total WAC	2670	U	mg/kg	< 10	500	--	--
Total Of 17 PAH's	2800	N	mg/kg	< 0.20	100	--	--
pH	2010	U		8.9	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.066	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455	U	0.0004	0.0038	0.5	2	25
Barium	1455	U	< 0.005	< 0.0005	20	100	300
Cadmium	1455	U	< 0.00011	< 0.00011	0.04	1	5
Chromium	1455	U	0.0048	0.048	0.5	10	70
Copper	1455	U	0.0022	0.022	2	50	100
Mercury	1455	U	< 0.00005	< 0.00005	0.01	0.2	2
Molybdenum	1455	U	0.0006	0.0063	0.5	10	30
Nickel	1455	U	0.0032	0.032	0.4	10	40
Lead	1455	U	< 0.0005	< 0.0005	0.5	10	50
Antimony	1455	U	< 0.0005	< 0.0005	0.06	0.7	5
Selenium	1455	U	< 0.0005	< 0.0005	0.1	0.5	7
Zinc	1455	U	< 0.003	< 0.003	4	50	200
Chloride	1220	U	< 1.0	< 10	800	15000	25000
Fluoride	1220	U	0.060	< 1.0	10	150	500
Sulphate	1220	U	< 1.0	< 10	1000	20000	50000
Total Dissolved Solids	1020	N	26	260	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	< 2.5	< 50	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	12

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: Dalguise House Monkstown Dublin

Chemtest Job No:	22-13843				**Landfill Waste Acceptance Criteria Limits**		
Chemtest Sample ID:	1410307						
Sample Ref:					**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Sample ID:							
Sample Location:	WS03						
Top Depth(m):	2.0						
Bottom Depth(m):	3.0						
Sampling Date:	07-Apr-2022						
Determinand	**SOP**	**Accred.**	**Units**				
Total Organic Carbon	2625	U	%	0.57	3	5	6
Loss On Ignition	2610	U	%	3.0	--	--	10
Total BTEX	2760	U	mg/kg	< 0.010	6	--	--
Total PCBs (7 congeners)	2815	N	mg/kg	< 0.0010	1	--	--
TPH Total WAC	2670	U	mg/kg	< 10	500	--	--
Total Of 17 PAH's	2800	N	mg/kg	< 0.20	100	--	--
pH	2010	U		8.9	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.037	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455	U	0.0002	0.0023	0.5	2	25
Barium	1455	U	< 0.005	< 0.0005	20	100	300
Cadmium	1455	U	< 0.00011	< 0.00011	0.04	1	5
Chromium	1455	U	0.0046	0.046	0.5	10	70
Copper	1455	U	0.0021	0.021	2	50	100
Mercury	1455	U	< 0.00005	< 0.00005	0.01	0.2	2
Molybdenum	1455	U	0.0017	0.017	0.5	10	30
Nickel	1455	U	0.0032	0.032	0.4	10	40
Lead	1455	U	< 0.0005	< 0.0005	0.5	10	50
Antimony	1455	U	< 0.0005	< 0.0005	0.06	0.7	5
Selenium	1455	U	< 0.0005	< 0.0005	0.1	0.5	7
Zinc	1455	U	< 0.003	< 0.003	4	50	200
Chloride	1220	U	< 1.0	< 10	800	15000	25000
Fluoride	1220	U	0.052	< 1.0	10	150	500
Sulphate	1220	U	1.1	11	1000	20000	50000
Total Dissolved Solids	1020	N	26	260	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	< 2.5	< 50	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	9.6

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: Dalguise House Monkstown Dublin

					Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	22-13843						
Chemtest Sample ID:	1410308						
Sample Ref:							
Sample ID:							
Sample Location:	WS04						
Top Depth(m):	0.0						
Bottom Depth(m):	1.0						
Sampling Date:	07-Apr-2022				**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Determinand	**SOP**	**Accred.**	**Units**				
Total Organic Carbon	2625	U	%	0.62	3	5	6
Loss On Ignition	2610	U	%	2.6	--	--	10
Total BTEX	2760	U	mg/kg	< 0.010	6	--	--
Total PCBs (7 congeners)	2815	N	mg/kg	< 0.0010	1	--	--
TPH Total WAC	2670	U	mg/kg	< 10	500	--	--
Total Of 17 PAH's	2800	N	mg/kg	1.5	100	--	--
pH	2010	U		7.9	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.067	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455	U	0.0004	0.0039	0.5	2	25
Barium	1455	U	< 0.005	< 0.0005	20	100	300
Cadmium	1455	U	< 0.00011	< 0.00011	0.04	1	5
Chromium	1455	U	0.0048	0.048	0.5	10	70
Copper	1455	U	0.0026	0.026	2	50	100
Mercury	1455	U	< 0.00005	< 0.00005	0.01	0.2	2
Molybdenum	1455	U	0.0008	0.0080	0.5	10	30
Nickel	1455	U	0.0035	0.035	0.4	10	40
Lead	1455	U	< 0.0005	< 0.0005	0.5	10	50
Antimony	1455	U	< 0.0005	< 0.0005	0.06	0.7	5
Selenium	1455	U	< 0.0005	< 0.0005	0.1	0.5	7
Zinc	1455	U	< 0.003	< 0.003	4	50	200
Chloride	1220	U	< 1.0	< 10	800	15000	25000
Fluoride	1220	U	< 0.050	< 1.0	10	150	500
Sulphate	1220	U	< 1.0	< 10	1000	20000	50000
Total Dissolved Solids	1020	N	26	260	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	2.7	< 50	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	11

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: Dalguise House Monkstown Dublin

					Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	22-13843						
Chemtest Sample ID:	1410309						
Sample Ref:							
Sample ID:							
Sample Location:	WS04						
Top Depth(m):	1.0						
Bottom Depth(m):	2.0						
Sampling Date:	07-Apr-2022				**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Determinand	**SOP**	**Accred.**	**Units**				
Total Organic Carbon	2625	U	%	0.26	3	5	6
Loss On Ignition	2610	U	%	2.1	--	--	10
Total BTEX	2760	U	mg/kg	< 0.010	6	--	--
Total PCBs (7 congeners)	2815	N	mg/kg	< 0.0010	1	--	--
TPH Total WAC	2670	U	mg/kg	< 10	500	--	--
Total Of 17 PAH's	2800	N	mg/kg	< 0.20	100	--	--
pH	2010	U		8.1	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.050	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455	U	0.0003	0.0028	0.5	2	25
Barium	1455	U	< 0.005	< 0.0005	20	100	300
Cadmium	1455	U	< 0.00011	< 0.00011	0.04	1	5
Chromium	1455	U	0.0051	0.051	0.5	10	70
Copper	1455	U	0.0027	0.027	2	50	100
Mercury	1455	U	< 0.00005	< 0.00005	0.01	0.2	2
Molybdenum	1455	U	0.0013	0.013	0.5	10	30
Nickel	1455	U	0.0035	0.035	0.4	10	40
Lead	1455	U	< 0.0005	< 0.0005	0.5	10	50
Antimony	1455	U	< 0.0005	< 0.0005	0.06	0.7	5
Selenium	1455	U	< 0.0005	< 0.0005	0.1	0.5	7
Zinc	1455	U	< 0.003	< 0.003	4	50	200
Chloride	1220	U	< 1.0	< 10	800	15000	25000
Fluoride	1220	U	< 0.050	< 1.0	10	150	500
Sulphate	1220	U	< 1.0	< 10	1000	20000	50000
Total Dissolved Solids	1020	N	26	260	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	2.6	< 50	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	9.5

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: Dalguise House Monkstown Dublin

Chemtest Job No:	22-13843				**Landfill Waste Acceptance Criteria Limits**		
Chemtest Sample ID:	1410310						
Sample Ref:					**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Sample ID:							
Sample Location:	WS05						
Top Depth(m):	0.0						
Bottom Depth(m):	1.0						
Sampling Date:	07-Apr-2022						
Determinand	**SOP**	**Accred.**	**Units**				
Total Organic Carbon	2625	U	%	0.49	3	5	6
Loss On Ignition	2610	U	%	2.9	--	--	10
Total BTEX	2760	U	mg/kg	< 0.010	6	--	--
Total PCBs (7 congeners)	2815	N	mg/kg	< 0.0010	1	--	--
TPH Total WAC	2670	U	mg/kg	< 10	500	--	--
Total Of 17 PAH's	2800	N	mg/kg	< 0.20	100	--	--
pH	2010	U		8.1	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.076	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455	U	0.0003	0.0026	0.5	2	25
Barium	1455	U	< 0.005	< 0.0005	20	100	300
Cadmium	1455	U	< 0.00011	< 0.00011	0.04	1	5
Chromium	1455	U	0.0049	0.049	0.5	10	70
Copper	1455	U	0.0022	0.022	2	50	100
Mercury	1455	U	< 0.00005	< 0.00005	0.01	0.2	2
Molybdenum	1455	U	0.0004	0.0045	0.5	10	30
Nickel	1455	U	0.0035	0.035	0.4	10	40
Lead	1455	U	< 0.0005	< 0.0005	0.5	10	50
Antimony	1455	U	< 0.0005	< 0.0005	0.06	0.7	5
Selenium	1455	U	< 0.0005	< 0.0005	0.1	0.5	7
Zinc	1455	U	< 0.003	< 0.003	4	50	200
Chloride	1220	U	< 1.0	< 10	800	15000	25000
Fluoride	1220	U	< 0.050	< 1.0	10	150	500
Sulphate	1220	U	< 1.0	< 10	1000	20000	50000
Total Dissolved Solids	1020	N	13	130	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	2.6	< 50	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	15

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: Dalguise House Monkstown Dublin

Chemtest Job No:	22-13843				**Landfill Waste Acceptance Criteria Limits**		
Chemtest Sample ID:	1410311						
Sample Ref:					**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Sample ID:							
Sample Location:	WS05						
Top Depth(m):	1.0						
Bottom Depth(m):	2.0						
Sampling Date:	07-Apr-2022						
Determinand	**SOP**	**Accred.**	**Units**				
Total Organic Carbon	2625	U	%	0.63	3	5	6
Loss On Ignition	2610	U	%	2.3	--	--	10
Total BTEX	2760	U	mg/kg	< 0.010	6	--	--
Total PCBs (7 congeners)	2815	N	mg/kg	< 0.0010	1	--	--
TPH Total WAC	2670	U	mg/kg	< 10	500	--	--
Total Of 17 PAH's	2800	N	mg/kg	< 0.20	100	--	--
pH	2010	U		8.1	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.073	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455	U	< 0.0002	< 0.0002	0.5	2	25
Barium	1455	U	< 0.005	< 0.0005	20	100	300
Cadmium	1455	U	< 0.00011	< 0.00011	0.04	1	5
Chromium	1455	U	0.0042	0.042	0.5	10	70
Copper	1455	U	0.0018	0.019	2	50	100
Mercury	1455	U	< 0.00005	< 0.00005	0.01	0.2	2
Molybdenum	1455	U	0.0016	0.016	0.5	10	30
Nickel	1455	U	0.0027	0.027	0.4	10	40
Lead	1455	U	< 0.0005	< 0.0005	0.5	10	50
Antimony	1455	U	< 0.0005	< 0.0005	0.06	0.7	5
Selenium	1455	U	< 0.0005	< 0.0005	0.1	0.5	7
Zinc	1455	U	< 0.003	< 0.003	4	50	200
Chloride	1220	U	< 1.0	< 10	800	15000	25000
Fluoride	1220	U	< 0.050	< 1.0	10	150	500
Sulphate	1220	U	< 1.0	< 10	1000	20000	50000
Total Dissolved Solids	1020	N	26	260	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	< 2.5	< 50	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	11

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: Dalguise House Monkstown Dublin

Chemtest Job No:	22-13843				**Landfill Waste Acceptance Criteria Limits**		
Chemtest Sample ID:	1410312						
Sample Ref:					**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Sample ID:							
Sample Location:	WS05						
Top Depth(m):	2.0						
Bottom Depth(m):	3.0						
Sampling Date:	07-Apr-2022						
Determinand	**SOP**	**Accred.**	**Units**				
Total Organic Carbon	2625	U	%	0.55	3	5	6
Loss On Ignition	2610	U	%	2.2	--	--	10
Total BTEX	2760	U	mg/kg	< 0.010	6	--	--
Total PCBs (7 congeners)	2815	N	mg/kg	< 0.0010	1	--	--
TPH Total WAC	2670	U	mg/kg	< 10	500	--	--
Total Of 17 PAH's	2800	N	mg/kg	< 0.20	100	--	--
pH	2010	U		8.2	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.13	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455	U	< 0.0002	< 0.0002	0.5	2	25
Barium	1455	U	< 0.005	< 0.0005	20	100	300
Cadmium	1455	U	< 0.00011	< 0.00011	0.04	1	5
Chromium	1455	U	0.0045	0.045	0.5	10	70
Copper	1455	U	0.0024	0.024	2	50	100
Mercury	1455	U	< 0.00005	< 0.00005	0.01	0.2	2
Molybdenum	1455	U	0.0012	0.012	0.5	10	30
Nickel	1455	U	0.0034	0.034	0.4	10	40
Lead	1455	U	< 0.0005	< 0.0005	0.5	10	50
Antimony	1455	U	< 0.0005	< 0.0005	0.06	0.7	5
Selenium	1455	U	< 0.0005	< 0.0005	0.1	0.5	7
Zinc	1455	U	< 0.003	< 0.003	4	50	200
Chloride	1220	U	< 1.0	< 10	800	15000	25000
Fluoride	1220	U	< 0.050	< 1.0	10	150	500
Sulphate	1220	U	< 1.0	< 10	1000	20000	50000
Total Dissolved Solids	1020	N	26	260	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	< 2.5	< 50	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	9.4

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Test Methods

SOP	Title	Parameters included	Method summary
1010	pH Value of Waters	pH	pH Meter
1020	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Conductivity Meter
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.
1455	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).
1610	Total/Dissolved Organic Carbon in Waters	Organic Carbon	TOC Analyser using Catalytic Oxidation
1800	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Waters by GC-MS	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Pentane extraction / GCMS detection
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.
2010	pH Value of Soils	pH	pH Meter
2015	Acid Neutralisation Capacity	Acid Reserve	Titration
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2180	Sulphur (Elemental) in Soils by HPLC	Sulphur	Dichloromethane extraction / HPLC with UV detection
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry
2300	Cyanides & Thiocyanate in Soils	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Allkaline extraction followed by colorimetric determination using Automated Flow Injection Analyser.
2325	Sulphide in Soils	Sulphide	Steam distillation with sulphuric acid / analysis by 'Aquakem 600' Discrete Analyser, using N,N–dimethyl-p-phenylenediamine.
2430	Total Sulphate in soils	Total Sulphate	Acid digestion followed by determination of sulphate in extract by ICP-OES.
2450	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.
2490	Hexavalent Chromium in Soils	Chromium [VI]	Soil extracts are prepared by extracting dried and ground soil samples into boiling water. Chromium [VI] is determined by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
2610	Loss on Ignition	loss on ignition (LOI)	Determination of the proportion by mass that is lost from a soil by ignition at 550°C.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.

Test Methods

SOP	Title	Parameters included	Method summary
2670	Total Petroleum Hydrocarbons (TPH) in Soils by GC-FID	TPH (C6–C40); optional carbon banding, e.g. 3-band – GRO, DRO & LRO*TPH C8–C40	Dichloromethane extraction / GC-FID
2680	TPH A/A Split	Aliphatics: >C5–C6, >C6–C8,>C8–C10, >C10–C12, >C12–C16, >C16–C21, >C21–C35, >C35– C44Aromatics: >C5–C7, >C7–C8, >C8– C10, >C10–C12, >C12–C16, >C16– C21, >C21– C35, >C35– C44	Dichloromethane extraction / GCxGC FID detection
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2800	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-MS	Acenaphthene*; Acenaphthylene; Anthracene*; Benzo[a]Anthracene*; Benzo[a]Pyrene*; Benzo[b]Fluoranthene*; Benzo[ghi]Perylene*; Benzo[k]Fluoranthene; Chrysene*; Dibenz[ah]Anthracene; Fluoranthene*; Fluorene*; Indeno[123cd]Pyrene*; Naphthalene*; Phenanthrene*; Pyrene*	Dichloromethane extraction / GC-MS
2815	Polychlorinated Biphenyls (PCB) ICES7Congeners in Soils by GC-MS	ICES7 PCB congeners	Acetone/Hexane extraction / GC-MS
2920	Phenols in Soils by HPLC	Phenolic compounds including Resorcinol, Phenol, Methylphenols, Dimethylphenols, 1-Naphthol and TrimethylphenolsNote: chlorophenols are excluded.	60:40 methanol/water mixture extraction, followed by HPLC determination using electrochemical detection.
640	Characterisation of Waste (Leaching C10)	Waste material including soil, sludges and granular waste	ComplianceTest for Leaching of Granular Waste Material and Sludge

Report Information

Key	
U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"
SOP	Standard operating procedure
LOD	Limit of detection

Comments or interpretations are beyond the scope of UKAS accreditation
The results relate only to the items tested
Uncertainty of measurement for the determinands tested are available upon request
None of the results in this report have been recovery corrected
All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis
All Asbestos testing is performed at the indicated laboratory
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied
B - Sample age exceeds stability time (sampling to extraction)
C - Sample not received in appropriate containers
D - Broken Container
E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 30 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.com

Eurofins Chemtest Ltd
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.com

2183

Amended Report

Report No.:	23-13257-2		
Initial Date of Issue:	02-May-2023	**Date of Re-Issue:**	01-Jun-2023
Re-Issue Details:	This report has been revised and directly supersedes 23-13257-1 in its entirety		
Client	IGSL		
Client Address:	M7 Business Park Naas County Kildare Ireland		
Contact(s):	Darren Keogh		
Project	Dalguise, Monkstown		
Quotation No.:	Q20-19951	**Date Received:**	23-Apr-2023
Order No.:		**Date Instructed:**	23-Apr-2023
No. of Samples:	9		
Turnaround (Wkdays):	7	**Results Due:**	02-May-2023
Date Approved:	02-May-2023		

Approved By:

Details: Stuart Henderson, Technical Manager

Results - Leachate

Project: Dalguise, Monkstown

Client: IGSL					**Chemtest Job No.:**	23-13257	23-13257	23-13257	23-13257	23-13257	23-13257	23-13257	23-13257	23-13257
Quotation No.: Q20-19951					**Chemtest Sample ID.:**	1627756	1627757	1627758	1627759	1627760	1627761	1627762	1627763	1627764
Order No.:					Client Sample Ref.:	198161	198161	198162	198159	198160	198155	198156	198157	198154
					Sample Location:	TP12	TP13	TP13	TP14	TP14	TP15	TP15	TP16	TP16
					Sample Type:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
					Top Depth (m):	0.5	0.2	0.6	0.25	1.0	0.2	0.7	0.2	0.9
					Bottom Depth (m):	1.0	0.6	1.0	0.9	1.2	0.7	1.0	0.9	1.2
Determinand	**Accred.**	**SOP**	**Type**	**Units**	**LOD**									
pH	U	1010	10:1		N/A	7.7	7.9	7.6	7.7	7.6	7.5	7.1	6.6	7.8
Ammonium	U	1220	10:1	mg/l	0.050	0.19	0.21	0.19	0.15	0.27	0.25	0.16	0.34	0.22
Ammonium	N	1220	10:1	mg/kg	0.10	2.0	2.2	1.9	1.5	2.8	2.5	1.6	3.4	2.3
Boron (Dissolved)	U	1455	10:1	mg/kg	0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	0.10	< 0.01
Benzo[j]fluoranthene	N	1800	10:1	µg/l	0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010

Results - Soil

Project: Dalguise, Monkstown

Client: IGSL				**Chemtest Job No.:**	23-13257	23-13257	23-13257	23-13257	23-13257	23-13257	23-13257	23-13257	23-13257
Quotation No.: Q20-19951				**Chemtest Sample ID.:**	1627756	1627757	1627758	1627759	1627760	1627761	1627762	1627763	1627764
Order No.:				Client Sample Ref.:	198161	198161	198162	198159	198160	198155	198156	198157	198154
				Sample Location:	TP12	TP13	TP13	TP14	TP14	TP15	TP15	TP16	TP16
				Sample Type:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
				Top Depth (m):	0.5	0.2	0.6	0.25	1.0	0.2	0.7	0.2	0.9
				Bottom Depth (m):	1.0	0.6	1.0	0.9	1.2	0.7	1.0	0.9	1.2
				Asbestos Lab:	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM
Determinand	**Accred.**	**SOP**	**Units**	**LOD**									
ACM Type	U	2192		N/A	-	-	-	-	-	-	-	-	-
Asbestos Identification	U	2192		N/A	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected
Moisture	N	2030	%	0.020	8.3	19	18	18	12	17	19	17	13
Boron (Hot Water Soluble)	U	2120	mg/kg	0.40	[A] < 0.40	[A] < 0.40	[A] < 0.40	[A] < 0.40	[A] < 0.40	[A] 0.48	[A] 0.47	[A] 0.56	[A] < 0.40
Sulphur (Elemental)	U	2180	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Cyanide (Total)	U	2300	mg/kg	0.50	[A] 0.90	[A] < 0.50	[A] < 0.50	[A] < 0.50	[A] < 0.50	[A] < 0.50	[A] < 0.50	[A] < 0.50	[A] < 0.50
Sulphide (Easily Liberatable)	N	2325	mg/kg	0.50	[A] 3.2	[A] 2.6	[A] 2.4	[A] 2.4	[A] 2.4	[A] 2.4	[A] 2.4	[A] 2.5	[A] 2.5
Sulphate (Acid Soluble)	U	2430	%	0.010	[A] 0.54	[A] 0.17	[A] 0.14	[A] 0.15	[A] 0.15	[A] 0.31	[A] 0.14	[A] 0.16	[A] 0.23
Arsenic	U	2455	mg/kg	0.5	14	12	9.6	10	12	9.8	12	12	14
Barium	U	2455	mg/kg	0	110	68	56	59	56	43	55	51	61
Cadmium	U	2455	mg/kg	0.10	2.5	1.6	1.3	1.3	1.2	0.95	1.1	1.1	1.2
Chromium	U	2455	mg/kg	0.5	26	25	18	21	18	14	19	17	26
Molybdenum	U	2455	mg/kg	0.5	3.6	2.5	2.0	2.0	2.3	1.8	2.4	2.1	2.5
Antimony	N	2455	mg/kg	2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Copper	U	2455	mg/kg	0.50	33	27	21	22	21	22	23	20	26
Mercury	U	2455	mg/kg	0.05	0.10	0.09	0.08	0.07	0.14	0.11	0.20	0.12	0.13
Nickel	U	2455	mg/kg	0.50	56	44	35	35	31	24	34	30	37
Lead	U	2455	mg/kg	0.50	49	36	34	27	33	38	35	44	54
Selenium	U	2455	mg/kg	0.25	1.4	1.3	0.86	0.96	0.94	0.78	0.96	0.93	1.4
Zinc	U	2455	mg/kg	0.50	110	93	80	76	75	62	76	70	84
Chromium (Trivalent)	N	2490	mg/kg	1.0	26	25	18	21	18	14	19	17	26
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Mineral Oil (TPH Calculation)	N	2670	mg/kg	10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Aliphatic TPH >C5-C6	N	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aliphatic TPH >C6-C8	N	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aliphatic TPH >C8-C10	N	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aliphatic TPH >C10-C12	N	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aliphatic TPH >C12-C16	N	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aliphatic TPH >C16-C21	N	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aliphatic TPH >C21-C35	N	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0	[A] < 5.0	[A] < 5.0	[A] < 5.0	[A] < 5.0	[A] < 5.0	[A] < 5.0	[A] < 5.0	[A] < 5.0	[A] < 5.0
Aromatic TPH >C5-C7	N	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aromatic TPH >C7-C8	N	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aromatic TPH >C8-C10	N	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aromatic TPH >C10-C12	N	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aromatic TPH >C12-C16	N	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aromatic TPH >C16-C21	N	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aromatic TPH >C21-C35	N	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0

Results - Soil

Project: Dalguise, Monkstown

Client: IGSL	Chemtest Job No.:				23-13257	23-13257	23-13257	23-13257	23-13257	23-13257	23-13257	23-13257	23-13257
Quotation No.: Q20-19951	Chemtest Sample ID.:				1627756	1627757	1627758	1627759	1627760	1627761	1627762	1627763	1627764
Order No.:	Client Sample Ref.:				198161	198161	198162	198159	198160	198155	198156	198157	198154
	Sample Location:				TP12	TP13	TP13	TP14	TP14	TP15	TP15	TP16	TP16
	Sample Type:				SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	Top Depth (m):				0.5	0.2	0.6	0.25	1.0	0.2	0.7	0.2	0.9
	Bottom Depth (m):				1.0	0.6	1.0	0.9	1.2	0.7	1.0	0.9	1.2
	Asbestos Lab:				DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM
Determinand	**Accred.**	**SOP**	**Units**	**LOD**									
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0	[A] < 5.0	[A] < 5.0	[A] < 5.0	[A] < 5.0	[A] < 5.0	[A] < 5.0	[A] < 5.0	[A] < 5.0	[A] < 5.0
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0	[A] < 10	[A] < 10	[A] < 10	[A] < 10	[A] < 10	[A] < 10	[A] < 10	[A] < 10	[A] < 10
Benzene	U	2760	µg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Toluene	U	2760	µg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Ethylbenzene	U	2760	µg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
m & p-Xylene	U	2760	µg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
o-Xylene	U	2760	µg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Methyl Tert-Butyl Ether	U	2760	µg/kg	1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0
Naphthalene	N	2800	mg/kg	0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] 0.072
Acenaphthylene	N	2800	mg/kg	0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] 0.040
Acenaphthene	N	2800	mg/kg	0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] 0.062
Fluorene	N	2800	mg/kg	0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] 0.039
Phenanthrene	N	2800	mg/kg	0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] 0.24
Anthracene	N	2800	mg/kg	0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] 0.098
Fluoranthene	N	2800	mg/kg	0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] 0.49
Pyrene	N	2800	mg/kg	0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] 0.46
Benzo[a]anthracene	N	2800	mg/kg	0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] 0.24
Chrysene	N	2800	mg/kg	0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] 0.26
Benzo[b]fluoranthene	N	2800	mg/kg	0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] 0.29
Benzo[k]fluoranthene	N	2800	mg/kg	0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] 0.11
Benzo[a]pyrene	N	2800	mg/kg	0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] 0.35
Indeno(1,2,3-c,d)Pyrene	N	2800	mg/kg	0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] 0.27
Dibenz(a,h)Anthracene	N	2800	mg/kg	0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] 0.080
Benzo[g,h,i]perylene	N	2800	mg/kg	0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] 0.35
Coronene	N	2800	mg/kg	0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010
Total Of 17 PAH's	N	2800	mg/kg	0.20	[A] < 0.20	[A] < 0.20	[A] < 0.20	[A] < 0.20	[A] < 0.20	[A] < 0.20	[A] < 0.20	[A] < 0.20	[A] 3.5
PCB 28	N	2815	mg/kg	0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010
PCB 52	N	2815	mg/kg	0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010
PCB 90+101	N	2815	mg/kg	0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010
PCB 118	N	2815	mg/kg	0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010
PCB 153	N	2815	mg/kg	0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010
PCB 138	N	2815	mg/kg	0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010
PCB 180	N	2815	mg/kg	0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010
Total PCBs (7 congeners)	N	2815	mg/kg	0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010	[A] < 0.0010
Total Phenols	U	2920	mg/kg	0.10	< 0.10	0.19	< 0.10	< 0.10	< 0.10	0.14	< 0.10	< 0.10	0.26

Results - Single Stage WAC

Project: Dalguise, Monkstown

Chemtest Job No:	23-13257				**Landfill Waste Acceptance Criteria Limits**		
Chemtest Sample ID:	1627756				**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Sample Ref:	198161						
Sample ID:							
Sample Location:	TP12						
Top Depth(m):	0.5						
Bottom Depth(m):	1.0						
Sampling Date:							
Determinand	**SOP**	**Accred.**	**Units**				
Total Organic Carbon	2625	U	%	[A] 1.2	3	5	6
Loss On Ignition	2610	U	%	3.3	--	--	10
Total BTEX	2760	U	mg/kg	[A] < 0.010	6	--	--
Total PCBs (7 congeners)	2815	N	mg/kg	[A] < 0.0010	1	--	--
TPH Total WAC	2670	U	mg/kg	[A] < 10	500	--	--
Total Of 17 PAH's	2800	N	mg/kg	[A] < 0.20	100	--	--
pH	2010	U		8.1	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.012	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455	U	0.0003	0.0030	0.5	2	25
Barium	1455	U	< 0.005	< 0.050	20	100	300
Cadmium	1455	U	< 0.00011	< 0.0011	0.04	1	5
Chromium	1455	U	< 0.0005	< 0.0050	0.5	10	70
Copper	1455	U	< 0.0005	< 0.0050	2	50	100
Mercury	1455	U	< 0.00005	< 0.00050	0.01	0.2	2
Molybdenum	1455	U	0.0002	0.0021	0.5	10	30
Nickel	1455	U	< 0.0005	< 0.0050	0.4	10	40
Lead	1455	U	< 0.0005	< 0.0050	0.5	10	50
Antimony	1455	U	< 0.0005	< 0.0050	0.06	0.7	5
Selenium	1455	U	< 0.0005	< 0.0050	0.1	0.5	7
Zinc	1455	U	0.004	0.042	4	50	200
Chloride	1220	U	2.0	20	800	15000	25000
Fluoride	1220	U	0.17	1.7	10	150	500
Sulphate	1220	U	< 1.0	< 10	1000	20000	50000
Total Dissolved Solids	1020	N	35	350	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	3.4	< 50	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	8.3

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: Dalguise, Monkstown

Chemtest Job No:	23-13257				**Landfill Waste Acceptance Criteria Limits**		
Chemtest Sample ID:	1627757						
Sample Ref:	198161				**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Sample ID:							
Sample Location:	TP13						
Top Depth(m):	0.2						
Bottom Depth(m):	0.6						
Sampling Date:							
Determinand	**SOP**	**Accred.**	**Units**				
Total Organic Carbon	2625	U	%	[A] 1.2	3	5	6
Loss On Ignition	2610	U	%	3.2	--	--	10
Total BTEX	2760	U	mg/kg	[A] < 0.010	6	--	--
Total PCBs (7 congeners)	2815	N	mg/kg	[A] < 0.0010	1	--	--
TPH Total WAC	2670	U	mg/kg	[A] < 10	500	--	--
Total Of 17 PAH's	2800	N	mg/kg	[A] < 0.20	100	--	--
pH	2010	U		8.2	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.014	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455	U	0.0004	0.0037	0.5	2	25
Barium	1455	U	< 0.005	< 0.050	20	100	300
Cadmium	1455	U	< 0.00011	< 0.0011	0.04	1	5
Chromium	1455	U	< 0.0005	< 0.0050	0.5	10	70
Copper	1455	U	0.0007	0.0069	2	50	100
Mercury	1455	U	< 0.00005	< 0.00050	0.01	0.2	2
Molybdenum	1455	U	0.0006	0.0064	0.5	10	30
Nickel	1455	U	< 0.0005	< 0.0050	0.4	10	40
Lead	1455	U	< 0.0005	< 0.0050	0.5	10	50
Antimony	1455	U	< 0.0005	< 0.0050	0.06	0.7	5
Selenium	1455	U	< 0.0005	< 0.0050	0.1	0.5	7
Zinc	1455	U	0.005	0.052	4	50	200
Chloride	1220	U	< 1.0	< 10	800	15000	25000
Fluoride	1220	U	0.12	1.2	10	150	500
Sulphate	1220	U	< 1.0	< 10	1000	20000	50000
Total Dissolved Solids	1020	N	19	190	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	3.1	< 50	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	19

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: Dalguise, Monkstown

Chemtest Job No:	23-13257				**Landfill Waste Acceptance Criteria Limits**		
Chemtest Sample ID:	1627758						
Sample Ref:	198162				**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Sample ID:							
Sample Location:	TP13						
Top Depth(m):	0.6						
Bottom Depth(m):	1.0						
Sampling Date:							
Determinand	**SOP**	**Accred.**	**Units**				
Total Organic Carbon	2625	U	%	[A] 1.1	3	5	6
Loss On Ignition	2610	U	%	3.7	--	--	10
Total BTEX	2760	U	mg/kg	[A] < 0.010	6	--	--
Total PCBs (7 congeners)	2815	N	mg/kg	[A] < 0.0010	1	--	--
TPH Total WAC	2670	U	mg/kg	[A] < 10	500	--	--
Total Of 17 PAH's	2800	N	mg/kg	[A] < 0.20	100	--	--
pH	2010	U		8.2	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.012	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455	U	0.0004	0.0043	0.5	2	25
Barium	1455	U	< 0.005	< 0.050	20	100	300
Cadmium	1455	U	< 0.00011	< 0.0011	0.04	1	5
Chromium	1455	U	< 0.0005	< 0.0050	0.5	10	70
Copper	1455	U	< 0.0005	< 0.0050	2	50	100
Mercury	1455	U	< 0.00005	< 0.00050	0.01	0.2	2
Molybdenum	1455	U	0.0008	0.0077	0.5	10	30
Nickel	1455	U	< 0.0005	< 0.0050	0.4	10	40
Lead	1455	U	< 0.0005	< 0.0050	0.5	10	50
Antimony	1455	U	< 0.0005	< 0.0050	0.06	0.7	5
Selenium	1455	U	< 0.0005	< 0.0050	0.1	0.5	7
Zinc	1455	U	0.003	0.033	4	50	200
Chloride	1220	U	< 1.0	< 10	800	15000	25000
Fluoride	1220	U	0.14	1.4	10	150	500
Sulphate	1220	U	< 1.0	< 10	1000	20000	50000
Total Dissolved Solids	1020	N	32	320	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	< 2.5	< 50	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	18

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: Dalguise, Monkstown

Chemtest Job No:	23-13257				**Landfill Waste Acceptance Criteria Limits**		
Chemtest Sample ID:	1627759						
Sample Ref:	198159				**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Sample ID:							
Sample Location:	TP14						
Top Depth(m):	0.25						
Bottom Depth(m):	0.9						
Sampling Date:							
Determinand	**SOP**	**Accred.**	**Units**				
Total Organic Carbon	2625	U	%	[A] 0.80	3	5	6
Loss On Ignition	2610	U	%	3.4	--	--	10
Total BTEX	2760	U	mg/kg	[A] < 0.010	6	--	--
Total PCBs (7 congeners)	2815	N	mg/kg	[A] < 0.0010	1	--	--
TPH Total WAC	2670	U	mg/kg	[A] < 10	500	--	--
Total Of 17 PAH's	2800	N	mg/kg	[A] < 0.20	100	--	--
pH	2010	U		8.1	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.016	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455	U	0.0014	0.014	0.5	2	25
Barium	1455	U	< 0.005	< 0.050	20	100	300
Cadmium	1455	U	< 0.00011	< 0.0011	0.04	1	5
Chromium	1455	U	0.0020	0.020	0.5	10	70
Copper	1455	U	0.0019	0.019	2	50	100
Mercury	1455	U	< 0.00005	< 0.00050	0.01	0.2	2
Molybdenum	1455	U	0.0014	0.014	0.5	10	30
Nickel	1455	U	0.0016	0.016	0.4	10	40
Lead	1455	U	0.0013	0.013	0.5	10	50
Antimony	1455	U	< 0.0005	< 0.0050	0.06	0.7	5
Selenium	1455	U	0.0006	0.0063	0.1	0.5	7
Zinc	1455	U	0.021	0.21	4	50	200
Chloride	1220	U	< 1.0	< 10	800	15000	25000
Fluoride	1220	U	0.16	1.6	10	150	500
Sulphate	1220	U	1.1	11	1000	20000	50000
Total Dissolved Solids	1020	N	18	180	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	4.1	< 50	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	18

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: Dalguise, Monkstown

Chemtest Job No:	23-13257				**Landfill Waste Acceptance Criteria Limits**		
Chemtest Sample ID:	1627760						
Sample Ref:	198160				**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Sample ID:							
Sample Location:	TP14						
Top Depth(m):	1.0						
Bottom Depth(m):	1.2						
Sampling Date:							
Determinand	**SOP**	**Accred.**	**Units**				
Total Organic Carbon	2625	U	%	[A] 1.2	3	5	6
Loss On Ignition	2610	U	%	3.6	--	--	10
Total BTEX	2760	U	mg/kg	[A] < 0.010	6	--	--
Total PCBs (7 congeners)	2815	N	mg/kg	[A] < 0.0010	1	--	--
TPH Total WAC	2670	U	mg/kg	[A] < 10	500	--	--
Total Of 17 PAH's	2800	N	mg/kg	[A] < 0.20	100	--	--
pH	2010	U		7.8	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.015	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455	U	0.0004	0.0040	0.5	2	25
Barium	1455	U	< 0.005	< 0.050	20	100	300
Cadmium	1455	U	< 0.00011	< 0.0011	0.04	1	5
Chromium	1455	U	< 0.0005	< 0.0050	0.5	10	70
Copper	1455	U	0.0007	0.0067	2	50	100
Mercury	1455	U	< 0.00005	< 0.00050	0.01	0.2	2
Molybdenum	1455	U	0.0006	0.0060	0.5	10	30
Nickel	1455	U	< 0.0005	< 0.0050	0.4	10	40
Lead	1455	U	< 0.0005	< 0.0050	0.5	10	50
Antimony	1455	U	< 0.0005	< 0.0050	0.06	0.7	5
Selenium	1455	U	< 0.0005	< 0.0050	0.1	0.5	7
Zinc	1455	U	0.007	0.067	4	50	200
Chloride	1220	U	< 1.0	< 10	800	15000	25000
Fluoride	1220	U	0.15	1.5	10	150	500
Sulphate	1220	U	< 1.0	< 10	1000	20000	50000
Total Dissolved Solids	1020	N	31	310	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	2.9	< 50	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	12

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: Dalguise, Monkstown

					Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	23-13257				**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Chemtest Sample ID:	1627761						
Sample Ref:	198155						
Sample ID:							
Sample Location:	TP15						
Top Depth(m):	0.2						
Bottom Depth(m):	0.7						
Sampling Date:							
Determinand	**SOP**	**Accred.**	**Units**				
Total Organic Carbon	2625	U	%	[A] 2.1	3	5	6
Loss On Ignition	2610	U	%	4.7	--	--	10
Total BTEX	2760	U	mg/kg	[A] < 0.010	6	--	--
Total PCBs (7 congeners)	2815	N	mg/kg	[A] < 0.0010	1	--	--
TPH Total WAC	2670	U	mg/kg	[A] < 10	500	--	--
Total Of 17 PAH's	2800	N	mg/kg	[A] < 0.20	100	--	--
pH	2010	U		8.0	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.018	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455	U	0.0048	0.048	0.5	2	25
Barium	1455	U	< 0.005	< 0.050	20	100	300
Cadmium	1455	U	< 0.00011	< 0.0011	0.04	1	5
Chromium	1455	U	< 0.0005	< 0.0050	0.5	10	70
Copper	1455	U	0.0009	0.0089	2	50	100
Mercury	1455	U	< 0.00005	< 0.00050	0.01	0.2	2
Molybdenum	1455	U	0.0021	0.021	0.5	10	30
Nickel	1455	U	< 0.0005	< 0.0050	0.4	10	40
Lead	1455	U	< 0.0005	< 0.0050	0.5	10	50
Antimony	1455	U	0.0011	0.011	0.06	0.7	5
Selenium	1455	U	< 0.0005	< 0.0050	0.1	0.5	7
Zinc	1455	U	0.009	0.087	4	50	200
Chloride	1220	U	< 1.0	< 10	800	15000	25000
Fluoride	1220	U	0.097	< 1.0	10	150	500
Sulphate	1220	U	< 1.0	< 10	1000	20000	50000
Total Dissolved Solids	1020	N	15	150	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	3.0	< 50	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	17

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: Dalguise, Monkstown

Chemtest Job No:	23-13257				**Landfill Waste Acceptance Criteria Limits**		
Chemtest Sample ID:	1627762						
Sample Ref:	198156				**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Sample ID:							
Sample Location:	TP15						
Top Depth(m):	0.7						
Bottom Depth(m):	1.0						
Sampling Date:							
Determinand	**SOP**	**Accred.**	**Units**				
Total Organic Carbon	2625	U	%	[A] 1.3	3	5	6
Loss On Ignition	2610	U	%	4.2	--	--	10
Total BTEX	2760	U	mg/kg	[A] < 0.010	6	--	--
Total PCBs (7 congeners)	2815	N	mg/kg	[A] < 0.0010	1	--	--
TPH Total WAC	2670	U	mg/kg	[A] < 10	500	--	--
Total Of 17 PAH's	2800	N	mg/kg	[A] < 0.20	100	--	--
pH	2010	U		8.0	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.012	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455	U	0.0031	0.031	0.5	2	25
Barium	1455	U	< 0.005	< 0.050	20	100	300
Cadmium	1455	U	< 0.00011	< 0.0011	0.04	1	5
Chromium	1455	U	0.0025	0.025	0.5	10	70
Copper	1455	U	0.0027	0.027	2	50	100
Mercury	1455	U	< 0.00005	< 0.00050	0.01	0.2	2
Molybdenum	1455	U	0.0025	0.025	0.5	10	30
Nickel	1455	U	0.0028	0.028	0.4	10	40
Lead	1455	U	0.0013	0.013	0.5	10	50
Antimony	1455	U	0.0006	0.0059	0.06	0.7	5
Selenium	1455	U	0.0006	0.0056	0.1	0.5	7
Zinc	1455	U	0.025	0.25	4	50	200
Chloride	1220	U	< 1.0	< 10	800	15000	25000
Fluoride	1220	U	0.10	1.0	10	150	500
Sulphate	1220	U	1.1	11	1000	20000	50000
Total Dissolved Solids	1020	N	13	130	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	3.3	< 50	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	19

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: Dalguise, Monkstown

Chemtest Job No:	23-13257				**Landfill Waste Acceptance Criteria Limits**		
Chemtest Sample ID:	1627763						
Sample Ref:	198157				**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Sample ID:							
Sample Location:	TP16						
Top Depth(m):	0.2						
Bottom Depth(m):	0.9						
Sampling Date:							
Determinand	**SOP**	**Accred.**	**Units**				
Total Organic Carbon	2625	U	%	[A] 1.1	3	5	6
Loss On Ignition	2610	U	%	4.4	--	--	10
Total BTEX	2760	U	mg/kg	[A] < 0.010	6	--	--
Total PCBs (7 congeners)	2815	N	mg/kg	[A] < 0.0010	1	--	--
TPH Total WAC	2670	U	mg/kg	[A] < 10	500	--	--
Total Of 17 PAH's	2800	N	mg/kg	[A] < 0.20	100	--	--
pH	2010	U		7.9	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.015	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455	U	0.0002	0.0023	0.5	2	25
Barium	1455	U	0.020	0.20	20	100	300
Cadmium	1455	U	< 0.00011	< 0.0011	0.04	1	5
Chromium	1455	U	0.0007	0.0071	0.5	10	70
Copper	1455	U	< 0.0005	< 0.0050	2	50	100
Mercury	1455	U	< 0.00005	< 0.00050	0.01	0.2	2
Molybdenum	1455	U	0.0006	0.0057	0.5	10	30
Nickel	1455	U	0.0012	0.012	0.4	10	40
Lead	1455	U	< 0.0005	< 0.0050	0.5	10	50
Antimony	1455	U	< 0.0005	< 0.0050	0.06	0.7	5
Selenium	1455	U	0.0041	0.041	0.1	0.5	7
Zinc	1455	U	0.003	0.033	4	50	200
Chloride	1220	U	5.8	58	800	15000	25000
Fluoride	1220	U	0.088	< 1.0	10	150	500
Sulphate	1220	U	52	520	1000	20000	50000
Total Dissolved Solids	1020	N	79	780	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	2.8	< 50	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	17

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: Dalguise, Monkstown

Chemtest Job No:	23-13257				**Landfill Waste Acceptance Criteria Limits**		
Chemtest Sample ID:	1627764						
Sample Ref:	198154				**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Sample ID:							
Sample Location:	TP16						
Top Depth(m):	0.9						
Bottom Depth(m):	1.2						
Sampling Date:							
Determinand	**SOP**	**Accred.**	**Units**				
Total Organic Carbon	2625	U	%	[A] 1.4	3	5	6
Loss On Ignition	2610	U	%	4.0	--	--	10
Total BTEX	2760	U	mg/kg	[A] < 0.010	6	--	--
Total PCBs (7 congeners)	2815	N	mg/kg	[A] < 0.0010	1	--	--
TPH Total WAC	2670	U	mg/kg	[A] < 10	500	--	--
Total Of 17 PAH's	2800	N	mg/kg	[A] 3.5	100	--	--
pH	2010	U		8.1	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.015	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455	U	0.0022	0.022	0.5	2	25
Barium	1455	U	< 0.005	< 0.050	20	100	300
Cadmium	1455	U	< 0.00011	< 0.0011	0.04	1	5
Chromium	1455	U	0.0005	0.0051	0.5	10	70
Copper	1455	U	0.0014	0.014	2	50	100
Mercury	1455	U	< 0.00005	< 0.00050	0.01	0.2	2
Molybdenum	1455	U	0.0041	0.041	0.5	10	30
Nickel	1455	U	0.0007	0.0072	0.4	10	40
Lead	1455	U	< 0.0005	< 0.0050	0.5	10	50
Antimony	1455	U	< 0.0005	< 0.0050	0.06	0.7	5
Selenium	1455	U	< 0.0005	< 0.0050	0.1	0.5	7
Zinc	1455	U	0.008	0.080	4	50	200
Chloride	1220	U	< 1.0	< 10	800	15000	25000
Fluoride	1220	U	0.094	< 1.0	10	150	500
Sulphate	1220	U	< 1.0	< 10	1000	20000	50000
Total Dissolved Solids	1020	N	29	290	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	2.9	< 50	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	13

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Deviations

In accordance with UKAS Policy on Deviating Samples TPS 63. Chemtest have a procedure to ensure 'upon receipt of each sample a competent laboratory shall assess whether the sample is suitable with regard to the requested test(s)'. This policy and the respective holding times applied, can be supplied upon request.The reason a sample is declared as deviating is detailed below. Where applicable the analysis remains UKAS/MCERTs accredited but the results may be compromised.

Sample:	Sample Ref:	Sample ID:	Sample Location:	Sampled Date:	Deviation Code(s):	Containers Received:
1627756	198161		TP12		A	Amber Glass 250ml
1627756	198161		TP12		A	Plastic Tub 500g
1627757	198161		TP13		A	Amber Glass 250ml
1627757	198161		TP13		A	Plastic Tub 500g
1627758	198162		TP13		A	Amber Glass 250ml
1627758	198162		TP13		A	Plastic Tub 500g
1627759	198159		TP14		A	Amber Glass 250ml
1627759	198159		TP14		A	Plastic Tub 500g
1627760	198160		TP14		A	Amber Glass 250ml
1627760	198160		TP14		A	Plastic Tub 500g
1627761	198155		TP15		A	Amber Glass 250ml
1627761	198155		TP15		A	Plastic Tub 500g
1627762	198156		TP15		A	Amber Glass 250ml
1627762	198156		TP15		A	Plastic Tub 500g
1627763	198157		TP16		A	Amber Glass 250ml
1627763	198157		TP16		A	Plastic Tub 500g
1627764	198154		TP16		A	Amber Glass 250ml
1627764	198154		TP16		A	Plastic Tub 500g

Test Methods

SOP	Title	Parameters included	Method summary
1010	pH Value of Waters	pH	pH Meter
1020	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Conductivity Meter
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.
1455	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).
1610	Total/Dissolved Organic Carbon in Waters	Organic Carbon	TOC Analyser using Catalytic Oxidation
1800	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Waters by GC-MS	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Pentane extraction / GCMS detection
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.
2010	pH Value of Soils	pH	pH Meter
2015	Acid Neutralisation Capacity	Acid Reserve	Titration
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2180	Sulphur (Elemental) in Soils by HPLC	Sulphur	Dichloromethane extraction / HPLC with UV detection
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry
2300	Cyanides & Thiocyanate in Soils	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Allkaline extraction followed by colorimetric determination using Automated Flow Injection Analyser.
2325	Sulphide in Soils	Sulphide	Steam distillation with sulphuric acid / analysis by 'Aquakem 600' Discrete Analyser, using N,N–dimethyl-p-phenylenediamine.
2430	Total Sulphate in soils	Total Sulphate	Acid digestion followed by determination of sulphate in extract by ICP-OES.
2455	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.
2490	Hexavalent Chromium in Soils	Chromium [VI]	Soil extracts are prepared by extracting dried and ground soil samples into boiling water. Chromium [VI] is determined by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
2610	Loss on Ignition	loss on ignition (LOI)	Determination of the proportion by mass that is lost from a soil by ignition at 550°C.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2670	Total Petroleum Hydrocarbons (TPH) in Soils by GC-FID	TPH (C6–C40); optional carbon banding, e.g. 3-band – GRO, DRO & LRO*TPH C8–C40	Dichloromethane extraction / GC-FID
2680	TPH A/A Split	Aliphatics: >C5–C6, >C6–C8,>C8–C10, >C10–C12, >C12–C16, >C16–C21, >C21–C35, >C35– C44Aromatics: >C5–C7, >C7–C8, >C8– C10, >C10–C12, >C12–C16, >C16– C21, >C21– C35, >C35– C44	Dichloromethane extraction / GCxGC FID detection

Test Methods

SOP	Title	Parameters included	Method summary
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2800	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-MS	Acenaphthene*; Acenaphthylene; Anthracene*; Benzo[a]Anthracene*; Benzo[a]Pyrene*; Benzo[b]Fluoranthene*; Benzo[ghi]Perylene*; Benzo[k]Fluoranthene; Chrysene*; Dibenz[ah]Anthracene; Fluoranthene*; Fluorene*; Indeno[123cd]Pyrene*; Naphthalene*; Phenanthrene*; Pyrene*	Dichloromethane extraction / GC-MS
2815	Polychlorinated Biphenyls (PCB) ICES7Congeners in Soils by GC-MS	ICES7 PCB congeners	Acetone/Hexane extraction / GC-MS
2920	Phenols in Soils by HPLC	Phenolic compounds including Resorcinol, Phenol, Methylphenols, Dimethylphenols, 1-Naphthol and TrimethylphenolsNote: chlorophenols are excluded.	60:40 methanol/water mixture extraction, followed by HPLC determination using electrochemical detection.
640	Characterisation of Waste (Leaching C10)	Waste material including soil, sludges and granular waste	ComplianceTest for Leaching of Granular Waste Material and Sludge

Report Information

Key	
U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"
SOP	Standard operating procedure
LOD	Limit of detection

Comments or interpretations are beyond the scope of UKAS accreditation
The results relate only to the items tested
Uncertainty of measurement for the determinands tested are available upon request
None of the results in this report have been recovery corrected
All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis
All Asbestos testing is performed at the indicated laboratory
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied
B - Sample age exceeds stability time (sampling to extraction)
C - Sample not received in appropriate containers
D - Broken Container
E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 30 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.com

Appendix 3

Waste Classification Report

environmental management for business

HazWasteOnline™

Waste Classification Report

HazWasteOnline™ classifies waste as either **hazardous** or **non-hazardous** based on its chemical composition, related legislation and the rules and data defined in the current UK or EU technical guidance (Appendix C) (note that HP 9 Infectious is not assessed). It is the responsibility of the classifier named below to:

a) understand the origin of the waste
b) select the correct List of Waste code(s)
c) confirm that the list of determinands, results and sampling plan are fit for purpose
d) select and justify the chosen metal species (Appendix B)
e) correctly apply moisture correction and other available corrections
f) add the meta data for their user-defined substances (Appendix A)
g) check that the classification engine is suitable with respect to the national destination of the waste (Appendix C)

To aid the reviewer, the laboratory results, assumptions and justifications managed by the classifier are highlighted in pale yellow.

39PJ2-6JAD9-NHH05

Job name

22-001-18 Dalguise

Description/Comments

Project

22-001-18

Site

Dalguise

Classified by

Name:
Austin Hynes
Date:
17 May 2022 10:43 GMT
Telephone:
+353 (0)21 4345366

Company:
O'Callaghan Moran & Associates
Unit 15 Melbourne Business Park,
Model Farm Road
Cork

HazWasteOnline™ provides a two day, hazardous waste classification course that covers the use of the software and both basic and advanced waste classification techniques. Certification has to be renewed every 3 years.

HazWasteOnline™ Certification: -

Course	**Date**
Hazardous Waste Classification	-

Job summary

#	Sample name	Depth [m]	Classification Result	Hazard properties	Page
1	BH01	1.0	Non Hazardous		3
2	BH01[2]	2.0	Non Hazardous		6
3	BH02A	1.00	Non Hazardous		9
4	BH02A[2]	2.0	Non Hazardous		12
5	BH02A[3]	3.0	Non Hazardous		15
6	BH03	1.0	Non Hazardous		18
7	BH03[2]	2.00	Non Hazardous		21
8	BH03[3]	3.0	Non Hazardous		24
9	BH04	1.0	Non Hazardous		27
10	BH04[2]	2.0	Non Hazardous		30
11	BH05	1.00	Non Hazardous		33
12	BH05[2]	2.0	Non Hazardous		36
13	BH05[3]	3.0	Non Hazardous		39
14	BH06	1.0	Non Hazardous		42
15	BH06[2]	2.0	Non Hazardous		45
16	TP21	0.75	Non Hazardous		48
17	TP21[2]	1.5	Non Hazardous		51
18	TP21[3]	3.0	Non Hazardous		54
19	TP22	0.6	Non Hazardous		57
20	TP22[2]	1.5	Non Hazardous		60
21	TP22[3]	3.3	Non Hazardous		63
22	TP23	0.3	Non Hazardous		66
23	TP23[2]	1.2	Non Hazardous		69
24	TP23[3]	2.4	Non Hazardous		72
25	TP24	0.5	Non Hazardous		75
26	TP24[2]	2.0	Non Hazardous		78
27	TP25	0.6	Non Hazardous		81
28	TP25[2]	1.5	Non Hazardous		84
29	TP26	0.5	Non Hazardous		87
30	TP26[2]	1.6	Non Hazardous		90

#	Sample name	Depth [m]	Classification Result	Hazard properties	Page
31	WS01	0.0-1.0	Non Hazardous		93
32	WS01[2]	1.0-2.0	Non Hazardous		96
33	WS02	0.0-1.0	Non Hazardous		99
34	WS02[2]	1.0-2.0	Non Hazardous		102
35	WS03	0.0-1.0	Non Hazardous		105
36	WS03[2]	1.0-2.0	Non Hazardous		108
37	WS03[3]	2.0-3.0	Non Hazardous		111
38	WS04	0.0-1.0	Non Hazardous		114
39	WS04[2]	1.0-2.0	Non Hazardous		117
40	WS05	0.0-1.0	Non Hazardous		120
41	WS05[2]	1.0-2.0	Non Hazardous		123
42	WS05[3]	2.0-3.0	Non Hazardous		126

Related documents

#	Name	Description
1	OCM Waste Stream Updated 2021	waste stream template used to create this Job

Report

Created by: Austin Hynes

Created date: 17 May 2022 10:43 GMT

Appendices	Page
Appendix A: Classifier defined and non EU CLP determinands	129
Appendix B: Rationale for selection of metal species	130
Appendix C: Version	131

Classification of sample: BH01

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:		LoW Code:	
BH01		Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:			
1.0 m		Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)
Moisture content:			
16% (no correction)			

Hazard properties

None identified

Determinands

Moisture content: 16% No Moisture Correction applied (MC)

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1	antimony { antimony trioxide }	051-005-00-X	215-175-0	1309-64-4		<2	mg/kg	1.197	<2.394	mg/kg	<0.000239 %		<LOD
2	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		14	mg/kg	1.32	18.485	mg/kg	0.00185 %		
3	boron { diboron trioxide }	005-008-00-8	215-125-8	1303-86-2		0.66	mg/kg	3.22	2.125	mg/kg	0.000213 %		
4	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		1.1	mg/kg	1.142	1.257	mg/kg	0.000126 %		
5	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		14	mg/kg	1.462	20.462	mg/kg	0.00205 %		
6	chromium in chromium(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8				<0.5	mg/kg	2.27	<1.135	mg/kg	<0.000113 %		<LOD
7	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		1200	mg/kg	1.126	1351.066	mg/kg	0.135 %		
8	lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	130	mg/kg	1.56	202.776	mg/kg	0.013 %		
9	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		0.11	mg/kg	1.353	0.149	mg/kg	0.0000149 %		
10	molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		2.7	mg/kg	1.5	4.051	mg/kg	0.000405 %		
11	nickel { nickel chromate }	028-035-00-7	238-766-5	14721-18-7		32	mg/kg	2.976	95.24	mg/kg	0.00952 %		
12	selenium { nickel selenate }	028-031-00-5	239-125-2	15060-62-5		0.37	mg/kg	2.554	0.945	mg/kg	0.0000945 %		
13	zinc { zinc chromate }	024-007-00-3	236-878-9	13530-65-9		290	mg/kg	2.774	804.502	mg/kg	0.0805 %		
14	TPH (C6 to C40) petroleum group			TPH		<10	mg/kg		<10	mg/kg	<0.001 %		<LOD
15	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number									
16		benzene				<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
		601-020-00-8	200-753-7	71-43-2									
17		toluene				<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
		601-021-00-3	203-625-9	108-88-3									
18	•	ethylbenzene				<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
		601-023-00-4	202-849-4	100-41-4									
19		xylene				<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
		601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]									
20		cyanides { • salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }				<0.5	mg/kg	1.884	<0.942	mg/kg	<0.0000942 %		<LOD
		006-007-00-5											
21		naphthalene				<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
		601-052-00-2	202-049-5	91-20-3									
22	•	acenaphthylene				<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
			205-917-1	208-96-8									
23	•	acenaphthene				<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
			201-469-6	83-32-9									
24	•	fluorene				<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
			201-695-5	86-73-7									
25	•	phenanthrene				0.11	mg/kg		0.11	mg/kg	0.000011 %		
			201-581-5	85-01-8									
26	•	anthracene				0.06	mg/kg		0.06	mg/kg	0.000006 %		
			204-371-1	120-12-7									
27	•	fluoranthene				0.13	mg/kg		0.13	mg/kg	0.000013 %		
			205-912-4	206-44-0									
28	•	pyrene				0.12	mg/kg		0.12	mg/kg	0.000012 %		
			204-927-3	129-00-0									
29		benzo[a]anthracene				0.1	mg/kg		0.1	mg/kg	0.00001 %		
		601-033-00-9	200-280-6	56-55-3									
30		chrysene				0.11	mg/kg		0.11	mg/kg	0.000011 %		
		601-048-00-0	205-923-4	218-01-9									
31		benzo[b]fluoranthene				0.13	mg/kg		0.13	mg/kg	0.000013 %		
		601-034-00-4	205-911-9	205-99-2									
32		benzo[k]fluoranthene				0.13	mg/kg		0.13	mg/kg	0.000013 %		
		601-036-00-5	205-916-6	207-08-9									
33		benzo[a]pyrene; benzo[def]chrysene				0.18	mg/kg		0.18	mg/kg	0.000018 %		
		601-032-00-3	200-028-5	50-32-8									
34	•	indeno[123-cd]pyrene				0.11	mg/kg		0.11	mg/kg	0.000011 %		
			205-893-2	193-39-5									
35		dibenz[a,h]anthracene				0.11	mg/kg		0.11	mg/kg	0.000011 %		
		601-041-00-2	200-181-8	53-70-3									
36	•	benzo[ghi]perylene				0.13	mg/kg		0.13	mg/kg	0.000013 %		
			205-883-8	191-24-2									
37		phenol				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		604-001-00-2	203-632-7	108-95-2									
38	•	polychlorobiphenyls; PCB				<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
		602-039-00-4	215-648-1	1336-36-3									
										Total:	0.244 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: BH01[2]

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:
BH01[2]
Sample Depth:
2.0 m
Moisture content:
12%
(no correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 12% No Moisture Correction applied (MC)

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	antimony { antimony trioxide }	051-005-00-X	215-175-0	1309-64-4		<2 mg/kg	1.197	<2.394 mg/kg	<0.000239 %		<LOD
2	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		14 mg/kg	1.32	18.485 mg/kg	0.00185 %		
3	boron { diboron trioxide }	005-008-00-8	215-125-8	1303-86-2		0.51 mg/kg	3.22	1.642 mg/kg	0.000164 %		
4	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		1.4 mg/kg	1.142	1.599 mg/kg	0.00016 %		
5	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		13 mg/kg	1.462	19 mg/kg	0.0019 %		
6	chromium in chromium(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8				<0.5 mg/kg	2.27	<1.135 mg/kg	<0.000113 %		<LOD
7	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		52 mg/kg	1.126	58.546 mg/kg	0.00585 %		
8	lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	51 mg/kg	1.56	79.551 mg/kg	0.0051 %		
9	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		0.1 mg/kg	1.353	0.135 mg/kg	0.0000135 %		
10	molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		3.1 mg/kg	1.5	4.651 mg/kg	0.000465 %		
11	nickel { nickel chromate }	028-035-00-7	238-766-5	14721-18-7		35 mg/kg	2.976	104.169 mg/kg	0.0104 %		
12	selenium { nickel selenate }	028-031-00-5	239-125-2	15060-62-5		0.56 mg/kg	2.554	1.43 mg/kg	0.000143 %		
13	zinc { zinc chromate }	024-007-00-3	236-878-9	13530-65-9		110 mg/kg	2.774	305.156 mg/kg	0.0305 %		
14	TPH (C6 to C40) petroleum group			TPH		<10 mg/kg		<10 mg/kg	<0.001 %		<LOD
15	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
16	benzene	601-020-00-8	200-753-7	71-43-2		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
17	toluene	601-021-00-3	203-625-9	108-88-3		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
18	ethylbenzene	601-023-00-4	202-849-4	100-41-4		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
19	xylene	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
20	cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				<0.5	mg/kg	1.884	<0.942	mg/kg	<0.0000942 %		<LOD
21	naphthalene	601-052-00-2	202-049-5	91-20-3		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
22	acenaphthylene		205-917-1	208-96-8		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
23	acenaphthene		201-469-6	83-32-9		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
24	fluorene		201-695-5	86-73-7		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
25	phenanthrene		201-581-5	85-01-8		0.11	mg/kg		0.11	mg/kg	0.000011 %		
26	anthracene		204-371-1	120-12-7		0.089	mg/kg		0.089	mg/kg	0.0000089 %		
27	fluoranthene		205-912-4	206-44-0		0.12	mg/kg		0.12	mg/kg	0.000012 %		
28	pyrene		204-927-3	129-00-0		0.15	mg/kg		0.15	mg/kg	0.000015 %		
29	benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		0.14	mg/kg		0.14	mg/kg	0.000014 %		
30	chrysene	601-048-00-0	205-923-4	218-01-9		0.17	mg/kg		0.17	mg/kg	0.000017 %		
31	benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		0.15	mg/kg		0.15	mg/kg	0.000015 %		
32	benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		0.093	mg/kg		0.093	mg/kg	0.0000093 %		
33	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		0.11	mg/kg		0.11	mg/kg	0.000011 %		
34	indeno[123-cd]pyrene		205-893-2	193-39-5		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
35	dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
36	benzo[ghi]perylene		205-883-8	191-24-2		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
37	phenol	604-001-00-2	203-632-7	108-95-2		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
38	polychlorobiphenyls; PCB	602-039-00-4	215-648-1	1336-36-3		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
										Total:	0.0582 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: BH02A

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:	**BH02A**	LoW Code:	
Sample Depth:	**1.00 m**	Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Moisture content:	**18%** (no correction)	Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 18% No Moisture Correction applied (MC)

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	antimony { antimony trioxide }	051-005-00-X	215-175-0	1309-64-4		<2 mg/kg	1.197	<2.394 mg/kg	<0.000239 %		<LOD
2	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		6 mg/kg	1.32	7.922 mg/kg	0.000792 %		
3	boron { diboron trioxide }	005-008-00-8	215-125-8	1303-86-2		0.67 mg/kg	3.22	2.157 mg/kg	0.000216 %		
4	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		0.6 mg/kg	1.142	0.685 mg/kg	0.0000685 %		
5	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		9.8 mg/kg	1.462	14.323 mg/kg	0.00143 %		
6	chromium in chromium(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8				<0.5 mg/kg	2.27	<1.135 mg/kg	<0.000113 %		<LOD
7	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		15 mg/kg	1.126	16.888 mg/kg	0.00169 %		
8	lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	26 mg/kg	1.56	40.555 mg/kg	0.0026 %		
9	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.1 mg/kg	1.353	<0.135 mg/kg	<0.0000135 %		<LOD
10	molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		<2 mg/kg	1.5	<3 mg/kg	<0.0003 %		<LOD
11	nickel { nickel chromate }	028-035-00-7	238-766-5	14721-18-7		21 mg/kg	2.976	62.502 mg/kg	0.00625 %		
12	selenium { nickel selenate }	028-031-00-5	239-125-2	15060-62-5		0.2 mg/kg	2.554	0.511 mg/kg	0.0000511 %		
13	zinc { zinc chromate }	024-007-00-3	236-878-9	13530-65-9		37 mg/kg	2.774	102.643 mg/kg	0.0103 %		
14	TPH (C6 to C40) petroleum group			TPH		<10 mg/kg		<10 mg/kg	<0.001 %		<LOD
15	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
16	benzene	601-020-00-8	200-753-7	71-43-2		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
17	toluene	601-021-00-3	203-625-9	108-88-3		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
18	ethylbenzene	601-023-00-4	202-849-4	100-41-4		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
19	xylene	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
20	cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				<0.5	mg/kg	1.884	<0.942	mg/kg	<0.0000942 %		<LOD
21	naphthalene	601-052-00-2	202-049-5	91-20-3		0.43	mg/kg		0.43	mg/kg	0.000043 %		
22	acenaphthylene		205-917-1	208-96-8		0.048	mg/kg		0.048	mg/kg	0.0000048 %		
23	acenaphthene		201-469-6	83-32-9		0.092	mg/kg		0.092	mg/kg	0.0000092 %		
24	fluorene		201-695-5	86-73-7		0.04	mg/kg		0.04	mg/kg	0.000004 %		
25	phenanthrene		201-581-5	85-01-8		0.2	mg/kg		0.2	mg/kg	0.00002 %		
26	anthracene		204-371-1	120-12-7		0.038	mg/kg		0.038	mg/kg	0.0000038 %		
27	fluoranthene		205-912-4	206-44-0		0.31	mg/kg		0.31	mg/kg	0.000031 %		
28	pyrene		204-927-3	129-00-0		0.34	mg/kg		0.34	mg/kg	0.000034 %		
29	benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		0.31	mg/kg		0.31	mg/kg	0.000031 %		
30	chrysene	601-048-00-0	205-923-4	218-01-9		0.3	mg/kg		0.3	mg/kg	0.00003 %		
31	benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		0.6	mg/kg		0.6	mg/kg	0.00006 %		
32	benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		0.24	mg/kg		0.24	mg/kg	0.000024 %		
33	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		0.58	mg/kg		0.58	mg/kg	0.000058 %		
34	indeno[123-cd]pyrene		205-893-2	193-39-5		0.46	mg/kg		0.46	mg/kg	0.000046 %		
35	dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		0.13	mg/kg		0.13	mg/kg	0.000013 %		
36	benzo[ghi]perylene		205-883-8	191-24-2		0.55	mg/kg		0.55	mg/kg	0.000055 %		
37	phenol	604-001-00-2	203-632-7	108-95-2		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
38	polychlorobiphenyls; PCB	602-039-00-4	215-648-1	1336-36-3		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
										Total:	0.0256 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: BH02A[2]

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:
BH02A[2]
Sample Depth:
2.0 m
Moisture content:
18%
(no correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 18% No Moisture Correction applied (MC)

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	antimony { antimony trioxide }	051-005-00-X	215-175-0	1309-64-4		<2 mg/kg	1.197	<2.394 mg/kg	<0.000239 %		<LOD
2	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		11 mg/kg	1.32	14.524 mg/kg	0.00145 %		
3	boron { diboron trioxide }	005-008-00-8	215-125-8	1303-86-2		0.41 mg/kg	3.22	1.32 mg/kg	0.000132 %		
4	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		0.47 mg/kg	1.142	0.537 mg/kg	0.0000537 %		
5	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		27 mg/kg	1.462	39.462 mg/kg	0.00395 %		
6	chromium in chromium(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8				<0.5 mg/kg	2.27	<1.135 mg/kg	<0.000113 %		<LOD
7	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		19 mg/kg	1.126	21.392 mg/kg	0.00214 %		
8	lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	22 mg/kg	1.56	34.316 mg/kg	0.0022 %		
9	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.1 mg/kg	1.353	<0.135 mg/kg	<0.0000135 %		<LOD
10	molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		<2 mg/kg	1.5	<3 mg/kg	<0.0003 %		<LOD
11	nickel { nickel chromate }	028-035-00-7	238-766-5	14721-18-7		34 mg/kg	2.976	101.193 mg/kg	0.0101 %		
12	selenium { nickel selenate }	028-031-00-5	239-125-2	15060-62-5		<0.2 mg/kg	2.554	<0.511 mg/kg	<0.0000511 %		<LOD
13	zinc { zinc chromate }	024-007-00-3	236-878-9	13530-65-9		55 mg/kg	2.774	152.578 mg/kg	0.0153 %		
14	TPH (C6 to C40) petroleum group			TPH		<10 mg/kg		<10 mg/kg	<0.001 %		<LOD
15	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
16	benzene	601-020-00-8	200-753-7	71-43-2		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
17	toluene	601-021-00-3	203-625-9	108-88-3		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
18	ethylbenzene	601-023-00-4	202-849-4	100-41-4		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
19	xylene	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
20	cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				<0.5 mg/kg	1.884	<0.942 mg/kg	<0.0000942 %		<LOD
21	naphthalene	601-052-00-2	202-049-5	91-20-3		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
22	acenaphthylene		205-917-1	208-96-8		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
23	acenaphthene		201-469-6	83-32-9		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
24	fluorene		201-695-5	86-73-7		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
25	phenanthrene		201-581-5	85-01-8		0.14 mg/kg		0.14 mg/kg	0.000014 %		
26	anthracene		204-371-1	120-12-7		0.036 mg/kg		0.036 mg/kg	0.0000036 %		
27	fluoranthene		205-912-4	206-44-0		0.1 mg/kg		0.1 mg/kg	0.00001 %		
28	pyrene		204-927-3	129-00-0		0.19 mg/kg		0.19 mg/kg	0.000019 %		
29	benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		0.13 mg/kg		0.13 mg/kg	0.000013 %		
30	chrysene	601-048-00-0	205-923-4	218-01-9		0.21 mg/kg		0.21 mg/kg	0.000021 %		
31	benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		0.24 mg/kg		0.24 mg/kg	0.000024 %		
32	benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		0.074 mg/kg		0.074 mg/kg	0.0000074 %		
33	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		0.18 mg/kg		0.18 mg/kg	0.000018 %		
34	indeno[123-cd]pyrene		205-893-2	193-39-5		0.11 mg/kg		0.11 mg/kg	0.000011 %		
35	dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		0.058 mg/kg		0.058 mg/kg	0.0000058 %		
36	benzo[ghi]perylene		205-883-8	191-24-2		0.2 mg/kg		0.2 mg/kg	0.00002 %		
37	phenol	604-001-00-2	203-632-7	108-95-2		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
38	polychlorobiphenyls; PCB	602-039-00-4	215-648-1	1336-36-3		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
								Total:	0.0373 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: BH02A[3]

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:	**BH02A[3]**	LoW Code:	
Sample Depth:	**3.0 m**	Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Moisture content:	**17%** (no correction)	Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 17% No Moisture Correction applied (MC)

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	antimony { antimony trioxide }	051-005-00-X	215-175-0	1309-64-4		<2 mg/kg	1.197	<2.394 mg/kg	<0.000239 %		<LOD
2	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		5.1 mg/kg	1.32	6.734 mg/kg	0.000673 %		
3	boron { diboron trioxide }	005-008-00-8	215-125-8	1303-86-2		0.56 mg/kg	3.22	1.803 mg/kg	0.00018 %		
4	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		0.25 mg/kg	1.142	0.286 mg/kg	0.0000286 %		
5	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		10 mg/kg	1.462	14.616 mg/kg	0.00146 %		
6	chromium in chromium(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8				<0.5 mg/kg	2.27	<1.135 mg/kg	<0.000113 %		<LOD
7	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		7 mg/kg	1.126	7.881 mg/kg	0.000788 %		
8	lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	7.2 mg/kg	1.56	11.231 mg/kg	0.00072 %		
9	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.1 mg/kg	1.353	<0.135 mg/kg	<0.0000135 %		<LOD
10	molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		<2 mg/kg	1.5	<3 mg/kg	<0.0003 %		<LOD
11	nickel { nickel chromate }	028-035-00-7	238-766-5	14721-18-7		14 mg/kg	2.976	41.668 mg/kg	0.00417 %		
12	selenium { nickel selenate }	028-031-00-5	239-125-2	15060-62-5		<0.2 mg/kg	2.554	<0.511 mg/kg	<0.0000511 %		<LOD
13	zinc { zinc chromate }	024-007-00-3	236-878-9	13530-65-9		29 mg/kg	2.774	80.45 mg/kg	0.00805 %		
14	TPH (C6 to C40) petroleum group			TPH		<10 mg/kg		<10 mg/kg	<0.001 %		<LOD
15	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
16	benzene	601-020-00-8	200-753-7	71-43-2		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
17	toluene	601-021-00-3	203-625-9	108-88-3		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
18	ethylbenzene	601-023-00-4	202-849-4	100-41-4		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
19	xylene	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
20	cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				<0.5 mg/kg	1.884	<0.942 mg/kg	<0.0000942 %		<LOD
21	naphthalene	601-052-00-2	202-049-5	91-20-3		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
22	acenaphthylene		205-917-1	208-96-8		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
23	acenaphthene		201-469-6	83-32-9		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
24	fluorene		201-695-5	86-73-7		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
25	phenanthrene		201-581-5	85-01-8		0.096 mg/kg		0.096 mg/kg	0.0000096 %		
26	anthracene		204-371-1	120-12-7		0.01 mg/kg		0.01 mg/kg	0.000001 %		
27	fluoranthene		205-912-4	206-44-0		0.18 mg/kg		0.18 mg/kg	0.000018 %		
28	pyrene		204-927-3	129-00-0		0.13 mg/kg		0.13 mg/kg	0.000013 %		
29	benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		0.089 mg/kg		0.089 mg/kg	0.0000089 %		
30	chrysene	601-048-00-0	205-923-4	218-01-9		0.077 mg/kg		0.077 mg/kg	0.0000077 %		
31	benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
32	benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
33	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
34	indeno[123-cd]pyrene		205-893-2	193-39-5		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
35	dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
36	benzo[ghi]perylene		205-883-8	191-24-2		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
37	phenol	604-001-00-2	203-632-7	108-95-2		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
38	polychlorobiphenyls; PCB	602-039-00-4	215-648-1	1336-36-3		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
								Total:	0.018 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: BH03

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:		LoW Code:	
BH03		Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:			
1.0 m		Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)
Moisture content:			
13% (no correction)			

Hazard properties

None identified

Determinands

Moisture content: 13% No Moisture Correction applied (MC)

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1	antimony { antimony trioxide }	051-005-00-X	215-175-0	1309-64-4		<2	mg/kg	1.197	<2.394	mg/kg	<0.000239 %		<LOD
2	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		13	mg/kg	1.32	17.164	mg/kg	0.00172 %		
3	boron { diboron trioxide }	005-008-00-8	215-125-8	1303-86-2		<0.4	mg/kg	3.22	<1.288	mg/kg	<0.000129 %		<LOD
4	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		1.6	mg/kg	1.142	1.828	mg/kg	0.000183 %		
5	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		13	mg/kg	1.462	19	mg/kg	0.0019 %		
6	chromium in chromium(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8				<0.5	mg/kg	2.27	<1.135	mg/kg	<0.000113 %		<LOD
7	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		21	mg/kg	1.126	23.644	mg/kg	0.00236 %		
8	lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	13	mg/kg	1.56	20.278	mg/kg	0.0013 %		
9	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.1	mg/kg	1.353	<0.135	mg/kg	<0.0000135 %		<LOD
10	molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		2.6	mg/kg	1.5	3.9	mg/kg	0.00039 %		
11	nickel { nickel chromate }	028-035-00-7	238-766-5	14721-18-7		35	mg/kg	2.976	104.169	mg/kg	0.0104 %		
12	selenium { nickel selenate }	028-031-00-5	239-125-2	15060-62-5		0.22	mg/kg	2.554	0.562	mg/kg	0.0000562 %		
13	zinc { zinc chromate }	024-007-00-3	236-878-9	13530-65-9		64	mg/kg	2.774	177.545	mg/kg	0.0178 %		
14	TPH (C6 to C40) petroleum group			TPH		<10	mg/kg		<10	mg/kg	<0.001 %		<LOD
15	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
16	benzene	601-020-00-8	200-753-7	71-43-2		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
17	toluene	601-021-00-3	203-625-9	108-88-3		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
18	ethylbenzene	601-023-00-4	202-849-4	100-41-4		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
19	xylene	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
20	cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				<0.5 mg/kg	1.884	<0.942 mg/kg	<0.0000942 %		<LOD
21	naphthalene	601-052-00-2	202-049-5	91-20-3		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
22	acenaphthylene		205-917-1	208-96-8		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
23	acenaphthene		201-469-6	83-32-9		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
24	fluorene		201-695-5	86-73-7		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
25	phenanthrene		201-581-5	85-01-8		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
26	anthracene		204-371-1	120-12-7		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
27	fluoranthene		205-912-4	206-44-0		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
28	pyrene		204-927-3	129-00-0		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
29	benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
30	chrysene	601-048-00-0	205-923-4	218-01-9		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
31	benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
32	benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
33	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
34	indeno[123-cd]pyrene		205-893-2	193-39-5		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
35	dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
36	benzo[ghi]perylene		205-883-8	191-24-2		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
37	phenol	604-001-00-2	203-632-7	108-95-2		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
38	polychlorobiphenyls; PCB	602-039-00-4	215-648-1	1336-36-3		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
								Total:	0.0377 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
●	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: BH03[2]

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:		LoW Code:	
BH03[2]		Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:			
2.00 m		Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)
Moisture content:			
14% (no correction)			

Hazard properties

None identified

Determinands

Moisture content: 14% No Moisture Correction applied (MC)

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1	antimony { antimony trioxide }	051-005-00-X	215-175-0	1309-64-4		<2	mg/kg	1.197	<2.394	mg/kg	<0.000239 %		<LOD
2	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		8.1	mg/kg	1.32	10.695	mg/kg	0.00107 %		
3	boron { diboron trioxide }	005-008-00-8	215-125-8	1303-86-2		<0.4	mg/kg	3.22	<1.288	mg/kg	<0.000129 %		<LOD
4	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		1	mg/kg	1.142	1.142	mg/kg	0.000114 %		
5	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		7.2	mg/kg	1.462	10.523	mg/kg	0.00105 %		
6	chromium in chromium(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8				<0.5	mg/kg	2.27	<1.135	mg/kg	<0.000113 %		<LOD
7	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		14	mg/kg	1.126	15.762	mg/kg	0.00158 %		
8	lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	8	mg/kg	1.56	12.479	mg/kg	0.0008 %		
9	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.1	mg/kg	1.353	<0.135	mg/kg	<0.0000135 %		<LOD
10	molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		<2	mg/kg	1.5	<3	mg/kg	<0.0003 %		<LOD
11	nickel { nickel chromate }	028-035-00-7	238-766-5	14721-18-7		22	mg/kg	2.976	65.478	mg/kg	0.00655 %		
12	selenium { nickel selenate }	028-031-00-5	239-125-2	15060-62-5		0.54	mg/kg	2.554	1.379	mg/kg	0.000138 %		
13	zinc { zinc chromate }	024-007-00-3	236-878-9	13530-65-9		40	mg/kg	2.774	110.966	mg/kg	0.0111 %		
14	TPH (C6 to C40) petroleum group			TPH		<10	mg/kg		<10	mg/kg	<0.001 %		<LOD
15	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number									
16		benzene				<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
		601-020-00-8	200-753-7	71-43-2									
17		toluene				<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
		601-021-00-3	203-625-9	108-88-3									
18	●	ethylbenzene				<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
		601-023-00-4	202-849-4	100-41-4									
19		xylene				<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
		601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]									
20		cyanides { ● salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }				<0.5	mg/kg	1.884	<0.942	mg/kg	<0.0000942 %		<LOD
		006-007-00-5											
21		naphthalene				<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
		601-052-00-2	202-049-5	91-20-3									
22	●	acenaphthylene				<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
			205-917-1	208-96-8									
23	●	acenaphthene				<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
			201-469-6	83-32-9									
24	●	fluorene				<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
			201-695-5	86-73-7									
25	●	phenanthrene				<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
			201-581-5	85-01-8									
26	●	anthracene				<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
			204-371-1	120-12-7									
27	●	fluoranthene				<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
			205-912-4	206-44-0									
28	●	pyrene				<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
			204-927-3	129-00-0									
29		benzo[a]anthracene				<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
		601-033-00-9	200-280-6	56-55-3									
30		chrysene				<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
		601-048-00-0	205-923-4	218-01-9									
31		benzo[b]fluoranthene				<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
		601-034-00-4	205-911-9	205-99-2									
32		benzo[k]fluoranthene				<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
		601-036-00-5	205-916-6	207-08-9									
33		benzo[a]pyrene; benzo[def]chrysene				<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
		601-032-00-3	200-028-5	50-32-8									
34	●	indeno[123-cd]pyrene				<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
			205-893-2	193-39-5									
35		dibenz[a,h]anthracene				<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
		601-041-00-2	200-181-8	53-70-3									
36	●	benzo[ghi]perylene				<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
			205-883-8	191-24-2									
37		phenol				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		604-001-00-2	203-632-7	108-95-2									
38	●	polychlorobiphenyls; PCB				<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
		602-039-00-4	215-648-1	1336-36-3									
										Total:	0.0243 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: BH03[3]

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:		LoW Code:	
BH03[3]		Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:			
3.0 m		Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)
Moisture content:			
12% (no correction)			

Hazard properties

None identified

Determinands

Moisture content: 12% No Moisture Correction applied (MC)

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1	antimony { antimony trioxide }	051-005-00-X	215-175-0	1309-64-4		<2	mg/kg	1.197	<2.394	mg/kg	<0.000239 %		<LOD
2	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		9.9	mg/kg	1.32	13.071	mg/kg	0.00131 %		
3	boron { diboron trioxide }	005-008-00-8	215-125-8	1303-86-2		0.58	mg/kg	3.22	1.868	mg/kg	0.000187 %		
4	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		1	mg/kg	1.142	1.142	mg/kg	0.000114 %		
5	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		9.9	mg/kg	1.462	14.469	mg/kg	0.00145 %		
6	chromium in chromium(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8				<0.5	mg/kg	2.27	<1.135	mg/kg	<0.000113 %		<LOD
7	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		14	mg/kg	1.126	15.762	mg/kg	0.00158 %		
8	lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	11	mg/kg	1.56	17.158	mg/kg	0.0011 %		
9	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.1	mg/kg	1.353	<0.135	mg/kg	<0.0000135 %		<LOD
10	molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		<2	mg/kg	1.5	<3	mg/kg	<0.0003 %		<LOD
11	nickel { nickel chromate }	028-035-00-7	238-766-5	14721-18-7		24	mg/kg	2.976	71.43	mg/kg	0.00714 %		
12	selenium { nickel selenate }	028-031-00-5	239-125-2	15060-62-5		0.34	mg/kg	2.554	0.868	mg/kg	0.0000868 %		
13	zinc { zinc chromate }	024-007-00-3	236-878-9	13530-65-9		43	mg/kg	2.774	119.288	mg/kg	0.0119 %		
14	TPH (C6 to C40) petroleum group			TPH		<10	mg/kg		<10	mg/kg	<0.001 %		<LOD
15	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
16	benzene	601-020-00-8	200-753-7	71-43-2		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
17	toluene	601-021-00-3	203-625-9	108-88-3		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
18	ethylbenzene	601-023-00-4	202-849-4	100-41-4		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
19	xylene	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
20	cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				<0.5	mg/kg	1.884	<0.942	mg/kg	<0.0000942 %		<LOD
21	naphthalene	601-052-00-2	202-049-5	91-20-3		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
22	acenaphthylene		205-917-1	208-96-8		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
23	acenaphthene		201-469-6	83-32-9		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
24	fluorene		201-695-5	86-73-7		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
25	phenanthrene		201-581-5	85-01-8		0.24	mg/kg		0.24	mg/kg	0.000024 %		
26	anthracene		204-371-1	120-12-7		0.069	mg/kg		0.069	mg/kg	0.0000069 %		
27	fluoranthene		205-912-4	206-44-0		0.23	mg/kg		0.23	mg/kg	0.000023 %		
28	pyrene		204-927-3	129-00-0		0.19	mg/kg		0.19	mg/kg	0.000019 %		
29	benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
30	chrysene	601-048-00-0	205-923-4	218-01-9		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
31	benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
32	benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
33	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
34	indeno[123-cd]pyrene		205-893-2	193-39-5		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
35	dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
36	benzo[ghi]perylene		205-883-8	191-24-2		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
37	phenol	604-001-00-2	203-632-7	108-95-2		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
38	polychlorobiphenyls; PCB	602-039-00-4	215-648-1	1336-36-3		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
										Total:	0.0267 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: BH04

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:		LoW Code:	
BH04		Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:			
1.0 m		Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)
Moisture content:			
26% (no correction)			

Hazard properties

None identified

Determinands

Moisture content: 26% No Moisture Correction applied (MC)

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1	antimony { antimony trioxide }	051-005-00-X	215-175-0	1309-64-4		<2	mg/kg	1.197	<2.394	mg/kg	<0.000239 %		<LOD
2	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		13	mg/kg	1.32	17.164	mg/kg	0.00172 %		
3	boron { diboron trioxide }	005-008-00-8	215-125-8	1303-86-2		<0.4	mg/kg	3.22	<1.288	mg/kg	<0.000129 %		<LOD
4	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		1.7	mg/kg	1.142	1.942	mg/kg	0.000194 %		
5	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		23	mg/kg	1.462	33.616	mg/kg	0.00336 %		
6	chromium in chromium(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8				<0.5	mg/kg	2.27	<1.135	mg/kg	<0.000113 %		<LOD
7	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		22	mg/kg	1.126	24.77	mg/kg	0.00248 %		
8	lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	18	mg/kg	1.56	28.077	mg/kg	0.0018 %		
9	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.1	mg/kg	1.353	<0.135	mg/kg	<0.0000135 %		<LOD
10	molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		2	mg/kg	1.5	3	mg/kg	0.0003 %		
11	nickel { nickel chromate }	028-035-00-7	238-766-5	14721-18-7		42	mg/kg	2.976	125.003	mg/kg	0.0125 %		
12	selenium { nickel selenate }	028-031-00-5	239-125-2	15060-62-5		<0.2	mg/kg	2.554	<0.511	mg/kg	<0.0000511 %		<LOD
13	zinc { zinc chromate }	024-007-00-3	236-878-9	13530-65-9		86	mg/kg	2.774	238.577	mg/kg	0.0239 %		
14	TPH (C6 to C40) petroleum group			TPH		<10	mg/kg		<10	mg/kg	<0.001 %		<LOD
15	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD

#		Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
16		benzene	601-020-00-8	200-753-7	71-43-2		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
17		toluene	601-021-00-3	203-625-9	108-88-3		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
18		ethylbenzene	601-023-00-4	202-849-4	100-41-4		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
19		xylene	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
20		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				<0.5 mg/kg	1.884	<0.942 mg/kg	<0.0000942 %		<LOD
21		naphthalene	601-052-00-2	202-049-5	91-20-3		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
22		acenaphthylene		205-917-1	208-96-8		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
23		acenaphthene		201-469-6	83-32-9		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
24		fluorene		201-695-5	86-73-7		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
25		phenanthrene		201-581-5	85-01-8		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
26		anthracene		204-371-1	120-12-7		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
27		fluoranthene		205-912-4	206-44-0		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
28		pyrene		204-927-3	129-00-0		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
29		benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
30		chrysene	601-048-00-0	205-923-4	218-01-9		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
31		benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
32		benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
33		benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
34		indeno[123-cd]pyrene		205-893-2	193-39-5		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
35		dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
36		benzo[ghi]perylene		205-883-8	191-24-2		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
37		phenol	604-001-00-2	203-632-7	108-95-2		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
38		polychlorobiphenyls; PCB	602-039-00-4	215-648-1	1336-36-3		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
									Total:	0.0479 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: BH04[2]

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:	**BH04[2]**	LoW Code:	
Sample Depth:	**2.0 m**	Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Moisture content:	**14%** (no correction)	Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 14% No Moisture Correction applied (MC)

#		Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1		antimony { antimony trioxide }	051-005-00-X	215-175-0	1309-64-4		<2	mg/kg	1.197	<2.394	mg/kg	<0.000239 %		<LOD
2		arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		12	mg/kg	1.32	15.844	mg/kg	0.00158 %		
3		boron { diboron trioxide }	005-008-00-8	215-125-8	1303-86-2		<0.4	mg/kg	3.22	<1.288	mg/kg	<0.000129 %		<LOD
4		cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		1.8	mg/kg	1.142	2.056	mg/kg	0.000206 %		
5		chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		12	mg/kg	1.462	17.539	mg/kg	0.00175 %		
6		chromium in chromium(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8				<0.5	mg/kg	2.27	<1.135	mg/kg	<0.000113 %		<LOD
7		copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		21	mg/kg	1.126	23.644	mg/kg	0.00236 %		
8		lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	11	mg/kg	1.56	17.158	mg/kg	0.0011 %		
9		mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.1	mg/kg	1.353	<0.135	mg/kg	<0.0000135 %		<LOD
10		molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		3.2	mg/kg	1.5	4.801	mg/kg	0.00048 %		
11		nickel { nickel chromate }	028-035-00-7	238-766-5	14721-18-7		40	mg/kg	2.976	119.051	mg/kg	0.0119 %		
12		selenium { nickel selenate }	028-031-00-5	239-125-2	15060-62-5		1.2	mg/kg	2.554	3.065	mg/kg	0.000306 %		
13		zinc { zinc chromate }	024-007-00-3	236-878-9	13530-65-9		61	mg/kg	2.774	169.223	mg/kg	0.0169 %		
14		TPH (C6 to C40) petroleum group			TPH		<10	mg/kg		<10	mg/kg	<0.001 %		<LOD
15		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD

#		Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
16		benzene	601-020-00-8	200-753-7	71-43-2		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
17		toluene	601-021-00-3	203-625-9	108-88-3		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
18		ethylbenzene	601-023-00-4	202-849-4	100-41-4		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
19		xylene	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
20		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				<0.5 mg/kg	1.884	<0.942 mg/kg	<0.0000942 %		<LOD
21		naphthalene	601-052-00-2	202-049-5	91-20-3		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
22		acenaphthylene		205-917-1	208-96-8		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
23		acenaphthene		201-469-6	83-32-9		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
24		fluorene		201-695-5	86-73-7		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
25		phenanthrene		201-581-5	85-01-8		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
26		anthracene		204-371-1	120-12-7		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
27		fluoranthene		205-912-4	206-44-0		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
28		pyrene		204-927-3	129-00-0		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
29		benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
30		chrysene	601-048-00-0	205-923-4	218-01-9		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
31		benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
32		benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
33		benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
34		indeno[123-cd]pyrene		205-893-2	193-39-5		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
35		dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
36		benzo[ghi]perylene		205-883-8	191-24-2		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
37		phenol	604-001-00-2	203-632-7	108-95-2		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
38		polychlorobiphenyls; PCB	602-039-00-4	215-648-1	1336-36-3		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
									Total:	0.0382 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: BH05

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:	**BH05**	LoW Code:	
Sample Depth:	**1.00 m**	Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Moisture content:	**10%** (no correction)	Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 10% No Moisture Correction applied (MC)

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1	antimony { antimony trioxide }	051-005-00-X	215-175-0	1309-64-4		<2	mg/kg	1.197	<2.394	mg/kg	<0.000239 %		<LOD
2	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		11	mg/kg	1.32	14.524	mg/kg	0.00145 %		
3	boron { diboron trioxide }	005-008-00-8	215-125-8	1303-86-2		<0.4	mg/kg	3.22	<1.288	mg/kg	<0.000129 %		<LOD
4	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		1.3	mg/kg	1.142	1.485	mg/kg	0.000149 %		
5	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		9.2	mg/kg	1.462	13.446	mg/kg	0.00134 %		
6	chromium in chromium(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8				<0.5	mg/kg	2.27	<1.135	mg/kg	<0.000113 %		<LOD
7	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		21	mg/kg	1.126	23.644	mg/kg	0.00236 %		
8	lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	22	mg/kg	1.56	34.316	mg/kg	0.0022 %		
9	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.1	mg/kg	1.353	<0.135	mg/kg	<0.0000135 %		<LOD
10	molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		<2	mg/kg	1.5	<3	mg/kg	<0.0003 %		<LOD
11	nickel { nickel chromate }	028-035-00-7	238-766-5	14721-18-7		29	mg/kg	2.976	86.312	mg/kg	0.00863 %		
12	selenium { nickel selenate }	028-031-00-5	239-125-2	15060-62-5		0.43	mg/kg	2.554	1.098	mg/kg	0.00011 %		
13	zinc { zinc chromate }	024-007-00-3	236-878-9	13530-65-9		87	mg/kg	2.774	241.351	mg/kg	0.0241 %		
14	TPH (C6 to C40) petroleum group			TPH		<10	mg/kg		<10	mg/kg	<0.001 %		<LOD
15	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number									
16		benzene 601-020-00-8	200-753-7	71-43-2		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
17		toluene 601-021-00-3	203-625-9	108-88-3		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
18	●	ethylbenzene 601-023-00-4	202-849-4	100-41-4		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
19		xylene 601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
20		cyanides { ● salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex } 006-007-00-5				<0.5	mg/kg	1.884	<0.942	mg/kg	<0.0000942 %		<LOD
21		naphthalene 601-052-00-2	202-049-5	91-20-3		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
22	●	acenaphthylene	205-917-1	208-96-8		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
23	●	acenaphthene	201-469-6	83-32-9		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
24	●	fluorene	201-695-5	86-73-7		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
25	●	phenanthrene	201-581-5	85-01-8		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
26	●	anthracene	204-371-1	120-12-7		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
27	●	fluoranthene	205-912-4	206-44-0		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
28	●	pyrene	204-927-3	129-00-0		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
29		benzo[a]anthracene 601-033-00-9	200-280-6	56-55-3		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
30		chrysene 601-048-00-0	205-923-4	218-01-9		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
31		benzo[b]fluoranthene 601-034-00-4	205-911-9	205-99-2		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
32		benzo[k]fluoranthene 601-036-00-5	205-916-6	207-08-9		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
33		benzo[a]pyrene; benzo[def]chrysene 601-032-00-3	200-028-5	50-32-8		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
34	●	indeno[123-cd]pyrene	205-893-2	193-39-5		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
35		dibenz[a,h]anthracene 601-041-00-2	200-181-8	53-70-3		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
36	●	benzo[ghi]perylene	205-883-8	191-24-2		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
37		phenol 604-001-00-2	203-632-7	108-95-2		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
38	●	polychlorobiphenyls; PCB 602-039-00-4	215-648-1	1336-36-3		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
										Total:	0.0423 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: BH05[2]

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:		LoW Code:	
BH05[2]		Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:			
2.0 m		Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)
Moisture content:			
15% (no correction)			

Hazard properties

None identified

Determinands

Moisture content: 15% No Moisture Correction applied (MC)

#		Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1		antimony { antimony trioxide }	051-005-00-X	215-175-0	1309-64-4		<2	mg/kg	1.197	<2.394	mg/kg	<0.000239 %		<LOD
2		arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		10	mg/kg	1.32	13.203	mg/kg	0.00132 %		
3		boron { diboron trioxide }	005-008-00-8	215-125-8	1303-86-2		<0.4	mg/kg	3.22	<1.288	mg/kg	<0.000129 %		<LOD
4		cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		0.84	mg/kg	1.142	0.96	mg/kg	0.000096 %		
5		chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		18	mg/kg	1.462	26.308	mg/kg	0.00263 %		
6		chromium in chromium(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8				<0.5	mg/kg	2.27	<1.135	mg/kg	<0.000113 %		<LOD
7		copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		14	mg/kg	1.126	15.762	mg/kg	0.00158 %		
8		lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	10	mg/kg	1.56	15.598	mg/kg	0.001 %		
9		mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.1	mg/kg	1.353	<0.135	mg/kg	<0.0000135 %		<LOD
10		molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		<2	mg/kg	1.5	<3	mg/kg	<0.0003 %		<LOD
11		nickel { nickel chromate }	028-035-00-7	238-766-5	14721-18-7		30	mg/kg	2.976	89.288	mg/kg	0.00893 %		
12		selenium { nickel selenate }	028-031-00-5	239-125-2	15060-62-5		<0.2	mg/kg	2.554	<0.511	mg/kg	<0.0000511 %		<LOD
13		zinc { zinc chromate }	024-007-00-3	236-878-9	13530-65-9		52	mg/kg	2.774	144.256	mg/kg	0.0144 %		
14		TPH (C6 to C40) petroleum group			TPH		<10	mg/kg		<10	mg/kg	<0.001 %		<LOD
15		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD

#		Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
16		benzene	601-020-00-8	200-753-7	71-43-2		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
17		toluene	601-021-00-3	203-625-9	108-88-3		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
18		ethylbenzene	601-023-00-4	202-849-4	100-41-4		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
19		xylene	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
20		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				<0.5	mg/kg	1.884	<0.942	mg/kg	<0.0000942 %		<LOD
21		naphthalene	601-052-00-2	202-049-5	91-20-3		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
22		acenaphthylene		205-917-1	208-96-8		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
23		acenaphthene		201-469-6	83-32-9		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
24		fluorene		201-695-5	86-73-7		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
25		phenanthrene		201-581-5	85-01-8		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
26		anthracene		204-371-1	120-12-7		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
27		fluoranthene		205-912-4	206-44-0		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
28		pyrene		204-927-3	129-00-0		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
29		benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
30		chrysene	601-048-00-0	205-923-4	218-01-9		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
31		benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
32		benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
33		benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
34		indeno[123-cd]pyrene		205-893-2	193-39-5		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
35		dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
36		benzo[ghi]perylene		205-883-8	191-24-2		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
37		phenol	604-001-00-2	203-632-7	108-95-2		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
38		polychlorobiphenyls; PCB	602-039-00-4	215-648-1	1336-36-3		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
											Total:	0.0319 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: BH05[3]

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:	**BH05[3]**	LoW Code:	
Sample Depth:	**3.0 m**	Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Moisture content:	**14%** (no correction)	Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 14% No Moisture Correction applied (MC)

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	antimony { antimony trioxide }	051-005-00-X	215-175-0	1309-64-4		<2 mg/kg	1.197	<2.394 mg/kg	<0.000239 %		<LOD
2	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		12 mg/kg	1.32	15.844 mg/kg	0.00158 %		
3	boron { diboron trioxide }	005-008-00-8	215-125-8	1303-86-2		<0.4 mg/kg	3.22	<1.288 mg/kg	<0.000129 %		<LOD
4	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		1.6 mg/kg	1.142	1.828 mg/kg	0.000183 %		
5	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		13 mg/kg	1.462	19 mg/kg	0.0019 %		
6	chromium in chromium(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8				<0.5 mg/kg	2.27	<1.135 mg/kg	<0.000113 %		<LOD
7	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		20 mg/kg	1.126	22.518 mg/kg	0.00225 %		
8	lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	12 mg/kg	1.56	18.718 mg/kg	0.0012 %		
9	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.1 mg/kg	1.353	<0.135 mg/kg	<0.0000135 %		<LOD
10	molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		3.2 mg/kg	1.5	4.801 mg/kg	0.00048 %		
11	nickel { nickel chromate }	028-035-00-7	238-766-5	14721-18-7		35 mg/kg	2.976	104.169 mg/kg	0.0104 %		
12	selenium { nickel selenate }	028-031-00-5	239-125-2	15060-62-5		0.53 mg/kg	2.554	1.354 mg/kg	0.000135 %		
13	zinc { zinc chromate }	024-007-00-3	236-878-9	13530-65-9		56 mg/kg	2.774	155.352 mg/kg	0.0155 %		
14	TPH (C6 to C40) petroleum group			TPH		<10 mg/kg		<10 mg/kg	<0.001 %		<LOD
15	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number									
16		benzene 601-020-00-8	200-753-7	71-43-2		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
17		toluene 601-021-00-3	203-625-9	108-88-3		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
18	●	ethylbenzene 601-023-00-4	202-849-4	100-41-4		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
19		xylene 601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
20		cyanides { ● salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex } 006-007-00-5				<0.5	mg/kg	1.884	<0.942	mg/kg	<0.0000942 %		<LOD
21		naphthalene 601-052-00-2	202-049-5	91-20-3		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
22	●	acenaphthylene	205-917-1	208-96-8		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
23	●	acenaphthene	201-469-6	83-32-9		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
24	●	fluorene	201-695-5	86-73-7		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
25	●	phenanthrene	201-581-5	85-01-8		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
26	●	anthracene	204-371-1	120-12-7		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
27	●	fluoranthene	205-912-4	206-44-0		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
28	●	pyrene	204-927-3	129-00-0		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
29		benzo[a]anthracene 601-033-00-9	200-280-6	56-55-3		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
30		chrysene 601-048-00-0	205-923-4	218-01-9		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
31		benzo[b]fluoranthene 601-034-00-4	205-911-9	205-99-2		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
32		benzo[k]fluoranthene 601-036-00-5	205-916-6	207-08-9		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
33		benzo[a]pyrene; benzo[def]chrysene 601-032-00-3	200-028-5	50-32-8		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
34	●	indeno[123-cd]pyrene	205-893-2	193-39-5		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
35		dibenz[a,h]anthracene 601-041-00-2	200-181-8	53-70-3		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
36	●	benzo[ghi]perylene	205-883-8	191-24-2		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
37		phenol 604-001-00-2	203-632-7	108-95-2		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
38	●	polychlorobiphenyls; PCB 602-039-00-4	215-648-1	1336-36-3		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
										Total:	0.0353 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
●	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: BH06

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:		LoW Code:	
BH06		Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:			
1.0 m		Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)
Moisture content:			
18% (no correction)			

Hazard properties

None identified

Determinands

Moisture content: 18% No Moisture Correction applied (MC)

#		Determinand EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1		antimony { antimony trioxide } 051-005-00-X	215-175-0	1309-64-4		<2	mg/kg	1.197	<2.394	mg/kg	<0.000239 %		<LOD
2		arsenic { arsenic trioxide } 033-003-00-0	215-481-4	1327-53-3		12	mg/kg	1.32	15.844	mg/kg	0.00158 %		
3		boron { diboron trioxide } 005-008-00-8	215-125-8	1303-86-2		<0.4	mg/kg	3.22	<1.288	mg/kg	<0.000129 %		<LOD
4		cadmium { cadmium oxide } 048-002-00-0	215-146-2	1306-19-0		1.3	mg/kg	1.142	1.485	mg/kg	0.000149 %		
5		chromium in chromium(III) compounds { chromium(III) oxide (worst case) }	215-160-9	1308-38-9		21	mg/kg	1.462	30.693	mg/kg	0.00307 %		
6		chromium in chromium(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex } 024-017-00-8				<0.5	mg/kg	2.27	<1.135	mg/kg	<0.000113 %		<LOD
7		copper { dicopper oxide; copper (I) oxide } 029-002-00-X	215-270-7	1317-39-1		23	mg/kg	1.126	25.895	mg/kg	0.00259 %		
8		lead { lead chromate } 082-004-00-2	231-846-0	7758-97-6	1	19	mg/kg	1.56	29.636	mg/kg	0.0019 %		
9		mercury { mercury dichloride } 080-010-00-X	231-299-8	7487-94-7		<0.1	mg/kg	1.353	<0.135	mg/kg	<0.0000135 %		<LOD
10		molybdenum { molybdenum(VI) oxide } 042-001-00-9	215-204-7	1313-27-5		2.1	mg/kg	1.5	3.15	mg/kg	0.000315 %		
11		nickel { nickel chromate } 028-035-00-7	238-766-5	14721-18-7		43	mg/kg	2.976	127.979	mg/kg	0.0128 %		
12		selenium { nickel selenate } 028-031-00-5	239-125-2	15060-62-5		0.42	mg/kg	2.554	1.073	mg/kg	0.000107 %		
13		zinc { zinc chromate } 024-007-00-3	236-878-9	13530-65-9		74	mg/kg	2.774	205.287	mg/kg	0.0205 %		
14		TPH (C6 to C40) petroleum group		TPH		<10	mg/kg		<10	mg/kg	<0.001 %		<LOD
15		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane 603-181-00-X	216-653-1	1634-04-4		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
16	benzene	601-020-00-8	200-753-7	71-43-2		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		**<LOD**
17	toluene	601-021-00-3	203-625-9	108-88-3		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		**<LOD**
18	ethylbenzene	601-023-00-4	202-849-4	100-41-4		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		**<LOD**
19	xylene	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		**<LOD**
20	cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				<0.5 mg/kg	1.884	<0.942 mg/kg	<0.0000942 %		**<LOD**
21	naphthalene	601-052-00-2	202-049-5	91-20-3		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		**<LOD**
22	acenaphthylene		205-917-1	208-96-8		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		**<LOD**
23	acenaphthene		201-469-6	83-32-9		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		**<LOD**
24	fluorene		201-695-5	86-73-7		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		**<LOD**
25	phenanthrene		201-581-5	85-01-8		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		**<LOD**
26	anthracene		204-371-1	120-12-7		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		**<LOD**
27	fluoranthene		205-912-4	206-44-0		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		**<LOD**
28	pyrene		204-927-3	129-00-0		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		**<LOD**
29	benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		**<LOD**
30	chrysene	601-048-00-0	205-923-4	218-01-9		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		**<LOD**
31	benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		**<LOD**
32	benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		**<LOD**
33	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		**<LOD**
34	indeno[123-cd]pyrene		205-893-2	193-39-5		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		**<LOD**
35	dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		**<LOD**
36	benzo[ghi]perylene		205-883-8	191-24-2		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		**<LOD**
37	phenol	604-001-00-2	203-632-7	108-95-2		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		**<LOD**
38	polychlorobiphenyls; PCB	602-039-00-4	215-648-1	1336-36-3		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		**<LOD**
								Total:	0.0447 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: BH06[2]

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:	**BH06[2]**	LoW Code:	
Sample Depth:	**2.0 m**	Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Moisture content:	**16%** (no correction)	Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 16% No Moisture Correction applied (MC)

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1	antimony { antimony trioxide }	051-005-00-X	215-175-0	1309-64-4		<2	mg/kg	1.197	<2.394	mg/kg	<0.000239 %		<LOD
2	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		9.8	mg/kg	1.32	12.939	mg/kg	0.00129 %		
3	boron { diboron trioxide }	005-008-00-8	215-125-8	1303-86-2		0.73	mg/kg	3.22	2.351	mg/kg	0.000235 %		
4	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		0.75	mg/kg	1.142	0.857	mg/kg	0.0000857 %		
5	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		26	mg/kg	1.462	38	mg/kg	0.0038 %		
6	chromium in chromium(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8				<0.5	mg/kg	2.27	<1.135	mg/kg	<0.000113 %		<LOD
7	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		18	mg/kg	1.126	20.266	mg/kg	0.00203 %		
8	lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	15	mg/kg	1.56	23.397	mg/kg	0.0015 %		
9	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.1	mg/kg	1.353	<0.135	mg/kg	<0.0000135 %		<LOD
10	molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		<2	mg/kg	1.5	<3	mg/kg	<0.0003 %		<LOD
11	nickel { nickel chromate }	028-035-00-7	238-766-5	14721-18-7		37	mg/kg	2.976	110.122	mg/kg	0.011 %		
12	selenium { nickel selenate }	028-031-00-5	239-125-2	15060-62-5		<0.2	mg/kg	2.554	<0.511	mg/kg	<0.0000511 %		<LOD
13	zinc { zinc chromate }	024-007-00-3	236-878-9	13530-65-9		53	mg/kg	2.774	147.03	mg/kg	0.0147 %		
14	TPH (C6 to C40) petroleum group			TPH		<10	mg/kg		<10	mg/kg	<0.001 %		<LOD
15	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
16	benzene	601-020-00-8	200-753-7	71-43-2		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
17	toluene	601-021-00-3	203-625-9	108-88-3		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
18	ethylbenzene	601-023-00-4	202-849-4	100-41-4		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
19	xylene	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
20	cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				<0.5	mg/kg	1.884	<0.942	mg/kg	<0.0000942 %		<LOD
21	naphthalene	601-052-00-2	202-049-5	91-20-3		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
22	acenaphthylene		205-917-1	208-96-8		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
23	acenaphthene		201-469-6	83-32-9		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
24	fluorene		201-695-5	86-73-7		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
25	phenanthrene		201-581-5	85-01-8		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
26	anthracene		204-371-1	120-12-7		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
27	fluoranthene		205-912-4	206-44-0		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
28	pyrene		204-927-3	129-00-0		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
29	benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
30	chrysene	601-048-00-0	205-923-4	218-01-9		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
31	benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
32	benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
33	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
34	indeno[123-cd]pyrene		205-893-2	193-39-5		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
35	dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
36	benzo[ghi]perylene		205-883-8	191-24-2		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
37	phenol	604-001-00-2	203-632-7	108-95-2		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
38	polychlorobiphenyls; PCB	602-039-00-4	215-648-1	1336-36-3		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
										Total:	0.0365 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: TP21

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:		LoW Code:	
TP21		Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:			
0.75 m		Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)
Moisture content:			
15% (no correction)			

Hazard properties

None identified

Determinands

Moisture content: 15% No Moisture Correction applied (MC)

#		Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1		antimony { antimony trioxide }	051-005-00-X	215-175-0	1309-64-4		<2	mg/kg	1.197	<2.394	mg/kg	<0.000239 %		<LOD
2		arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		11	mg/kg	1.32	14.524	mg/kg	0.00145 %		
3		boron { diboron trioxide }	005-008-00-8	215-125-8	1303-86-2		0.69	mg/kg	3.22	2.222	mg/kg	0.000222 %		
4		cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		0.97	mg/kg	1.142	1.108	mg/kg	0.000111 %		
5		chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		20	mg/kg	1.462	29.231	mg/kg	0.00292 %		
6		chromium in chromium(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8				<0.5	mg/kg	2.27	<1.135	mg/kg	<0.000113 %		<LOD
7		copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		24	mg/kg	1.126	27.021	mg/kg	0.0027 %		
8		lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	39	mg/kg	1.56	60.833	mg/kg	0.0039 %		
9		mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		0.1	mg/kg	1.353	0.135	mg/kg	0.0000135 %		
10		molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		<2	mg/kg	1.5	<3	mg/kg	<0.0003 %		<LOD
11		nickel { nickel chromate }	028-035-00-7	238-766-5	14721-18-7		36	mg/kg	2.976	107.146	mg/kg	0.0107 %		
12		selenium { nickel selenate }	028-031-00-5	239-125-2	15060-62-5		0.46	mg/kg	2.554	1.175	mg/kg	0.000117 %		
13		zinc { zinc chromate }	024-007-00-3	236-878-9	13530-65-9		84	mg/kg	2.774	233.028	mg/kg	0.0233 %		
14		TPH (C6 to C40) petroleum group			TPH		<10	mg/kg		<10	mg/kg	<0.001 %		<LOD
15		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
16	benzene	601-020-00-8	200-753-7	71-43-2		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
17	toluene	601-021-00-3	203-625-9	108-88-3		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
18	ethylbenzene	601-023-00-4	202-849-4	100-41-4		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
19	xylene	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
20	cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				<0.5 mg/kg	1.884	<0.942 mg/kg	<0.0000942 %		<LOD
21	naphthalene	601-052-00-2	202-049-5	91-20-3		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
22	acenaphthylene		205-917-1	208-96-8		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
23	acenaphthene		201-469-6	83-32-9		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
24	fluorene		201-695-5	86-73-7		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
25	phenanthrene		201-581-5	85-01-8		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
26	anthracene		204-371-1	120-12-7		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
27	fluoranthene		205-912-4	206-44-0		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
28	pyrene		204-927-3	129-00-0		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
29	benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
30	chrysene	601-048-00-0	205-923-4	218-01-9		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
31	benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
32	benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
33	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
34	indeno[123-cd]pyrene		205-893-2	193-39-5		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
35	dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
36	benzo[ghi]perylene		205-883-8	191-24-2		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
37	phenol	604-001-00-2	203-632-7	108-95-2		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
38	polychlorobiphenyls; PCB	602-039-00-4	215-648-1	1336-36-3		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
								Total:	0.0472 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: TP21[2]

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:		LoW Code:	
TP21[2]		Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:			
1.5 m		Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)
Moisture content:			
5% (no correction)			

Hazard properties

None identified

Determinands

Moisture content: 5% No Moisture Correction applied (MC)

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1	antimony { antimony trioxide }	051-005-00-X	215-175-0	1309-64-4		<2	mg/kg	1.197	<2.394	mg/kg	<0.000239 %		<LOD
2	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		5.7	mg/kg	1.32	7.526	mg/kg	0.000753 %		
3	boron { diboron trioxide }	005-008-00-8	215-125-8	1303-86-2		0.42	mg/kg	3.22	1.352	mg/kg	0.000135 %		
4	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		0.85	mg/kg	1.142	0.971	mg/kg	0.0000971 %		
5	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		5.6	mg/kg	1.462	8.185	mg/kg	0.000818 %		
6	chromium in chromium(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8				<0.5	mg/kg	2.27	<1.135	mg/kg	<0.000113 %		<LOD
7	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		11	mg/kg	1.126	12.385	mg/kg	0.00124 %		
8	lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	5.5	mg/kg	1.56	8.579	mg/kg	0.00055 %		
9	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.1	mg/kg	1.353	<0.135	mg/kg	<0.0000135 %		<LOD
10	molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		<2	mg/kg	1.5	<3	mg/kg	<0.0003 %		<LOD
11	nickel { nickel chromate }	028-035-00-7	238-766-5	14721-18-7		19	mg/kg	2.976	56.549	mg/kg	0.00565 %		
12	selenium { nickel selenate }	028-031-00-5	239-125-2	15060-62-5		0.2	mg/kg	2.554	0.511	mg/kg	0.0000511 %		
13	zinc { zinc chromate }	024-007-00-3	236-878-9	13530-65-9		31	mg/kg	2.774	85.999	mg/kg	0.0086 %		
14	TPH (C6 to C40) petroleum group			TPH		<10	mg/kg		<10	mg/kg	<0.001 %		<LOD
15	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
16	benzene	601-020-00-8	200-753-7	71-43-2		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
17	toluene	601-021-00-3	203-625-9	108-88-3		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
18	ethylbenzene	601-023-00-4	202-849-4	100-41-4		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
19	xylene	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
20	cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				<0.5 mg/kg	1.884	<0.942 mg/kg	<0.0000942 %		<LOD
21	naphthalene	601-052-00-2	202-049-5	91-20-3		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
22	acenaphthylene		205-917-1	208-96-8		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
23	acenaphthene		201-469-6	83-32-9		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
24	fluorene		201-695-5	86-73-7		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
25	phenanthrene		201-581-5	85-01-8		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
26	anthracene		204-371-1	120-12-7		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
27	fluoranthene		205-912-4	206-44-0		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
28	pyrene		204-927-3	129-00-0		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
29	benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
30	chrysene	601-048-00-0	205-923-4	218-01-9		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
31	benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
32	benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
33	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
34	indeno[123-cd]pyrene		205-893-2	193-39-5		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
35	dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
36	benzo[ghi]perylene		205-883-8	191-24-2		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
37	phenol	604-001-00-2	203-632-7	108-95-2		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
38	polychlorobiphenyls; PCB	602-039-00-4	215-648-1	1336-36-3		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
								Total:	0.0197 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: TP21[3]

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:		LoW Code:	
TP21[3]		Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:			
3.0 m		Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)
Moisture content:			
7.9% (no correction)			

Hazard properties

None identified

Determinands

Moisture content: 7.9% No Moisture Correction applied (MC)

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number									
1		antimony { antimony trioxide }				<2	mg/kg	1.197	<2.394	mg/kg	<0.000239 %		**<LOD**
		051-005-00-X	215-175-0	1309-64-4									
2		arsenic { arsenic trioxide }				12	mg/kg	1.32	15.844	mg/kg	0.00158 %		
		033-003-00-0	215-481-4	1327-53-3									
3		boron { diboron trioxide }				<0.4	mg/kg	3.22	<1.288	mg/kg	<0.000129 %		**<LOD**
		005-008-00-8	215-125-8	1303-86-2									
4		cadmium { cadmium oxide }				1.7	mg/kg	1.142	1.942	mg/kg	0.000194 %		
		048-002-00-0	215-146-2	1306-19-0									
5		chromium in chromium(III) compounds { chromium(III) oxide (worst case) }				10	mg/kg	1.462	14.616	mg/kg	0.00146 %		
			215-160-9	1308-38-9									
6		chromium in chromium(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }				<0.5	mg/kg	2.27	<1.135	mg/kg	<0.000113 %		**<LOD**
		024-017-00-8											
7		copper { dicopper oxide; copper (I) oxide }				22	mg/kg	1.126	24.77	mg/kg	0.00248 %		
		029-002-00-X	215-270-7	1317-39-1									
8		lead { lead chromate }			1	13	mg/kg	1.56	20.278	mg/kg	0.0013 %		
		082-004-00-2	231-846-0	7758-97-6									
9		mercury { mercury dichloride }				<0.1	mg/kg	1.353	<0.135	mg/kg	<0.0000135 %		**<LOD**
		080-010-00-X	231-299-8	7487-94-7									
10		molybdenum { molybdenum(VI) oxide }				3.5	mg/kg	1.5	5.251	mg/kg	0.000525 %		
		042-001-00-9	215-204-7	1313-27-5									
11		nickel { nickel chromate }				42	mg/kg	2.976	125.003	mg/kg	0.0125 %		
		028-035-00-7	238-766-5	14721-18-7									
12		selenium { nickel selenate }				3.1	mg/kg	2.554	7.917	mg/kg	0.000792 %		
		028-031-00-5	239-125-2	15060-62-5									
13		zinc { zinc chromate }				63	mg/kg	2.774	174.771	mg/kg	0.0175 %		
		024-007-00-3	236-878-9	13530-65-9									
14		TPH (C6 to C40) petroleum group				<10	mg/kg		<10	mg/kg	<0.001 %		**<LOD**
				TPH									
15		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane				<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		**<LOD**
		603-181-00-X	216-653-1	1634-04-4									

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
16	benzene	601-020-00-8	200-753-7	71-43-2		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
17	toluene	601-021-00-3	203-625-9	108-88-3		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
18	ethylbenzene	601-023-00-4	202-849-4	100-41-4		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
19	xylene	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
20	cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				<0.5 mg/kg	1.884	<0.942 mg/kg	<0.0000942 %		<LOD
21	naphthalene	601-052-00-2	202-049-5	91-20-3		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
22	acenaphthylene		205-917-1	208-96-8		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
23	acenaphthene		201-469-6	83-32-9		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
24	fluorene		201-695-5	86-73-7		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
25	phenanthrene		201-581-5	85-01-8		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
26	anthracene		204-371-1	120-12-7		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
27	fluoranthene		205-912-4	206-44-0		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
28	pyrene		204-927-3	129-00-0		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
29	benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
30	chrysene	601-048-00-0	205-923-4	218-01-9		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
31	benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
32	benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
33	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
34	indeno[123-cd]pyrene		205-893-2	193-39-5		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
35	dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
36	benzo[ghi]perylene		205-883-8	191-24-2		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
37	phenol	604-001-00-2	203-632-7	108-95-2		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
38	polychlorobiphenyls; PCB	602-039-00-4	215-648-1	1336-36-3		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
								Total:	0.0399 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
●	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: TP22

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:	**TP22**	LoW Code:	
Sample Depth:	**0.6 m**	Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Moisture content:	**16%** (no correction)	Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 16% No Moisture Correction applied (MC)

#	Determinand / EU CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	antimony { antimony trioxide } 051-005-00-X	215-175-0	1309-64-4		<2 mg/kg	1.197	<2.394 mg/kg	<0.000239 %		<LOD
2	arsenic { arsenic trioxide } 033-003-00-0	215-481-4	1327-53-3		9.9 mg/kg	1.32	13.071 mg/kg	0.00131 %		
3	boron { diboron trioxide } 005-008-00-8	215-125-8	1303-86-2		0.68 mg/kg	3.22	2.19 mg/kg	0.000219 %		
4	cadmium { cadmium oxide } 048-002-00-0	215-146-2	1306-19-0		1.4 mg/kg	1.142	1.599 mg/kg	0.00016 %		
5	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }	215-160-9	1308-38-9		16 mg/kg	1.462	23.385 mg/kg	0.00234 %		
6	chromium in chromium(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex } 024-017-00-8				<0.5 mg/kg	2.27	<1.135 mg/kg	<0.000113 %		<LOD
7	copper { dicopper oxide; copper (I) oxide } 029-002-00-X	215-270-7	1317-39-1		22 mg/kg	1.126	24.77 mg/kg	0.00248 %		
8	lead { lead chromate } 082-004-00-2	231-846-0	7758-97-6	1	17 mg/kg	1.56	26.517 mg/kg	0.0017 %		
9	mercury { mercury dichloride } 080-010-00-X	231-299-8	7487-94-7		<0.1 mg/kg	1.353	<0.135 mg/kg	<0.0000135 %		<LOD
10	molybdenum { molybdenum(VI) oxide } 042-001-00-9	215-204-7	1313-27-5		<2 mg/kg	1.5	<3 mg/kg	<0.0003 %		<LOD
11	nickel { nickel chromate } 028-035-00-7	238-766-5	14721-18-7		37 mg/kg	2.976	110.122 mg/kg	0.011 %		
12	selenium { nickel selenate } 028-031-00-5	239-125-2	15060-62-5		0.3 mg/kg	2.554	0.766 mg/kg	0.0000766 %		
13	zinc { zinc chromate } 024-007-00-3	236-878-9	13530-65-9		78 mg/kg	2.774	216.383 mg/kg	0.0216 %		
14	TPH (C6 to C40) petroleum group		TPH		<10 mg/kg		<10 mg/kg	<0.001 %		<LOD
15	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane 603-181-00-X	216-653-1	1634-04-4		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD

#		Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
16		benzene	601-020-00-8	200-753-7	71-43-2		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
17		toluene	601-021-00-3	203-625-9	108-88-3		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
18		ethylbenzene	601-023-00-4	202-849-4	100-41-4		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
19		xylene	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
20		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				<0.5 mg/kg	1.884	<0.942 mg/kg	<0.0000942 %		<LOD
21		naphthalene	601-052-00-2	202-049-5	91-20-3		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
22		acenaphthylene		205-917-1	208-96-8		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
23		acenaphthene		201-469-6	83-32-9		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
24		fluorene		201-695-5	86-73-7		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
25		phenanthrene		201-581-5	85-01-8		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
26		anthracene		204-371-1	120-12-7		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
27		fluoranthene		205-912-4	206-44-0		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
28		pyrene		204-927-3	129-00-0		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
29		benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
30		chrysene	601-048-00-0	205-923-4	218-01-9		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
31		benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
32		benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
33		benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
34		indeno[123-cd]pyrene		205-893-2	193-39-5		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
35		dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
36		benzo[ghi]perylene		205-883-8	191-24-2		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
37		phenol	604-001-00-2	203-632-7	108-95-2		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
38		polychlorobiphenyls; PCB	602-039-00-4	215-648-1	1336-36-3		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
									Total:	0.0427 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: TP22[2]

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:		LoW Code:	
TP22[2]		Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:			
1.5 m		Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)
Moisture content:			
10% (no correction)			

Hazard properties

None identified

Determinands

Moisture content: 10% No Moisture Correction applied (MC)

#		Determinand / EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1		antimony { antimony trioxide } 051-005-00-X	215-175-0	1309-64-4		<2	mg/kg	1.197	<2.394	mg/kg	<0.000239 %		<LOD
2		arsenic { arsenic trioxide } 033-003-00-0	215-481-4	1327-53-3		12	mg/kg	1.32	15.844	mg/kg	0.00158 %		
3		boron { diboron trioxide } 005-008-00-8	215-125-8	1303-86-2		<0.4	mg/kg	3.22	<1.288	mg/kg	<0.000129 %		<LOD
4		cadmium { cadmium oxide } 048-002-00-0	215-146-2	1306-19-0		1.5	mg/kg	1.142	1.713	mg/kg	0.000171 %		
5		chromium in chromium(III) compounds { chromium(III) oxide (worst case) }	215-160-9	1308-38-9		9.7	mg/kg	1.462	14.177	mg/kg	0.00142 %		
6		chromium in chromium(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex } 024-017-00-8				<0.5	mg/kg	2.27	<1.135	mg/kg	<0.000113 %		<LOD
7		copper { dicopper oxide; copper (I) oxide } 029-002-00-X	215-270-7	1317-39-1		18	mg/kg	1.126	20.266	mg/kg	0.00203 %		
8		lead { lead chromate } 082-004-00-2	231-846-0	7758-97-6	1	11	mg/kg	1.56	17.158	mg/kg	0.0011 %		
9		mercury { mercury dichloride } 080-010-00-X	231-299-8	7487-94-7		<0.1	mg/kg	1.353	<0.135	mg/kg	<0.0000135 %		<LOD
10		molybdenum { molybdenum(VI) oxide } 042-001-00-9	215-204-7	1313-27-5		2.8	mg/kg	1.5	4.201	mg/kg	0.00042 %		
11		nickel { nickel chromate } 028-035-00-7	238-766-5	14721-18-7		34	mg/kg	2.976	101.193	mg/kg	0.0101 %		
12		selenium { nickel selenate } 028-031-00-5	239-125-2	15060-62-5		0.34	mg/kg	2.554	0.868	mg/kg	0.0000868 %		
13		zinc { zinc chromate } 024-007-00-3	236-878-9	13530-65-9		57	mg/kg	2.774	158.126	mg/kg	0.0158 %		
14		TPH (C6 to C40) petroleum group		TPH		<10	mg/kg		<10	mg/kg	<0.001 %		<LOD
15		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane 603-181-00-X	216-653-1	1634-04-4		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
16	benzene	601-020-00-8	200-753-7	71-43-2		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
17	toluene	601-021-00-3	203-625-9	108-88-3		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
18	ethylbenzene	601-023-00-4	202-849-4	100-41-4		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
19	xylene	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
20	cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				<0.5 mg/kg	1.884	<0.942 mg/kg	<0.0000942 %		<LOD
21	naphthalene	601-052-00-2	202-049-5	91-20-3		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
22	acenaphthylene		205-917-1	208-96-8		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
23	acenaphthene		201-469-6	83-32-9		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
24	fluorene		201-695-5	86-73-7		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
25	phenanthrene		201-581-5	85-01-8		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
26	anthracene		204-371-1	120-12-7		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
27	fluoranthene		205-912-4	206-44-0		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
28	pyrene		204-927-3	129-00-0		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
29	benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
30	chrysene	601-048-00-0	205-923-4	218-01-9		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
31	benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
32	benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
33	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
34	indeno[123-cd]pyrene		205-893-2	193-39-5		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
35	dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
36	benzo[ghi]perylene		205-883-8	191-24-2		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
37	phenol	604-001-00-2	203-632-7	108-95-2		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
38	polychlorobiphenyls; PCB	602-039-00-4	215-648-1	1336-36-3		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
								Total:	0.0344 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: TP22[3]

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name: **TP22[3]**
Sample Depth: **3.3 m**
Moisture content: **9.9%** (no correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 9.9% No Moisture Correction applied (MC)

#		Determinand / EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1		antimony { antimony trioxide } 051-005-00-X	215-175-0	1309-64-4		<2	mg/kg	1.197	<2.394	mg/kg	<0.000239 %		<LOD
2		arsenic { arsenic trioxide } 033-003-00-0	215-481-4	1327-53-3		5.8	mg/kg	1.32	7.658	mg/kg	0.000766 %		
3		boron { diboron trioxide } 005-008-00-8	215-125-8	1303-86-2		0.44	mg/kg	3.22	1.417	mg/kg	0.000142 %		
4		cadmium { cadmium oxide } 048-002-00-0	215-146-2	1306-19-0		0.81	mg/kg	1.142	0.925	mg/kg	0.0000925 %		
5		chromium in chromium(III) compounds { chromium(III) oxide (worst case) }	215-160-9	1308-38-9		5.5	mg/kg	1.462	8.039	mg/kg	0.000804 %		
6		chromium in chromium(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex } 024-017-00-8				<0.5	mg/kg	2.27	<1.135	mg/kg	<0.000113 %		<LOD
7		copper { dicopper oxide; copper (I) oxide } 029-002-00-X	215-270-7	1317-39-1		10	mg/kg	1.126	11.259	mg/kg	0.00113 %		
8		lead { lead chromate } 082-004-00-2	231-846-0	7758-97-6	1	9.8	mg/kg	1.56	15.286	mg/kg	0.00098 %		
9		mercury { mercury dichloride } 080-010-00-X	231-299-8	7487-94-7		<0.1	mg/kg	1.353	<0.135	mg/kg	<0.0000135 %		<LOD
10		molybdenum { molybdenum(VI) oxide } 042-001-00-9	215-204-7	1313-27-5		<2	mg/kg	1.5	<3	mg/kg	<0.0003 %		<LOD
11		nickel { nickel chromate } 028-035-00-7	238-766-5	14721-18-7		19	mg/kg	2.976	56.549	mg/kg	0.00565 %		
12		selenium { nickel selenate } 028-031-00-5	239-125-2	15060-62-5		0.51	mg/kg	2.554	1.302	mg/kg	0.00013 %		
13		zinc { zinc chromate } 024-007-00-3	236-878-9	13530-65-9		37	mg/kg	2.774	102.643	mg/kg	0.0103 %		
14		TPH (C6 to C40) petroleum group		TPH		<10	mg/kg		<10	mg/kg	<0.001 %		<LOD
15		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane 603-181-00-X	216-653-1	1634-04-4		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
16	benzene	601-020-00-8	200-753-7	71-43-2		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
17	toluene	601-021-00-3	203-625-9	108-88-3		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
18	ethylbenzene	601-023-00-4	202-849-4	100-41-4		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
19	xylene	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
20	cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				<0.5	mg/kg	1.884	<0.942	mg/kg	<0.0000942 %		<LOD
21	naphthalene	601-052-00-2	202-049-5	91-20-3		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
22	acenaphthylene		205-917-1	208-96-8		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
23	acenaphthene		201-469-6	83-32-9		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
24	fluorene		201-695-5	86-73-7		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
25	phenanthrene		201-581-5	85-01-8		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
26	anthracene		204-371-1	120-12-7		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
27	fluoranthene		205-912-4	206-44-0		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
28	pyrene		204-927-3	129-00-0		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
29	benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
30	chrysene	601-048-00-0	205-923-4	218-01-9		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
31	benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
32	benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
33	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
34	indeno[123-cd]pyrene		205-893-2	193-39-5		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
35	dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
36	benzo[ghi]perylene		205-883-8	191-24-2		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
37	phenol	604-001-00-2	203-632-7	108-95-2		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
38	polychlorobiphenyls; PCB	602-039-00-4	215-648-1	1336-36-3		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
										Total:	0.0217 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: TP23

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:
TP23
Sample Depth:
0.3 m
Moisture content:
16%
(no correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 16% No Moisture Correction applied (MC)

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	antimony { antimony trioxide }	051-005-00-X	215-175-0	1309-64-4		<2 mg/kg	1.197	<2.394 mg/kg	<0.000239 %		<LOD
2	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		9.4 mg/kg	1.32	12.411 mg/kg	0.00124 %		
3	boron { diboron trioxide }	005-008-00-8	215-125-8	1303-86-2		0.75 mg/kg	3.22	2.415 mg/kg	0.000241 %		
4	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		0.88 mg/kg	1.142	1.005 mg/kg	0.000101 %		
5	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		16 mg/kg	1.462	23.385 mg/kg	0.00234 %		
6	chromium in chromium(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8				<0.5 mg/kg	2.27	<1.135 mg/kg	<0.000113 %		<LOD
7	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		24 mg/kg	1.126	27.021 mg/kg	0.0027 %		
8	lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	44 mg/kg	1.56	68.632 mg/kg	0.0044 %		
9	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.1 mg/kg	1.353	<0.135 mg/kg	<0.0000135 %		<LOD
10	molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		<2 mg/kg	1.5	<3 mg/kg	<0.0003 %		<LOD
11	nickel { nickel chromate }	028-035-00-7	238-766-5	14721-18-7		29 mg/kg	2.976	86.312 mg/kg	0.00863 %		
12	selenium { nickel selenate }	028-031-00-5	239-125-2	15060-62-5		0.37 mg/kg	2.554	0.945 mg/kg	0.0000945 %		
13	zinc { zinc chromate }	024-007-00-3	236-878-9	13530-65-9		88 mg/kg	2.774	244.125 mg/kg	0.0244 %		
14	TPH (C6 to C40) petroleum group			TPH		<10 mg/kg		<10 mg/kg	<0.001 %		<LOD
15	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD

#		Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
16		benzene	601-020-00-8	200-753-7	71-43-2		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
17		toluene	601-021-00-3	203-625-9	108-88-3		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
18		ethylbenzene	601-023-00-4	202-849-4	100-41-4		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
19		xylene	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
20		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				<0.5	mg/kg	1.884	<0.942	mg/kg	<0.0000942 %		<LOD
21		naphthalene	601-052-00-2	202-049-5	91-20-3		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
22		acenaphthylene		205-917-1	208-96-8		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
23		acenaphthene		201-469-6	83-32-9		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
24		fluorene		201-695-5	86-73-7		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
25		phenanthrene		201-581-5	85-01-8		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
26		anthracene		204-371-1	120-12-7		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
27		fluoranthene		205-912-4	206-44-0		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
28		pyrene		204-927-3	129-00-0		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
29		benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
30		chrysene	601-048-00-0	205-923-4	218-01-9		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
31		benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
32		benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
33		benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
34		indeno[123-cd]pyrene		205-893-2	193-39-5		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
35		dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
36		benzo[ghi]perylene		205-883-8	191-24-2		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
37		phenol	604-001-00-2	203-632-7	108-95-2		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
38		polychlorobiphenyls; PCB	602-039-00-4	215-648-1	1336-36-3		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
											Total:	0.0459 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
●	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: TP23[2]

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:		LoW Code:	
TP23[2]		Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:			
1.2 m		Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)
Moisture content:			
12% (no correction)			

Hazard properties

None identified

Determinands

Moisture content: 12% No Moisture Correction applied (MC)

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1	antimony { antimony trioxide }	051-005-00-X	215-175-0	1309-64-4		<2	mg/kg	1.197	<2.394	mg/kg	<0.000239 %		<LOD
2	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		12	mg/kg	1.32	15.844	mg/kg	0.00158 %		
3	boron { diboron trioxide }	005-008-00-8	215-125-8	1303-86-2		<0.4	mg/kg	3.22	<1.288	mg/kg	<0.000129 %		<LOD
4	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		1.5	mg/kg	1.142	1.713	mg/kg	0.000171 %		
5	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		12	mg/kg	1.462	17.539	mg/kg	0.00175 %		
6	chromium in chromium(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8				<0.5	mg/kg	2.27	<1.135	mg/kg	<0.000113 %		<LOD
7	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		16	mg/kg	1.126	18.014	mg/kg	0.0018 %		
8	lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	13	mg/kg	1.56	20.278	mg/kg	0.0013 %		
9	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.1	mg/kg	1.353	<0.135	mg/kg	<0.0000135 %		<LOD
10	molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		2	mg/kg	1.5	3	mg/kg	0.0003 %		
11	nickel { nickel chromate }	028-035-00-7	238-766-5	14721-18-7		27	mg/kg	2.976	80.359	mg/kg	0.00804 %		
12	selenium { nickel selenate }	028-031-00-5	239-125-2	15060-62-5		0.23	mg/kg	2.554	0.587	mg/kg	0.0000587 %		
13	zinc { zinc chromate }	024-007-00-3	236-878-9	13530-65-9		61	mg/kg	2.774	169.223	mg/kg	0.0169 %		
14	TPH (C6 to C40) petroleum group			TPH		<10	mg/kg		<10	mg/kg	<0.001 %		<LOD
15	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD

#		Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
16		benzene	601-020-00-8	200-753-7	71-43-2		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		**<LOD**
17		toluene	601-021-00-3	203-625-9	108-88-3		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		**<LOD**
18		ethylbenzene	601-023-00-4	202-849-4	100-41-4		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		**<LOD**
19		xylene	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		**<LOD**
20		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				<0.5 mg/kg	1.884	<0.942 mg/kg	<0.0000942 %		**<LOD**
21		naphthalene	601-052-00-2	202-049-5	91-20-3		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		**<LOD**
22		acenaphthylene		205-917-1	208-96-8		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		**<LOD**
23		acenaphthene		201-469-6	83-32-9		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		**<LOD**
24		fluorene		201-695-5	86-73-7		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		**<LOD**
25		phenanthrene		201-581-5	85-01-8		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		**<LOD**
26		anthracene		204-371-1	120-12-7		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		**<LOD**
27		fluoranthene		205-912-4	206-44-0		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		**<LOD**
28		pyrene		204-927-3	129-00-0		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		**<LOD**
29		benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		**<LOD**
30		chrysene	601-048-00-0	205-923-4	218-01-9		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		**<LOD**
31		benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		**<LOD**
32		benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		**<LOD**
33		benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		**<LOD**
34		indeno[123-cd]pyrene		205-893-2	193-39-5		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		**<LOD**
35		dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		**<LOD**
36		benzo[ghi]perylene		205-883-8	191-24-2		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		**<LOD**
37		phenol	604-001-00-2	203-632-7	108-95-2		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		**<LOD**
38		polychlorobiphenyls; PCB	602-039-00-4	215-648-1	1336-36-3		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		**<LOD**
									Total:	0.0335 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: TP23[3]

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:		LoW Code:	
TP23[3]		Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:			
2.4 m		Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)
Moisture content:			
13% (no correction)			

Hazard properties

None identified

Determinands

Moisture content: 13% No Moisture Correction applied (MC)

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number									
1		antimony { antimony trioxide }				<2	mg/kg	1.197	<2.394	mg/kg	<0.000239 %		<LOD
		051-005-00-X	215-175-0	1309-64-4									
2		arsenic { arsenic trioxide }				8.2	mg/kg	1.32	10.827	mg/kg	0.00108 %		
		033-003-00-0	215-481-4	1327-53-3									
3		boron { diboron trioxide }				<0.4	mg/kg	3.22	<1.288	mg/kg	<0.000129 %		<LOD
		005-008-00-8	215-125-8	1303-86-2									
4		cadmium { cadmium oxide }				0.36	mg/kg	1.142	0.411	mg/kg	0.0000411 %		
		048-002-00-0	215-146-2	1306-19-0									
5		chromium in chromium(III) compounds { chromium(III) oxide (worst case) }				25	mg/kg	1.462	36.539	mg/kg	0.00365 %		
			215-160-9	1308-38-9									
6		chromium in chromium(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }				<0.5	mg/kg	2.27	<1.135	mg/kg	<0.000113 %		<LOD
		024-017-00-8											
7		copper { dicopper oxide; copper (I) oxide }				15	mg/kg	1.126	16.888	mg/kg	0.00169 %		
		029-002-00-X	215-270-7	1317-39-1									
8		lead { lead chromate }			1	11	mg/kg	1.56	17.158	mg/kg	0.0011 %		
		082-004-00-2	231-846-0	7758-97-6									
9		mercury { mercury dichloride }				<0.1	mg/kg	1.353	<0.135	mg/kg	<0.0000135 %		<LOD
		080-010-00-X	231-299-8	7487-94-7									
10		molybdenum { molybdenum(VI) oxide }				<2	mg/kg	1.5	<3	mg/kg	<0.0003 %		<LOD
		042-001-00-9	215-204-7	1313-27-5									
11		nickel { nickel chromate }				34	mg/kg	2.976	101.193	mg/kg	0.0101 %		
		028-035-00-7	238-766-5	14721-18-7									
12		selenium { nickel selenate }				<0.2	mg/kg	2.554	<0.511	mg/kg	<0.0000511 %		<LOD
		028-031-00-5	239-125-2	15060-62-5									
13		zinc { zinc chromate }				47	mg/kg	2.774	130.385	mg/kg	0.013 %		
		024-007-00-3	236-878-9	13530-65-9									
14		TPH (C6 to C40) petroleum group				<10	mg/kg		<10	mg/kg	<0.001 %		<LOD
				TPH									
15		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane				<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
		603-181-00-X	216-653-1	1634-04-4									

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
16	benzene	601-020-00-8	200-753-7	71-43-2		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
17	toluene	601-021-00-3	203-625-9	108-88-3		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
18	ethylbenzene	601-023-00-4	202-849-4	100-41-4		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
19	xylene	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
20	cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				<0.5	mg/kg	1.884	<0.942	mg/kg	<0.0000942 %		<LOD
21	naphthalene	601-052-00-2	202-049-5	91-20-3		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
22	acenaphthylene		205-917-1	208-96-8		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
23	acenaphthene		201-469-6	83-32-9		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
24	fluorene		201-695-5	86-73-7		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
25	phenanthrene		201-581-5	85-01-8		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
26	anthracene		204-371-1	120-12-7		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
27	fluoranthene		205-912-4	206-44-0		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
28	pyrene		204-927-3	129-00-0		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
29	benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
30	chrysene	601-048-00-0	205-923-4	218-01-9		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
31	benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
32	benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
33	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
34	indeno[123-cd]pyrene		205-893-2	193-39-5		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
35	dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
36	benzo[ghi]perylene		205-883-8	191-24-2		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
37	phenol	604-001-00-2	203-632-7	108-95-2		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
38	polychlorobiphenyls; PCB	602-039-00-4	215-648-1	1336-36-3		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
										Total:	0.0327 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: TP24

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:		LoW Code:	
TP24		Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:			
0.5 m		Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)
Moisture content:			
13% (no correction)			

Hazard properties

None identified

Determinands

Moisture content: 13% No Moisture Correction applied (MC)

#		Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1		antimony { antimony trioxide }	051-005-00-X	215-175-0	1309-64-4		<2	mg/kg	1.197	<2.394	mg/kg	<0.000239 %		<LOD
2		arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		6.2	mg/kg	1.32	8.186	mg/kg	0.000819 %		
3		boron { diboron trioxide }	005-008-00-8	215-125-8	1303-86-2		0.47	mg/kg	3.22	1.513	mg/kg	0.000151 %		
4		cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		0.6	mg/kg	1.142	0.685	mg/kg	0.0000685 %		
5		chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		7.8	mg/kg	1.462	11.4	mg/kg	0.00114 %		
6		chromium in chromium(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8				<0.5	mg/kg	2.27	<1.135	mg/kg	<0.000113 %		<LOD
7		copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		12	mg/kg	1.126	13.511	mg/kg	0.00135 %		
8		lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	9.5	mg/kg	1.56	14.818	mg/kg	0.00095 %		
9		mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.1	mg/kg	1.353	<0.135	mg/kg	<0.0000135 %		<LOD
10		molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		<2	mg/kg	1.5	<3	mg/kg	<0.0003 %		<LOD
11		nickel { nickel chromate }	028-035-00-7	238-766-5	14721-18-7		20	mg/kg	2.976	59.525	mg/kg	0.00595 %		
12		selenium { nickel selenate }	028-031-00-5	239-125-2	15060-62-5		0.78	mg/kg	2.554	1.992	mg/kg	0.000199 %		
13		zinc { zinc chromate }	024-007-00-3	236-878-9	13530-65-9		31	mg/kg	2.774	85.999	mg/kg	0.0086 %		
14		TPH (C6 to C40) petroleum group			TPH		<10	mg/kg		<10	mg/kg	<0.001 %		<LOD
15		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number									
16		benzene 601-020-00-8	200-753-7	71-43-2		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
17		toluene 601-021-00-3	203-625-9	108-88-3		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
18	●	ethylbenzene 601-023-00-4	202-849-4	100-41-4		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
19		xylene 601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
20		cyanides { ● salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex } 006-007-00-5				<0.5	mg/kg	1.884	<0.942	mg/kg	<0.0000942 %		<LOD
21		naphthalene 601-052-00-2	202-049-5	91-20-3		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
22	●	acenaphthylene	205-917-1	208-96-8		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
23	●	acenaphthene	201-469-6	83-32-9		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
24	●	fluorene	201-695-5	86-73-7		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
25	●	phenanthrene	201-581-5	85-01-8		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
26	●	anthracene	204-371-1	120-12-7		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
27	●	fluoranthene	205-912-4	206-44-0		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
28	●	pyrene	204-927-3	129-00-0		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
29		benzo[a]anthracene 601-033-00-9	200-280-6	56-55-3		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
30		chrysene 601-048-00-0	205-923-4	218-01-9		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
31		benzo[b]fluoranthene 601-034-00-4	205-911-9	205-99-2		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
32		benzo[k]fluoranthene 601-036-00-5	205-916-6	207-08-9		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
33		benzo[a]pyrene; benzo[def]chrysene 601-032-00-3	200-028-5	50-32-8		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
34	●	indeno[123-cd]pyrene	205-893-2	193-39-5		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
35		dibenz[a,h]anthracene 601-041-00-2	200-181-8	53-70-3		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
36	●	benzo[ghi]perylene	205-883-8	191-24-2		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
37		phenol 604-001-00-2	203-632-7	108-95-2		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
38	●	polychlorobiphenyls; PCB 602-039-00-4	215-648-1	1336-36-3		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
										Total:	0.021 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: TP24[2]

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:		LoW Code:	
TP24[2]		Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:			
2.0 m		Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)
Moisture content:			
14% (no correction)			

Hazard properties

None identified

Determinands

Moisture content: 14% No Moisture Correction applied (MC)

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1	antimony { antimony trioxide }	051-005-00-X	215-175-0	1309-64-4		<2	mg/kg	1.197	<2.394	mg/kg	<0.000239 %		**<LOD**
2	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		4.4	mg/kg	1.32	5.809	mg/kg	0.000581 %		
3	boron { diboron trioxide }	005-008-00-8	215-125-8	1303-86-2		<0.4	mg/kg	3.22	<1.288	mg/kg	<0.000129 %		**<LOD**
4	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		0.15	mg/kg	1.142	0.171	mg/kg	0.0000171 %		
5	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		16	mg/kg	1.462	23.385	mg/kg	0.00234 %		
6	chromium in chromium(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8				<0.5	mg/kg	2.27	<1.135	mg/kg	<0.000113 %		**<LOD**
7	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		9.4	mg/kg	1.126	10.583	mg/kg	0.00106 %		
8	lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	5.7	mg/kg	1.56	8.891	mg/kg	0.00057 %		
9	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.1	mg/kg	1.353	<0.135	mg/kg	<0.0000135 %		**<LOD**
10	molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		<2	mg/kg	1.5	<3	mg/kg	<0.0003 %		**<LOD**
11	nickel { nickel chromate }	028-035-00-7	238-766-5	14721-18-7		20	mg/kg	2.976	59.525	mg/kg	0.00595 %		
12	selenium { nickel selenate }	028-031-00-5	239-125-2	15060-62-5		<0.2	mg/kg	2.554	<0.511	mg/kg	<0.0000511 %		**<LOD**
13	zinc { zinc chromate }	024-007-00-3	236-878-9	13530-65-9		28	mg/kg	2.774	77.676	mg/kg	0.00777 %		
14	TPH (C6 to C40) petroleum group			TPH		<10	mg/kg		<10	mg/kg	<0.001 %		**<LOD**
15	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		**<LOD**

#		Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
16		benzene	601-020-00-8	200-753-7	71-43-2		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
17		toluene	601-021-00-3	203-625-9	108-88-3		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
18	●	ethylbenzene	601-023-00-4	202-849-4	100-41-4		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
19		xylene	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
20		cyanides { ● salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				<0.5 mg/kg	1.884	<0.942 mg/kg	<0.0000942 %		<LOD
21		naphthalene	601-052-00-2	202-049-5	91-20-3		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
22	●	acenaphthylene		205-917-1	208-96-8		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
23	●	acenaphthene		201-469-6	83-32-9		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
24	●	fluorene		201-695-5	86-73-7		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
25	●	phenanthrene		201-581-5	85-01-8		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
26	●	anthracene		204-371-1	120-12-7		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
27	●	fluoranthene		205-912-4	206-44-0		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
28	●	pyrene		204-927-3	129-00-0		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
29		benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
30		chrysene	601-048-00-0	205-923-4	218-01-9		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
31		benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
32		benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
33		benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
34	●	indeno[123-cd]pyrene		205-893-2	193-39-5		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
35		dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
36	●	benzo[ghi]perylene		205-883-8	191-24-2		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
37		phenol	604-001-00-2	203-632-7	108-95-2		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
38	●	polychlorobiphenyls; PCB	602-039-00-4	215-648-1	1336-36-3		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
									Total:	0.0203 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: TP25

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:
TP25
Sample Depth:
0.6 m
Moisture content:
14%
(no correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 14% No Moisture Correction applied (MC)

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	antimony { antimony trioxide }	051-005-00-X	215-175-0	1309-64-4		<2 mg/kg	1.197	<2.394 mg/kg	<0.000239 %		<LOD
2	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		4.2 mg/kg	1.32	5.545 mg/kg	0.000555 %		
3	boron { diboron trioxide }	005-008-00-8	215-125-8	1303-86-2		1.1 mg/kg	3.22	3.542 mg/kg	0.000354 %		
4	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		0.51 mg/kg	1.142	0.583 mg/kg	0.0000583 %		
5	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		8.5 mg/kg	1.462	12.423 mg/kg	0.00124 %		
6	chromium in chromium(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8				<0.5 mg/kg	2.27	<1.135 mg/kg	<0.000113 %		<LOD
7	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		8.2 mg/kg	1.126	9.232 mg/kg	0.000923 %		
8	lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	6.5 mg/kg	1.56	10.139 mg/kg	0.00065 %		
9	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.1 mg/kg	1.353	<0.135 mg/kg	<0.0000135 %		<LOD
10	molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		<2 mg/kg	1.5	<3 mg/kg	<0.0003 %		<LOD
11	nickel { nickel chromate }	028-035-00-7	238-766-5	14721-18-7		15 mg/kg	2.976	44.644 mg/kg	0.00446 %		
12	selenium { nickel selenate }	028-031-00-5	239-125-2	15060-62-5		0.23 mg/kg	2.554	0.587 mg/kg	0.0000587 %		
13	zinc { zinc chromate }	024-007-00-3	236-878-9	13530-65-9		37 mg/kg	2.774	102.643 mg/kg	0.0103 %		
14	TPH (C6 to C40) petroleum group			TPH		<10 mg/kg		<10 mg/kg	<0.001 %		<LOD
15	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD

#		Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
16		benzene	601-020-00-8	200-753-7	71-43-2		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
17		toluene	601-021-00-3	203-625-9	108-88-3		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
18		ethylbenzene	601-023-00-4	202-849-4	100-41-4		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
19		xylene	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
20		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				<0.5	mg/kg	1.884	<0.942	mg/kg	<0.0000942 %		<LOD
21		naphthalene	601-052-00-2	202-049-5	91-20-3		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
22		acenaphthylene		205-917-1	208-96-8		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
23		acenaphthene		201-469-6	83-32-9		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
24		fluorene		201-695-5	86-73-7		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
25		phenanthrene		201-581-5	85-01-8		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
26		anthracene		204-371-1	120-12-7		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
27		fluoranthene		205-912-4	206-44-0		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
28		pyrene		204-927-3	129-00-0		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
29		benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
30		chrysene	601-048-00-0	205-923-4	218-01-9		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
31		benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
32		benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
33		benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
34		indeno[123-cd]pyrene		205-893-2	193-39-5		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
35		dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
36		benzo[ghi]perylene		205-883-8	191-24-2		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
37		phenol	604-001-00-2	203-632-7	108-95-2		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
38		polychlorobiphenyls; PCB	602-039-00-4	215-648-1	1336-36-3		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
											Total:	0.0204 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: TP25[2]

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:		LoW Code:	
TP25[2]		Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:			
1.5 m		Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)
Moisture content:			
13% (no correction)			

Hazard properties

None identified

Determinands

Moisture content: 13% No Moisture Correction applied (MC)

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1	antimony { antimony trioxide }	051-005-00-X	215-175-0	1309-64-4		<2	mg/kg	1.197	<2.394	mg/kg	<0.000239 %		<LOD
2	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		4.1	mg/kg	1.32	5.413	mg/kg	0.000541 %		
3	boron { diboron trioxide }	005-008-00-8	215-125-8	1303-86-2		<0.4	mg/kg	3.22	<1.288	mg/kg	<0.000129 %		<LOD
4	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		0.33	mg/kg	1.142	0.377	mg/kg	0.0000377 %		
5	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		9.8	mg/kg	1.462	14.323	mg/kg	0.00143 %		
6	chromium in chromium(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8				<0.5	mg/kg	2.27	<1.135	mg/kg	<0.000113 %		<LOD
7	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		7.8	mg/kg	1.126	8.782	mg/kg	0.000878 %		
8	lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	8.3	mg/kg	1.56	12.946	mg/kg	0.00083 %		
9	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.1	mg/kg	1.353	<0.135	mg/kg	<0.0000135 %		<LOD
10	molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		<2	mg/kg	1.5	<3	mg/kg	<0.0003 %		<LOD
11	nickel { nickel chromate }	028-035-00-7	238-766-5	14721-18-7		15	mg/kg	2.976	44.644	mg/kg	0.00446 %		
12	selenium { nickel selenate }	028-031-00-5	239-125-2	15060-62-5		<0.2	mg/kg	2.554	<0.511	mg/kg	<0.0000511 %		<LOD
13	zinc { zinc chromate }	024-007-00-3	236-878-9	13530-65-9		21	mg/kg	2.774	58.257	mg/kg	0.00583 %		
14	TPH (C6 to C40) petroleum group			TPH		<10	mg/kg		<10	mg/kg	<0.001 %		<LOD
15	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD

#		Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
16		benzene	601-020-00-8	200-753-7	71-43-2		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
17		toluene	601-021-00-3	203-625-9	108-88-3		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
18	●	ethylbenzene	601-023-00-4	202-849-4	100-41-4		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
19		xylene	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
20		cyanides { ● salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				<0.5 mg/kg	1.884	<0.942 mg/kg	<0.0000942 %		<LOD
21		naphthalene	601-052-00-2	202-049-5	91-20-3		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
22	●	acenaphthylene		205-917-1	208-96-8		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
23	●	acenaphthene		201-469-6	83-32-9		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
24	●	fluorene		201-695-5	86-73-7		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
25	●	phenanthrene		201-581-5	85-01-8		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
26	●	anthracene		204-371-1	120-12-7		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
27	●	fluoranthene		205-912-4	206-44-0		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
28	●	pyrene		204-927-3	129-00-0		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
29		benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
30		chrysene	601-048-00-0	205-923-4	218-01-9		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
31		benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
32		benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
33		benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
34	●	indeno[123-cd]pyrene		205-893-2	193-39-5		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
35		dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
36	●	benzo[ghi]perylene		205-883-8	191-24-2		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
37		phenol	604-001-00-2	203-632-7	108-95-2		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
38	●	polychlorobiphenyls; PCB	602-039-00-4	215-648-1	1336-36-3		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
									Total:	0.016 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
●	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: TP26

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:	**TP26**	LoW Code:	
Sample Depth:	**0.5 m**	Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Moisture content:	**19%** (no correction)	Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 19% No Moisture Correction applied (MC)

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	antimony { antimony trioxide }	051-005-00-X	215-175-0	1309-64-4		<2 mg/kg	1.197	<2.394 mg/kg	<0.000239 %		<LOD
2	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		2.9 mg/kg	1.32	3.829 mg/kg	0.000383 %		
3	boron { diboron trioxide }	005-008-00-8	215-125-8	1303-86-2		0.58 mg/kg	3.22	1.868 mg/kg	0.000187 %		
4	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		0.29 mg/kg	1.142	0.331 mg/kg	0.0000331 %		
5	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		8 mg/kg	1.462	11.692 mg/kg	0.00117 %		
6	chromium in chromium(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8				<0.5 mg/kg	2.27	<1.135 mg/kg	<0.000113 %		<LOD
7	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		7.7 mg/kg	1.126	8.669 mg/kg	0.000867 %		
8	lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	9.9 mg/kg	1.56	15.442 mg/kg	0.00099 %		
9	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.1 mg/kg	1.353	<0.135 mg/kg	<0.0000135 %		<LOD
10	molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		<2 mg/kg	1.5	<3 mg/kg	<0.0003 %		<LOD
11	nickel { nickel chromate }	028-035-00-7	238-766-5	14721-18-7		14 mg/kg	2.976	41.668 mg/kg	0.00417 %		
12	selenium { nickel selenate }	028-031-00-5	239-125-2	15060-62-5		<0.2 mg/kg	2.554	<0.511 mg/kg	<0.0000511 %		<LOD
13	zinc { zinc chromate }	024-007-00-3	236-878-9	13530-65-9		24 mg/kg	2.774	66.58 mg/kg	0.00666 %		
14	TPH (C6 to C40) petroleum group			TPH		<10 mg/kg		<10 mg/kg	<0.001 %		<LOD
15	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
16	benzene	601-020-00-8	200-753-7	71-43-2		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		**<LOD**
17	toluene	601-021-00-3	203-625-9	108-88-3		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		**<LOD**
18	ethylbenzene	601-023-00-4	202-849-4	100-41-4		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		**<LOD**
19	xylene	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		**<LOD**
20	cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				<0.5	mg/kg	1.884	<0.942	mg/kg	<0.0000942 %		**<LOD**
21	naphthalene	601-052-00-2	202-049-5	91-20-3		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		**<LOD**
22	acenaphthylene		205-917-1	208-96-8		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		**<LOD**
23	acenaphthene		201-469-6	83-32-9		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		**<LOD**
24	fluorene		201-695-5	86-73-7		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		**<LOD**
25	phenanthrene		201-581-5	85-01-8		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		**<LOD**
26	anthracene		204-371-1	120-12-7		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		**<LOD**
27	fluoranthene		205-912-4	206-44-0		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		**<LOD**
28	pyrene		204-927-3	129-00-0		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		**<LOD**
29	benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		**<LOD**
30	chrysene	601-048-00-0	205-923-4	218-01-9		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		**<LOD**
31	benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		**<LOD**
32	benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		**<LOD**
33	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		**<LOD**
34	indeno[123-cd]pyrene		205-893-2	193-39-5		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		**<LOD**
35	dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		**<LOD**
36	benzo[ghi]perylene		205-883-8	191-24-2		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		**<LOD**
37	phenol	604-001-00-2	203-632-7	108-95-2		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		**<LOD**
38	polychlorobiphenyls; PCB	602-039-00-4	215-648-1	1336-36-3		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		**<LOD**
										Total:	0.0163 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: TP26[2]

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name: **TP26[2]**
Sample Depth: **1.6 m**
Moisture content: **13%** (no correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 13% No Moisture Correction applied (MC)

#		Determinand / EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1		antimony { antimony trioxide } 051-005-00-X	215-175-0	1309-64-4		<2	mg/kg	1.197	<2.394	mg/kg	<0.000239 %		<LOD
2		arsenic { arsenic trioxide } 033-003-00-0	215-481-4	1327-53-3		8.5	mg/kg	1.32	11.223	mg/kg	0.00112 %		
3		boron { diboron trioxide } 005-008-00-8	215-125-8	1303-86-2		<0.4	mg/kg	3.22	<1.288	mg/kg	<0.000129 %		<LOD
4		cadmium { cadmium oxide } 048-002-00-0	215-146-2	1306-19-0		1.3	mg/kg	1.142	1.485	mg/kg	0.000149 %		
5		chromium in chromium(III) compounds { chromium(III) oxide (worst case) }	215-160-9	1308-38-9		11	mg/kg	1.462	16.077	mg/kg	0.00161 %		
6		chromium in chromium(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex } 024-017-00-8				<0.5	mg/kg	2.27	<1.135	mg/kg	<0.000113 %		<LOD
7		copper { dicopper oxide; copper (I) oxide } 029-002-00-X	215-270-7	1317-39-1		20	mg/kg	1.126	22.518	mg/kg	0.00225 %		
8		lead { lead chromate } 082-004-00-2	231-846-0	7758-97-6	1	12	mg/kg	1.56	18.718	mg/kg	0.0012 %		
9		mercury { mercury dichloride } 080-010-00-X	231-299-8	7487-94-7		<0.1	mg/kg	1.353	<0.135	mg/kg	<0.0000135 %		<LOD
10		molybdenum { molybdenum(VI) oxide } 042-001-00-9	215-204-7	1313-27-5		2	mg/kg	1.5	3	mg/kg	0.0003 %		
11		nickel { nickel chromate } 028-035-00-7	238-766-5	14721-18-7		33	mg/kg	2.976	98.217	mg/kg	0.00982 %		
12		selenium { nickel selenate } 028-031-00-5	239-125-2	15060-62-5		0.33	mg/kg	2.554	0.843	mg/kg	0.0000843 %		
13		zinc { zinc chromate } 024-007-00-3	236-878-9	13530-65-9		66	mg/kg	2.774	183.094	mg/kg	0.0183 %		
14		TPH (C6 to C40) petroleum group		TPH		<10	mg/kg		<10	mg/kg	<0.001 %		<LOD
15		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane 603-181-00-X	216-653-1	1634-04-4		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number									
16		benzene 601-020-00-8	200-753-7	71-43-2		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
17		toluene 601-021-00-3	203-625-9	108-88-3		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
18	●	ethylbenzene 601-023-00-4	202-849-4	100-41-4		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
19		xylene 601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
20		cyanides { ● salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex } 006-007-00-5				<0.5	mg/kg	1.884	<0.942	mg/kg	<0.0000942 %		<LOD
21		naphthalene 601-052-00-2	202-049-5	91-20-3		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
22	●	acenaphthylene	205-917-1	208-96-8		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
23	●	acenaphthene	201-469-6	83-32-9		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
24	●	fluorene	201-695-5	86-73-7		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
25	●	phenanthrene	201-581-5	85-01-8		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
26	●	anthracene	204-371-1	120-12-7		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
27	●	fluoranthene	205-912-4	206-44-0		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
28	●	pyrene	204-927-3	129-00-0		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
29		benzo[a]anthracene 601-033-00-9	200-280-6	56-55-3		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
30		chrysene 601-048-00-0	205-923-4	218-01-9		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
31		benzo[b]fluoranthene 601-034-00-4	205-911-9	205-99-2		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
32		benzo[k]fluoranthene 601-036-00-5	205-916-6	207-08-9		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
33		benzo[a]pyrene; benzo[def]chrysene 601-032-00-3	200-028-5	50-32-8		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
34	●	indeno[123-cd]pyrene	205-893-2	193-39-5		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
35		dibenz[a,h]anthracene 601-041-00-2	200-181-8	53-70-3		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
36	●	benzo[ghi]perylene	205-883-8	191-24-2		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
37		phenol 604-001-00-2	203-632-7	108-95-2		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
38	●	polychlorobiphenyls; PCB 602-039-00-4	215-648-1	1336-36-3		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
										Total:	0.0365 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: WS01

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:		LoW Code:	
WS01		Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:			
0.0-1.0 m		Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)
Moisture content:			
18% (no correction)			

Hazard properties

None identified

Determinands

Moisture content: 18% No Moisture Correction applied (MC)

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1	antimony { antimony trioxide }	051-005-00-X	215-175-0	1309-64-4		<2	mg/kg	1.197	<2.394	mg/kg	<0.000239 %		<LOD
2	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		21	mg/kg	1.32	27.727	mg/kg	0.00277 %		
3	boron { diboron trioxide }	005-008-00-8	215-125-8	1303-86-2		0.76	mg/kg	3.22	2.447	mg/kg	0.000245 %		
4	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		1.7	mg/kg	1.142	1.942	mg/kg	0.000194 %		
5	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		29	mg/kg	1.462	42.385	mg/kg	0.00424 %		
6	chromium in chromium(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8				<0.5	mg/kg	2.27	<1.135	mg/kg	<0.000113 %		<LOD
7	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		40	mg/kg	1.126	45.036	mg/kg	0.0045 %		
8	lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	87	mg/kg	1.56	135.704	mg/kg	0.0087 %		
9	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		0.22	mg/kg	1.353	0.298	mg/kg	0.0000298 %		
10	molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		4.5	mg/kg	1.5	6.751	mg/kg	0.000675 %		
11	nickel { nickel chromate }	028-035-00-7	238-766-5	14721-18-7		54	mg/kg	2.976	160.718	mg/kg	0.0161 %		
12	selenium { nickel selenate }	028-031-00-5	239-125-2	15060-62-5		0.9	mg/kg	2.554	2.298	mg/kg	0.00023 %		
13	zinc { zinc chromate }	024-007-00-3	236-878-9	13530-65-9		160	mg/kg	2.774	443.863	mg/kg	0.0444 %		
14	TPH (C6 to C40) petroleum group			TPH		<10	mg/kg		<10	mg/kg	<0.001 %		<LOD
15	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
16	benzene	601-020-00-8	200-753-7	71-43-2		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
17	toluene	601-021-00-3	203-625-9	108-88-3		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
18	ethylbenzene	601-023-00-4	202-849-4	100-41-4		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
19	xylene	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
20	cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				<0.5 mg/kg	1.884	<0.942 mg/kg	<0.0000942 %		<LOD
21	naphthalene	601-052-00-2	202-049-5	91-20-3		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
22	acenaphthylene		205-917-1	208-96-8		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
23	acenaphthene		201-469-6	83-32-9		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
24	fluorene		201-695-5	86-73-7		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
25	phenanthrene		201-581-5	85-01-8		0.08 mg/kg		0.08 mg/kg	0.000008 %		
26	anthracene		204-371-1	120-12-7		0.03 mg/kg		0.03 mg/kg	0.000003 %		
27	fluoranthene		205-912-4	206-44-0		0.07 mg/kg		0.07 mg/kg	0.000007 %		
28	pyrene		204-927-3	129-00-0		0.09 mg/kg		0.09 mg/kg	0.000009 %		
29	benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
30	chrysene	601-048-00-0	205-923-4	218-01-9		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
31	benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
32	benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
33	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
34	indeno[123-cd]pyrene		205-893-2	193-39-5		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
35	dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
36	benzo[ghi]perylene		205-883-8	191-24-2		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
37	phenol	604-001-00-2	203-632-7	108-95-2		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
38	polychlorobiphenyls; PCB	602-039-00-4	215-648-1	1336-36-3		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
								Total:	0.0835 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: WS01[2]

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:
WS01[2]
Sample Depth:
1.0-2.0 m
Moisture content:
16%
(no correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 16% No Moisture Correction applied (MC)

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	antimony { antimony trioxide }	051-005-00-X	215-175-0	1309-64-4		<2 mg/kg	1.197	<2.394 mg/kg	<0.000239 %		<LOD
2	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		17 mg/kg	1.32	22.446 mg/kg	0.00224 %		
3	boron { diboron trioxide }	005-008-00-8	215-125-8	1303-86-2		<0.4 mg/kg	3.22	<1.288 mg/kg	<0.000129 %		<LOD
4	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		1.2 mg/kg	1.142	1.371 mg/kg	0.000137 %		
5	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		23 mg/kg	1.462	33.616 mg/kg	0.00336 %		
6	chromium in chromium(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8				<0.5 mg/kg	2.27	<1.135 mg/kg	<0.000113 %		<LOD
7	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		31 mg/kg	1.126	34.903 mg/kg	0.00349 %		
8	lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	32 mg/kg	1.56	49.914 mg/kg	0.0032 %		
9	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		0.1 mg/kg	1.353	0.135 mg/kg	0.0000135 %		
10	molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		2.6 mg/kg	1.5	3.9 mg/kg	0.00039 %		
11	nickel { nickel chromate }	028-035-00-7	238-766-5	14721-18-7		45 mg/kg	2.976	133.932 mg/kg	0.0134 %		
12	selenium { nickel selenate }	028-031-00-5	239-125-2	15060-62-5		0.32 mg/kg	2.554	0.817 mg/kg	0.0000817 %		
13	zinc { zinc chromate }	024-007-00-3	236-878-9	13530-65-9		94 mg/kg	2.774	260.77 mg/kg	0.0261 %		
14	TPH (C6 to C40) petroleum group			TPH		<10 mg/kg		<10 mg/kg	<0.001 %		<LOD
15	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number									
16		benzene 601-020-00-8	200-753-7	71-43-2		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
17		toluene 601-021-00-3	203-625-9	108-88-3		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
18	●	ethylbenzene 601-023-00-4	202-849-4	100-41-4		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
19		xylene 601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
20		cyanides { ● salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex } 006-007-00-5				<0.5	mg/kg	1.884	<0.942	mg/kg	<0.0000942 %		<LOD
21		naphthalene 601-052-00-2	202-049-5	91-20-3		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
22	●	acenaphthylene	205-917-1	208-96-8		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
23	●	acenaphthene	201-469-6	83-32-9		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
24	●	fluorene	201-695-5	86-73-7		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
25	●	phenanthrene	201-581-5	85-01-8		0.06	mg/kg		0.06	mg/kg	0.000006 %		
26	●	anthracene	204-371-1	120-12-7		0.02	mg/kg		0.02	mg/kg	0.000002 %		
27	●	fluoranthene	205-912-4	206-44-0		0.16	mg/kg		0.16	mg/kg	0.000016 %		
28	●	pyrene	204-927-3	129-00-0		0.17	mg/kg		0.17	mg/kg	0.000017 %		
29		benzo[a]anthracene 601-033-00-9	200-280-6	56-55-3		0.09	mg/kg		0.09	mg/kg	0.000009 %		
30		chrysene 601-048-00-0	205-923-4	218-01-9		0.06	mg/kg		0.06	mg/kg	0.000006 %		
31		benzo[b]fluoranthene 601-034-00-4	205-911-9	205-99-2		0.15	mg/kg		0.15	mg/kg	0.000015 %		
32		benzo[k]fluoranthene 601-036-00-5	205-916-6	207-08-9		0.1	mg/kg		0.1	mg/kg	0.00001 %		
33		benzo[a]pyrene; benzo[def]chrysene 601-032-00-3	200-028-5	50-32-8		0.13	mg/kg		0.13	mg/kg	0.000013 %		
34	●	indeno[123-cd]pyrene	205-893-2	193-39-5		0.07	mg/kg		0.07	mg/kg	0.000007 %		
35		dibenz[a,h]anthracene 601-041-00-2	200-181-8	53-70-3		0.04	mg/kg		0.04	mg/kg	0.000004 %		
36	●	benzo[ghi]perylene	205-883-8	191-24-2		0.11	mg/kg		0.11	mg/kg	0.000011 %		
37		phenol 604-001-00-2	203-632-7	108-95-2		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
38	●	polychlorobiphenyls; PCB 602-039-00-4	215-648-1	1336-36-3		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
										Total:	0.0541 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
●	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: WS02

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:
WS02
Sample Depth:
0.0-1.0 m
Moisture content:
18%
(no correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 18% No Moisture Correction applied (MC)

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1	antimony { antimony trioxide }	051-005-00-X	215-175-0	1309-64-4		<2	mg/kg	1.197	<2.394	mg/kg	<0.000239 %		<LOD
2	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		18	mg/kg	1.32	23.766	mg/kg	0.00238 %		
3	boron { diboron trioxide }	005-008-00-8	215-125-8	1303-86-2		0.97	mg/kg	3.22	3.123	mg/kg	0.000312 %		
4	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		1.6	mg/kg	1.142	1.828	mg/kg	0.000183 %		
5	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		25	mg/kg	1.462	36.539	mg/kg	0.00365 %		
6	chromium in chromium(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8				<0.5	mg/kg	2.27	<1.135	mg/kg	<0.000113 %		<LOD
7	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		38	mg/kg	1.126	42.784	mg/kg	0.00428 %		
8	lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	100	mg/kg	1.56	155.982	mg/kg	0.01 %		
9	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		0.21	mg/kg	1.353	0.284	mg/kg	0.0000284 %		
10	molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		3.9	mg/kg	1.5	5.851	mg/kg	0.000585 %		
11	nickel { nickel chromate }	028-035-00-7	238-766-5	14721-18-7		46	mg/kg	2.976	136.908	mg/kg	0.0137 %		
12	selenium { nickel selenate }	028-031-00-5	239-125-2	15060-62-5		0.79	mg/kg	2.554	2.018	mg/kg	0.000202 %		
13	zinc { zinc chromate }	024-007-00-3	236-878-9	13530-65-9		150	mg/kg	2.774	416.122	mg/kg	0.0416 %		
14	TPH (C6 to C40) petroleum group			TPH		<10	mg/kg		<10	mg/kg	<0.001 %		<LOD
15	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
16	benzene	601-020-00-8	200-753-7	71-43-2		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		**<LOD**
17	toluene	601-021-00-3	203-625-9	108-88-3		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		**<LOD**
18	ethylbenzene	601-023-00-4	202-849-4	100-41-4		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		**<LOD**
19	xylene	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		**<LOD**
20	cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				<0.5	mg/kg	1.884	<0.942	mg/kg	<0.0000942 %		**<LOD**
21	naphthalene	601-052-00-2	202-049-5	91-20-3		0.35	mg/kg		0.35	mg/kg	0.000035 %		
22	acenaphthylene		205-917-1	208-96-8		0.07	mg/kg		0.07	mg/kg	0.000007 %		
23	acenaphthene		201-469-6	83-32-9		0.04	mg/kg		0.04	mg/kg	0.000004 %		
24	fluorene		201-695-5	86-73-7		0.05	mg/kg		0.05	mg/kg	0.000005 %		
25	phenanthrene		201-581-5	85-01-8		0.12	mg/kg		0.12	mg/kg	0.000012 %		
26	anthracene		204-371-1	120-12-7		0.03	mg/kg		0.03	mg/kg	0.000003 %		
27	fluoranthene		205-912-4	206-44-0		0.1	mg/kg		0.1	mg/kg	0.00001 %		
28	pyrene		204-927-3	129-00-0		0.1	mg/kg		0.1	mg/kg	0.00001 %		
29	benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		0.04	mg/kg		0.04	mg/kg	0.000004 %		
30	chrysene	601-048-00-0	205-923-4	218-01-9		0.05	mg/kg		0.05	mg/kg	0.000005 %		
31	benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		0.06	mg/kg		0.06	mg/kg	0.000006 %		
32	benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		0.05	mg/kg		0.05	mg/kg	0.000005 %		
33	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		0.08	mg/kg		0.08	mg/kg	0.000008 %		
34	indeno[123-cd]pyrene		205-893-2	193-39-5		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		**<LOD**
35	dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		**<LOD**
36	benzo[ghi]perylene		205-883-8	191-24-2		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		**<LOD**
37	phenol	604-001-00-2	203-632-7	108-95-2		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		**<LOD**
38	polychlorobiphenyls; PCB	602-039-00-4	215-648-1	1336-36-3		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		**<LOD**
										Total:	0.0785 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: WS02[2]

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:
WS02[2]
Sample Depth:
1.0-2.0 m
Moisture content:
17%
(no correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 17% No Moisture Correction applied (MC)

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1	antimony { antimony trioxide }	051-005-00-X	215-175-0	1309-64-4		<2	mg/kg	1.197	<2.394	mg/kg	<0.000239 %		<LOD
2	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		15	mg/kg	1.32	19.805	mg/kg	0.00198 %		
3	boron { diboron trioxide }	005-008-00-8	215-125-8	1303-86-2		2.8	mg/kg	3.22	9.016	mg/kg	0.000902 %		
4	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		<0.1	mg/kg	1.142	<0.114	mg/kg	<0.0000114 %		<LOD
5	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		13	mg/kg	1.462	19	mg/kg	0.0019 %		
6	chromium in chromium(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8				<0.5	mg/kg	2.27	<1.135	mg/kg	<0.000113 %		<LOD
7	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		3.9	mg/kg	1.126	4.391	mg/kg	0.000439 %		
8	lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	6.4	mg/kg	1.56	9.983	mg/kg	0.00064 %		
9	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.1	mg/kg	1.353	<0.135	mg/kg	<0.0000135 %		<LOD
10	molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		<2	mg/kg	1.5	<3	mg/kg	<0.0003 %		<LOD
11	nickel { nickel chromate }	028-035-00-7	238-766-5	14721-18-7		10	mg/kg	2.976	29.763	mg/kg	0.00298 %		
12	selenium { nickel selenate }	028-031-00-5	239-125-2	15060-62-5		<0.2	mg/kg	2.554	<0.511	mg/kg	<0.0000511 %		<LOD
13	zinc { zinc chromate }	024-007-00-3	236-878-9	13530-65-9		12	mg/kg	2.774	33.29	mg/kg	0.00333 %		
14	TPH (C6 to C40) petroleum group			TPH		<10	mg/kg		<10	mg/kg	<0.001 %		<LOD
15	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
16	benzene	601-020-00-8	200-753-7	71-43-2		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
17	toluene	601-021-00-3	203-625-9	108-88-3		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
18	ethylbenzene	601-023-00-4	202-849-4	100-41-4		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
19	xylene	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
20	cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				<0.5 mg/kg	1.884	<0.942 mg/kg	<0.0000942 %		<LOD
21	naphthalene	601-052-00-2	202-049-5	91-20-3		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
22	acenaphthylene		205-917-1	208-96-8		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
23	acenaphthene		201-469-6	83-32-9		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
24	fluorene		201-695-5	86-73-7		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
25	phenanthrene		201-581-5	85-01-8		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
26	anthracene		204-371-1	120-12-7		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
27	fluoranthene		205-912-4	206-44-0		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
28	pyrene		204-927-3	129-00-0		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
29	benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
30	chrysene	601-048-00-0	205-923-4	218-01-9		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
31	benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
32	benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
33	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
34	indeno[123-cd]pyrene		205-893-2	193-39-5		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
35	dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
36	benzo[ghi]perylene		205-883-8	191-24-2		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
37	phenol	604-001-00-2	203-632-7	108-95-2		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
38	polychlorobiphenyls; PCB	602-039-00-4	215-648-1	1336-36-3		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
								Total:	0.014 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: WS03

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:		LoW Code:	
WS03		Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:			
0.0-1.0 m		Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)
Moisture content:			
12% (no correction)			

Hazard properties

None identified

Determinands

Moisture content: 12% No Moisture Correction applied (MC)

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	antimony { antimony trioxide }	051-005-00-X	215-175-0	1309-64-4		<2 mg/kg	1.197	<2.394 mg/kg	<0.000239 %		<LOD
2	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		14 mg/kg	1.32	18.485 mg/kg	0.00185 %		
3	boron { diboron trioxide }	005-008-00-8	215-125-8	1303-86-2		<0.4 mg/kg	3.22	<1.288 mg/kg	<0.000129 %		<LOD
4	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		1.2 mg/kg	1.142	1.371 mg/kg	0.000137 %		
5	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		15 mg/kg	1.462	21.923 mg/kg	0.00219 %		
6	chromium in chromium(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8				<0.5 mg/kg	2.27	<1.135 mg/kg	<0.000113 %		<LOD
7	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		21 mg/kg	1.126	23.644 mg/kg	0.00236 %		
8	lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	30 mg/kg	1.56	46.794 mg/kg	0.003 %		
9	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.1 mg/kg	1.353	<0.135 mg/kg	<0.0000135 %		<LOD
10	molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		<2 mg/kg	1.5	<3 mg/kg	<0.0003 %		<LOD
11	nickel { nickel chromate }	028-035-00-7	238-766-5	14721-18-7		32 mg/kg	2.976	95.24 mg/kg	0.00952 %		
12	selenium { nickel selenate }	028-031-00-5	239-125-2	15060-62-5		0.64 mg/kg	2.554	1.634 mg/kg	0.000163 %		
13	zinc { zinc chromate }	024-007-00-3	236-878-9	13530-65-9		54 mg/kg	2.774	149.804 mg/kg	0.015 %		
14	TPH (C6 to C40) petroleum group			TPH		<10 mg/kg		<10 mg/kg	<0.001 %		<LOD
15	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
16	benzene	601-020-00-8	200-753-7	71-43-2		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
17	toluene	601-021-00-3	203-625-9	108-88-3		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
18	ethylbenzene	601-023-00-4	202-849-4	100-41-4		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
19	xylene	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
20	cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				<0.5 mg/kg	1.884	<0.942 mg/kg	<0.0000942 %		<LOD
21	naphthalene	601-052-00-2	202-049-5	91-20-3		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
22	acenaphthylene		205-917-1	208-96-8		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
23	acenaphthene		201-469-6	83-32-9		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
24	fluorene		201-695-5	86-73-7		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
25	phenanthrene		201-581-5	85-01-8		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
26	anthracene		204-371-1	120-12-7		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
27	fluoranthene		205-912-4	206-44-0		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
28	pyrene		204-927-3	129-00-0		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
29	benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
30	chrysene	601-048-00-0	205-923-4	218-01-9		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
31	benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
32	benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
33	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
34	indeno[123-cd]pyrene		205-893-2	193-39-5		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
35	dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
36	benzo[ghi]perylene		205-883-8	191-24-2		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
37	phenol	604-001-00-2	203-632-7	108-95-2		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
38	polychlorobiphenyls; PCB	602-039-00-4	215-648-1	1336-36-3		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
								Total:	0.0361 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: WS03[2]

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:	LoW Code:	
WS03[2]	Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:		
1.0-2.0 m	Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)
Moisture content:		
12% (no correction)		

Hazard properties

None identified

Determinands

Moisture content: 12% No Moisture Correction applied (MC)

#		Determinand: EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1		antimony { antimony trioxide } 051-005-00-X	215-175-0	1309-64-4		<2	mg/kg	1.197	<2.394	mg/kg	<0.000239 %		<LOD
2		arsenic { arsenic trioxide } 033-003-00-0	215-481-4	1327-53-3		18	mg/kg	1.32	23.766	mg/kg	0.00238 %		
3		boron { diboron trioxide } 005-008-00-8	215-125-8	1303-86-2		<0.4	mg/kg	3.22	<1.288	mg/kg	<0.000129 %		<LOD
4		cadmium { cadmium oxide } 048-002-00-0	215-146-2	1306-19-0		1.6	mg/kg	1.142	1.828	mg/kg	0.000183 %		
5		chromium in chromium(III) compounds { chromium(III) oxide (worst case) }	215-160-9	1308-38-9		13	mg/kg	1.462	19	mg/kg	0.0019 %		
6		chromium in chromium(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex } 024-017-00-8				<0.5	mg/kg	2.27	<1.135	mg/kg	<0.000113 %		<LOD
7		copper { dicopper oxide; copper (I) oxide } 029-002-00-X	215-270-7	1317-39-1		24	mg/kg	1.126	27.021	mg/kg	0.0027 %		
8		lead { lead chromate } 082-004-00-2	231-846-0	7758-97-6	1	15	mg/kg	1.56	23.397	mg/kg	0.0015 %		
9		mercury { mercury dichloride } 080-010-00-X	231-299-8	7487-94-7		<0.1	mg/kg	1.353	<0.135	mg/kg	<0.0000135 %		<LOD
10		molybdenum { molybdenum(VI) oxide } 042-001-00-9	215-204-7	1313-27-5		2.3	mg/kg	1.5	3.45	mg/kg	0.000345 %		
11		nickel { nickel chromate } 028-035-00-7	238-766-5	14721-18-7		37	mg/kg	2.976	110.122	mg/kg	0.011 %		
12		selenium { nickel selenate } 028-031-00-5	239-125-2	15060-62-5		0.33	mg/kg	2.554	0.843	mg/kg	0.0000843 %		
13		zinc { zinc chromate } 024-007-00-3	236-878-9	13530-65-9		57	mg/kg	2.774	158.126	mg/kg	0.0158 %		
14		TPH (C6 to C40) petroleum group		TPH		<10	mg/kg		<10	mg/kg	<0.001 %		<LOD
15		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane 603-181-00-X	216-653-1	1634-04-4		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
16	benzene	601-020-00-8	200-753-7	71-43-2		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
17	toluene	601-021-00-3	203-625-9	108-88-3		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
18	ethylbenzene	601-023-00-4	202-849-4	100-41-4		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
19	xylene	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
20	cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				<0.5 mg/kg	1.884	<0.942 mg/kg	<0.0000942 %		<LOD
21	naphthalene	601-052-00-2	202-049-5	91-20-3		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
22	acenaphthylene		205-917-1	208-96-8		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
23	acenaphthene		201-469-6	83-32-9		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
24	fluorene		201-695-5	86-73-7		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
25	phenanthrene		201-581-5	85-01-8		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
26	anthracene		204-371-1	120-12-7		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
27	fluoranthene		205-912-4	206-44-0		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
28	pyrene		204-927-3	129-00-0		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
29	benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
30	chrysene	601-048-00-0	205-923-4	218-01-9		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
31	benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
32	benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
33	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
34	indeno[123-cd]pyrene		205-893-2	193-39-5		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
35	dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
36	benzo[ghi]perylene		205-883-8	191-24-2		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
37	phenol	604-001-00-2	203-632-7	108-95-2		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
38	polychlorobiphenyls; PCB	602-039-00-4	215-648-1	1336-36-3		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
								Total:	0.0375 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: WS03[3]

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:
WS03[3]
Sample Depth:
2.0-3.0 m
Moisture content:
9.6%
(no correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 9.6% No Moisture Correction applied (MC)

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1	antimony { antimony trioxide }	051-005-00-X	215-175-0	1309-64-4		<2	mg/kg	1.197	<2.394	mg/kg	<0.000239 %		<LOD
2	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		17	mg/kg	1.32	22.446	mg/kg	0.00224 %		
3	boron { diboron trioxide }	005-008-00-8	215-125-8	1303-86-2		<0.4	mg/kg	3.22	<1.288	mg/kg	<0.000129 %		<LOD
4	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		1.8	mg/kg	1.142	2.056	mg/kg	0.000206 %		
5	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		16	mg/kg	1.462	23.385	mg/kg	0.00234 %		
6	chromium in chromium(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8				<0.5	mg/kg	2.27	<1.135	mg/kg	<0.000113 %		<LOD
7	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		27	mg/kg	1.126	30.399	mg/kg	0.00304 %		
8	lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	45	mg/kg	1.56	70.192	mg/kg	0.0045 %		
9	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.1	mg/kg	1.353	<0.135	mg/kg	<0.0000135 %		<LOD
10	molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		2.9	mg/kg	1.5	4.351	mg/kg	0.000435 %		
11	nickel { nickel chromate }	028-035-00-7	238-766-5	14721-18-7		43	mg/kg	2.976	127.979	mg/kg	0.0128 %		
12	selenium { nickel selenate }	028-031-00-5	239-125-2	15060-62-5		0.86	mg/kg	2.554	2.196	mg/kg	0.00022 %		
13	zinc { zinc chromate }	024-007-00-3	236-878-9	13530-65-9		75	mg/kg	2.774	208.061	mg/kg	0.0208 %		
14	TPH (C6 to C40) petroleum group			TPH		<10	mg/kg		<10	mg/kg	<0.001 %		<LOD
15	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD

#		Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
16		benzene	601-020-00-8	200-753-7	71-43-2		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
17		toluene	601-021-00-3	203-625-9	108-88-3		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
18	●	ethylbenzene	601-023-00-4	202-849-4	100-41-4		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
19		xylene	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
20		cyanides { ● salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				<0.5	mg/kg	1.884	<0.942	mg/kg	<0.0000942 %		<LOD
21		naphthalene	601-052-00-2	202-049-5	91-20-3		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
22	●	acenaphthylene		205-917-1	208-96-8		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
23	●	acenaphthene		201-469-6	83-32-9		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
24	●	fluorene		201-695-5	86-73-7		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
25	●	phenanthrene		201-581-5	85-01-8		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
26	●	anthracene		204-371-1	120-12-7		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
27	●	fluoranthene		205-912-4	206-44-0		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
28	●	pyrene		204-927-3	129-00-0		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
29		benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
30		chrysene	601-048-00-0	205-923-4	218-01-9		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
31		benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
32		benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
33		benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
34	●	indeno[123-cd]pyrene		205-893-2	193-39-5		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
35		dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
36	●	benzo[ghi]perylene		205-883-8	191-24-2		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
37		phenol	604-001-00-2	203-632-7	108-95-2		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
38	●	polychlorobiphenyls; PCB	602-039-00-4	215-648-1	1336-36-3		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
											Total:	0.0482 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: WS04

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:
WS04
Sample Depth:
0.0-1.0 m
Moisture content:
11%
(no correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 11% No Moisture Correction applied (MC)

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	antimony { antimony trioxide }	051-005-00-X	215-175-0	1309-64-4		<2 mg/kg	1.197	<2.394 mg/kg	<0.000239 %		<LOD
2	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		31 mg/kg	1.32	40.93 mg/kg	0.00409 %		
3	boron { diboron trioxide }	005-008-00-8	215-125-8	1303-86-2		<0.4 mg/kg	3.22	<1.288 mg/kg	<0.000129 %		<LOD
4	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		2.2 mg/kg	1.142	2.513 mg/kg	0.000251 %		
5	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		25 mg/kg	1.462	36.539 mg/kg	0.00365 %		
6	chromium in chromium(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8				<0.5 mg/kg	2.27	<1.135 mg/kg	<0.000113 %		<LOD
7	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		36 mg/kg	1.126	40.532 mg/kg	0.00405 %		
8	lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	32 mg/kg	1.56	49.914 mg/kg	0.0032 %		
9	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.1 mg/kg	1.353	<0.135 mg/kg	<0.0000135 %		<LOD
10	molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		3.2 mg/kg	1.5	4.801 mg/kg	0.00048 %		
11	nickel { nickel chromate }	028-035-00-7	238-766-5	14721-18-7		50 mg/kg	2.976	148.813 mg/kg	0.0149 %		
12	selenium { nickel selenate }	028-031-00-5	239-125-2	15060-62-5		0.53 mg/kg	2.554	1.354 mg/kg	0.000135 %		
13	zinc { zinc chromate }	024-007-00-3	236-878-9	13530-65-9		97 mg/kg	2.774	269.092 mg/kg	0.0269 %		
14	TPH (C6 to C40) petroleum group			TPH		<10 mg/kg		<10 mg/kg	<0.001 %		<LOD
15	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD

#		Determinand EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
16		benzene 601-020-00-8	200-753-7	71-43-2		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
17		toluene 601-021-00-3	203-625-9	108-88-3		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
18	●	ethylbenzene 601-023-00-4	202-849-4	100-41-4		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
19		xylene 601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
20		cyanides { ● salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex } 006-007-00-5				<0.5	mg/kg	1.884	<0.942	mg/kg	<0.0000942 %		<LOD
21		naphthalene 601-052-00-2	202-049-5	91-20-3		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
22	●	acenaphthylene	205-917-1	208-96-8		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
23	●	acenaphthene	201-469-6	83-32-9		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
24	●	fluorene	201-695-5	86-73-7		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
25	●	phenanthrene	201-581-5	85-01-8		0.16	mg/kg		0.16	mg/kg	0.000016 %		
26	●	anthracene	204-371-1	120-12-7		0.064	mg/kg		0.064	mg/kg	0.0000064 %		
27	●	fluoranthene	205-912-4	206-44-0		0.25	mg/kg		0.25	mg/kg	0.000025 %		
28	●	pyrene	204-927-3	129-00-0		0.23	mg/kg		0.23	mg/kg	0.000023 %		
29		benzo[a]anthracene 601-033-00-9	200-280-6	56-55-3		0.13	mg/kg		0.13	mg/kg	0.000013 %		
30		chrysene 601-048-00-0	205-923-4	218-01-9		0.11	mg/kg		0.11	mg/kg	0.000011 %		
31		benzo[b]fluoranthene 601-034-00-4	205-911-9	205-99-2		0.14	mg/kg		0.14	mg/kg	0.000014 %		
32		benzo[k]fluoranthene 601-036-00-5	205-916-6	207-08-9		0.065	mg/kg		0.065	mg/kg	0.0000065 %		
33		benzo[a]pyrene; benzo[def]chrysene 601-032-00-3	200-028-5	50-32-8		0.12	mg/kg		0.12	mg/kg	0.000012 %		
34	●	indeno[123-cd]pyrene	205-893-2	193-39-5		0.061	mg/kg		0.061	mg/kg	0.0000061 %		
35		dibenz[a,h]anthracene 601-041-00-2	200-181-8	53-70-3		0.049	mg/kg		0.049	mg/kg	0.0000049 %		
36	●	benzo[ghi]perylene	205-883-8	191-24-2		0.085	mg/kg		0.085	mg/kg	0.0000085 %		
37		phenol 604-001-00-2	203-632-7	108-95-2		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
38	●	polychlorobiphenyls; PCB 602-039-00-4	215-648-1	1336-36-3		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
										Total:	0.0594 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: WS04[2]

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:
WS04[2]
Sample Depth:
1.0-2.0 m
Moisture content:
9.5%
(no correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 9.5% No Moisture Correction applied (MC)

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	antimony { antimony trioxide }	051-005-00-X	215-175-0	1309-64-4		<2 mg/kg	1.197	<2.394 mg/kg	<0.000239 %		<LOD
2	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		24 mg/kg	1.32	31.688 mg/kg	0.00317 %		
3	boron { diboron trioxide }	005-008-00-8	215-125-8	1303-86-2		<0.4 mg/kg	3.22	<1.288 mg/kg	<0.000129 %		<LOD
4	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		2 mg/kg	1.142	2.285 mg/kg	0.000228 %		
5	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		26 mg/kg	1.462	38 mg/kg	0.0038 %		
6	chromium in chromium(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8				<0.5 mg/kg	2.27	<1.135 mg/kg	<0.000113 %		<LOD
7	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		31 mg/kg	1.126	34.903 mg/kg	0.00349 %		
8	lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	19 mg/kg	1.56	29.636 mg/kg	0.0019 %		
9	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.1 mg/kg	1.353	<0.135 mg/kg	<0.0000135 %		<LOD
10	molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		3.3 mg/kg	1.5	4.951 mg/kg	0.000495 %		
11	nickel { nickel chromate }	028-035-00-7	238-766-5	14721-18-7		53 mg/kg	2.976	157.742 mg/kg	0.0158 %		
12	selenium { nickel selenate }	028-031-00-5	239-125-2	15060-62-5		0.32 mg/kg	2.554	0.817 mg/kg	0.0000817 %		
13	zinc { zinc chromate }	024-007-00-3	236-878-9	13530-65-9		89 mg/kg	2.774	246.899 mg/kg	0.0247 %		
14	TPH (C6 to C40) petroleum group			TPH		<10 mg/kg		<10 mg/kg	<0.001 %		<LOD
15	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
16	benzene	601-020-00-8	200-753-7	71-43-2		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
17	toluene	601-021-00-3	203-625-9	108-88-3		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
18	ethylbenzene	601-023-00-4	202-849-4	100-41-4		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
19	xylene	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
20	cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				<0.5 mg/kg	1.884	<0.942 mg/kg	<0.0000942 %		<LOD
21	naphthalene	601-052-00-2	202-049-5	91-20-3		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
22	acenaphthylene		205-917-1	208-96-8		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
23	acenaphthene		201-469-6	83-32-9		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
24	fluorene		201-695-5	86-73-7		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
25	phenanthrene		201-581-5	85-01-8		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
26	anthracene		204-371-1	120-12-7		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
27	fluoranthene		205-912-4	206-44-0		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
28	pyrene		204-927-3	129-00-0		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
29	benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
30	chrysene	601-048-00-0	205-923-4	218-01-9		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
31	benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
32	benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
33	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
34	indeno[123-cd]pyrene		205-893-2	193-39-5		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
35	dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
36	benzo[ghi]perylene		205-883-8	191-24-2		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
37	phenol	604-001-00-2	203-632-7	108-95-2		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
38	polychlorobiphenyls; PCB	602-039-00-4	215-648-1	1336-36-3		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
								Total:	0.0552 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: WS05

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:		LoW Code:	
WS05		Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:			
0.0-1.0 m		Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)
Moisture content:			
15% (no correction)			

Hazard properties

None identified

Determinands

Moisture content: 15% No Moisture Correction applied (MC)

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	antimony { antimony trioxide }	051-005-00-X	215-175-0	1309-64-4		<2 mg/kg	1.197	<2.394 mg/kg	<0.000239 %		<LOD
2	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		28 mg/kg	1.32	36.969 mg/kg	0.0037 %		
3	boron { diboron trioxide }	005-008-00-8	215-125-8	1303-86-2		<0.4 mg/kg	3.22	<1.288 mg/kg	<0.000129 %		<LOD
4	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		1.8 mg/kg	1.142	2.056 mg/kg	0.000206 %		
5	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		23 mg/kg	1.462	33.616 mg/kg	0.00336 %		
6	chromium in chromium(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8				<0.5 mg/kg	2.27	<1.135 mg/kg	<0.000113 %		<LOD
7	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		35 mg/kg	1.126	39.406 mg/kg	0.00394 %		
8	lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	29 mg/kg	1.56	45.235 mg/kg	0.0029 %		
9	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.1 mg/kg	1.353	<0.135 mg/kg	<0.0000135 %		<LOD
10	molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		2.8 mg/kg	1.5	4.201 mg/kg	0.00042 %		
11	nickel { nickel chromate }	028-035-00-7	238-766-5	14721-18-7		48 mg/kg	2.976	142.861 mg/kg	0.0143 %		
12	selenium { nickel selenate }	028-031-00-5	239-125-2	15060-62-5		0.5 mg/kg	2.554	1.277 mg/kg	0.000128 %		
13	zinc { zinc chromate }	024-007-00-3	236-878-9	13530-65-9		110 mg/kg	2.774	305.156 mg/kg	0.0305 %		
14	TPH (C6 to C40) petroleum group			TPH		<10 mg/kg		<10 mg/kg	<0.001 %		<LOD
15	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
16	benzene	601-020-00-8	200-753-7	71-43-2		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
17	toluene	601-021-00-3	203-625-9	108-88-3		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
18	ethylbenzene	601-023-00-4	202-849-4	100-41-4		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
19	xylene	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
20	cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				<0.5 mg/kg	1.884	<0.942 mg/kg	<0.0000942 %		<LOD
21	naphthalene	601-052-00-2	202-049-5	91-20-3		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
22	acenaphthylene		205-917-1	208-96-8		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
23	acenaphthene		201-469-6	83-32-9		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
24	fluorene		201-695-5	86-73-7		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
25	phenanthrene		201-581-5	85-01-8		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
26	anthracene		204-371-1	120-12-7		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
27	fluoranthene		205-912-4	206-44-0		0.05 mg/kg		0.05 mg/kg	0.000005 %		
28	pyrene		204-927-3	129-00-0		0.078 mg/kg		0.078 mg/kg	0.0000078 %		
29	benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
30	chrysene	601-048-00-0	205-923-4	218-01-9		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
31	benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
32	benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
33	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
34	indeno[123-cd]pyrene		205-893-2	193-39-5		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
35	dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
36	benzo[ghi]perylene		205-883-8	191-24-2		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
37	phenol	604-001-00-2	203-632-7	108-95-2		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
38	polychlorobiphenyls; PCB	602-039-00-4	215-648-1	1336-36-3		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
								Total:	0.0611 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
•	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: WS05[2]

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:	**WS05[2]**	LoW Code:	
Sample Depth:	**1.0-2.0 m**	Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Moisture content:	**11%** (no correction)	Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 11% No Moisture Correction applied (MC)

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1	antimony { antimony trioxide }	051-005-00-X	215-175-0	1309-64-4		<2	mg/kg	1.197	<2.394	mg/kg	<0.000239 %		<LOD
2	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		38	mg/kg	1.32	50.172	mg/kg	0.00502 %		
3	boron { diboron trioxide }	005-008-00-8	215-125-8	1303-86-2		<0.4	mg/kg	3.22	<1.288	mg/kg	<0.000129 %		<LOD
4	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		1.7	mg/kg	1.142	1.942	mg/kg	0.000194 %		
5	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		24	mg/kg	1.462	35.077	mg/kg	0.00351 %		
6	chromium in chromium(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8				<0.5	mg/kg	2.27	<1.135	mg/kg	<0.000113 %		<LOD
7	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		29	mg/kg	1.126	32.651	mg/kg	0.00327 %		
8	lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	17	mg/kg	1.56	26.517	mg/kg	0.0017 %		
9	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.1	mg/kg	1.353	<0.135	mg/kg	<0.0000135 %		<LOD
10	molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		3	mg/kg	1.5	4.501	mg/kg	0.00045 %		
11	nickel { nickel chromate }	028-035-00-7	238-766-5	14721-18-7		45	mg/kg	2.976	133.932	mg/kg	0.0134 %		
12	selenium { nickel selenate }	028-031-00-5	239-125-2	15060-62-5		0.44	mg/kg	2.554	1.124	mg/kg	0.000112 %		
13	zinc { zinc chromate }	024-007-00-3	236-878-9	13530-65-9		75	mg/kg	2.774	208.061	mg/kg	0.0208 %		
14	TPH (C6 to C40) petroleum group			TPH		<10	mg/kg		<10	mg/kg	<0.001 %		<LOD
15	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
16	benzene	601-020-00-8	200-753-7	71-43-2		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		**<LOD**
17	toluene	601-021-00-3	203-625-9	108-88-3		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		**<LOD**
18	ethylbenzene	601-023-00-4	202-849-4	100-41-4		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		**<LOD**
19	xylene	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		**<LOD**
20	cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				<0.5 mg/kg	1.884	<0.942 mg/kg	<0.0000942 %		**<LOD**
21	naphthalene	601-052-00-2	202-049-5	91-20-3		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		**<LOD**
22	acenaphthylene		205-917-1	208-96-8		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		**<LOD**
23	acenaphthene		201-469-6	83-32-9		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		**<LOD**
24	fluorene		201-695-5	86-73-7		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		**<LOD**
25	phenanthrene		201-581-5	85-01-8		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		**<LOD**
26	anthracene		204-371-1	120-12-7		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		**<LOD**
27	fluoranthene		205-912-4	206-44-0		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		**<LOD**
28	pyrene		204-927-3	129-00-0		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		**<LOD**
29	benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		**<LOD**
30	chrysene	601-048-00-0	205-923-4	218-01-9		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		**<LOD**
31	benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		**<LOD**
32	benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		**<LOD**
33	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		**<LOD**
34	indeno[123-cd]pyrene		205-893-2	193-39-5		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		**<LOD**
35	dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		**<LOD**
36	benzo[ghi]perylene		205-883-8	191-24-2		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		**<LOD**
37	phenol	604-001-00-2	203-632-7	108-95-2		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		**<LOD**
38	polychlorobiphenyls; PCB	602-039-00-4	215-648-1	1336-36-3		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		**<LOD**
								Total:	0.0501 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: WS05[3]

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:
WS05[3]
Sample Depth:
2.0-3.0 m
Moisture content:
9.4%
(no correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 9.4% No Moisture Correction applied (MC)

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1	antimony { antimony trioxide }	051-005-00-X	215-175-0	1309-64-4		<2	mg/kg	1.197	<2.394	mg/kg	<0.000239 %		<LOD
2	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		55	mg/kg	1.32	72.618	mg/kg	0.00726 %		
3	boron { diboron trioxide }	005-008-00-8	215-125-8	1303-86-2		<0.4	mg/kg	3.22	<1.288	mg/kg	<0.000129 %		<LOD
4	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		1.9	mg/kg	1.142	2.17	mg/kg	0.000217 %		
5	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		24	mg/kg	1.462	35.077	mg/kg	0.00351 %		
6	chromium in chromium(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8				<0.5	mg/kg	2.27	<1.135	mg/kg	<0.000113 %		<LOD
7	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		36	mg/kg	1.126	40.532	mg/kg	0.00405 %		
8	lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	29	mg/kg	1.56	45.235	mg/kg	0.0029 %		
9	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.1	mg/kg	1.353	<0.135	mg/kg	<0.0000135 %		<LOD
10	molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		2.6	mg/kg	1.5	3.9	mg/kg	0.00039 %		
11	nickel { nickel chromate }	028-035-00-7	238-766-5	14721-18-7		51	mg/kg	2.976	151.79	mg/kg	0.0152 %		
12	selenium { nickel selenate }	028-031-00-5	239-125-2	15060-62-5		0.54	mg/kg	2.554	1.379	mg/kg	0.000138 %		
13	zinc { zinc chromate }	024-007-00-3	236-878-9	13530-65-9		100	mg/kg	2.774	277.415	mg/kg	0.0277 %		
14	TPH (C6 to C40) petroleum group			TPH		<10	mg/kg		<10	mg/kg	<0.001 %		<LOD
15	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
16	benzene	601-020-00-8	200-753-7	71-43-2		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		**<LOD**
17	toluene	601-021-00-3	203-625-9	108-88-3		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		**<LOD**
18	ethylbenzene	601-023-00-4	202-849-4	100-41-4		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		**<LOD**
19	xylene	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		**<LOD**
20	cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				<0.5 mg/kg	1.884	<0.942 mg/kg	<0.0000942 %		**<LOD**
21	naphthalene	601-052-00-2	202-049-5	91-20-3		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		**<LOD**
22	acenaphthylene		205-917-1	208-96-8		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		**<LOD**
23	acenaphthene		201-469-6	83-32-9		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		**<LOD**
24	fluorene		201-695-5	86-73-7		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		**<LOD**
25	phenanthrene		201-581-5	85-01-8		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		**<LOD**
26	anthracene		204-371-1	120-12-7		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		**<LOD**
27	fluoranthene		205-912-4	206-44-0		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		**<LOD**
28	pyrene		204-927-3	129-00-0		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		**<LOD**
29	benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		**<LOD**
30	chrysene	601-048-00-0	205-923-4	218-01-9		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		**<LOD**
31	benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		**<LOD**
32	benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		**<LOD**
33	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		**<LOD**
34	indeno[123-cd]pyrene		205-893-2	193-39-5		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		**<LOD**
35	dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		**<LOD**
36	benzo[ghi]perylene		205-883-8	191-24-2		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		**<LOD**
37	phenol	604-001-00-2	203-632-7	108-95-2		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		**<LOD**
38	polychlorobiphenyls; PCB	602-039-00-4	215-648-1	1336-36-3		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		**<LOD**
								Total:	0.063 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Appendix A: Classifier defined and non EU CLP determinands

chromium(III) oxide (worst case) (EC Number: 215-160-9, CAS Number: 1308-38-9)

Description/Comments: Data from C&L Inventory Database
Data source: https://echa.europa.eu/information-on-chemicals/cl-inventory-database/-/discli/details/33806
Data source date: 17 Jul 2015
Hazard Statements: Acute Tox. 4; H332 , Acute Tox. 4; H302 , Eye Irrit. 2; H319 , STOT SE 3; H335 , Skin Irrit. 2; H315 , Resp. Sens. 1; H334 , Skin Sens. 1; H317 , Repr. 1B; H360FD , Aquatic Acute 1; H400 , Aquatic Chronic 1; H410

TPH (C6 to C40) petroleum group (CAS Number: TPH)

Description/Comments: Hazard statements taken from WM3 1st Edition 2015; Risk phrases: WM2 3rd Edition 2013
Data source: WM3 1st Edition 2015
Data source date: 25 May 2015
Hazard Statements: Flam. Liq. 3; H226 , Asp. Tox. 1; H304 , STOT RE 2; H373 , Muta. 1B; H340 , Carc. 1B; H350 , Repr. 2; H361d , Aquatic Chronic 2; H411

ethylbenzene (EC Number: 202-849-4, CAS Number: 100-41-4)

EU CLP index number: 601-023-00-4
Description/Comments:
Additional Hazard Statement(s): Carc. 2; H351
Reason for additional Hazards Statement(s):
03 Jun 2015 - Carc. 2; H351 hazard statement sourced from: IARC Group 2B (77) 2000

salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex

EU CLP index number: 006-007-00-5
Description/Comments: Conversion factor based on a worst case compound: sodium cyanide
Additional Hazard Statement(s): EUH032 >= 0.2 %
Reason for additional Hazards Statement(s):
14 Dec 2015 - EUH032 >= 0.2 % hazard statement sourced from: WM3, Table C12.2

acenaphthylene (EC Number: 205-917-1, CAS Number: 208-96-8)

Description/Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 17 Jul 2015
Hazard Statements: Acute Tox. 4; H302 , Acute Tox. 1; H330 , Acute Tox. 1; H310 , Eye Irrit. 2; H319 , STOT SE 3; H335 , Skin Irrit. 2; H315

acenaphthene (EC Number: 201-469-6, CAS Number: 83-32-9)

Description/Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 17 Jul 2015
Hazard Statements: Eye Irrit. 2; H319 , STOT SE 3; H335 , Skin Irrit. 2; H315 , Aquatic Acute 1; H400 , Aquatic Chronic 1; H410 , Aquatic Chronic 2; H411

fluorene (EC Number: 201-695-5, CAS Number: 86-73-7)

Description/Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 06 Aug 2015
Hazard Statements: Aquatic Acute 1; H400 , Aquatic Chronic 1; H410

phenanthrene (EC Number: 201-581-5, CAS Number: 85-01-8)

Description/Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 06 Aug 2015
Hazard Statements: Acute Tox. 4; H302 , Eye Irrit. 2; H319 , STOT SE 3; H335 , Carc. 2; H351 , Skin Sens. 1; H317 , Aquatic Acute 1; H400 , Aquatic Chronic 1; H410 , Skin Irrit. 2; H315

anthracene (EC Number: 204-371-1, CAS Number: 120-12-7)

Description/Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 17 Jul 2015
Hazard Statements: Eye Irrit. 2; H319 , STOT SE 3; H335 , Skin Irrit. 2; H315 , Skin Sens. 1; H317 , Aquatic Acute 1; H400 , Aquatic Chronic 1; H410

fluoranthene (EC Number: 205-912-4, CAS Number: 206-44-0)

Description/Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 21 Aug 2015
Hazard Statements: Acute Tox. 4; H302 , Aquatic Acute 1; H400 , Aquatic Chronic 1; H410

- **pyrene** (EC Number: 204-927-3, CAS Number: 129-00-0)

Description/Comments: Data from C&L Inventory Database; SDS Sigma Aldrich 2014
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 21 Aug 2015
Hazard Statements: Skin Irrit. 2; H315 , Eye Irrit. 2; H319 , STOT SE 3; H335 , Aquatic Acute 1; H400 , Aquatic Chronic 1; H410

- **indeno[123-cd]pyrene** (EC Number: 205-893-2, CAS Number: 193-39-5)

Description/Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 06 Aug 2015
Hazard Statements: Carc. 2; H351

- **benzo[ghi]perylene** (EC Number: 205-883-8, CAS Number: 191-24-2)

Description/Comments: Data from C&L Inventory Database; SDS Sigma Aldrich 28/02/2015
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 23 Jul 2015
Hazard Statements: Aquatic Acute 1; H400 , Aquatic Chronic 1; H410

- **polychlorobiphenyls; PCB** (EC Number: 215-648-1, CAS Number: 1336-36-3)

EU CLP index number: 602-039-00-4
Description/Comments: Worst Case: IARC considers PCB Group 1; Carcinogenic to humans; POP specific threshold from ATP1 (Regulation 756/2010/EU) to POPs Regulation (Regulation 850/2004/EC). Where applicable, the calculation method laid down in European standards EN 12766-1 and EN 12766-2 shall be applied.
Additional Hazard Statement(s): Carc. 1A; H350
Reason for additional Hazards Statement(s):
29 Sep 2015 - Carc. 1A; H350 hazard statement sourced from: IARC Group 1 (23, Sup 7, 100C) 2012

Appendix B: Rationale for selection of metal species

antimony {antimony trioxide}

Worst case CLP species based on hazard statements/molecular weight and low solubility. Industrial sources include: flame retardants in electrical apparatus, textiles and coatings (edit as required)

arsenic {arsenic trioxide}

Reasonable case CLP species based on hazard statements/molecular weight and most common (stable) oxide of arsenic. Industrial sources include: smelting; main precursor to other arsenic compounds (edit as required)

boron {diboron trioxide}

Reasonable case CLP species based on hazard statements/ molecular weight, physical form and low solubility. Industrial sources include: fluxing agent for glass/enamels; additive for fibre optics, borosilicate glass (edit as required)

cadmium {cadmium oxide}

Reasonable case CLP species based on hazard statements/molecular weight, very low solubility in water. Industrial sources include: electroplating baths, electrodes for storage batteries, catalysts, ceramic glazes, phosphors, pigments and nematocides. (edit as required) Worst case compounds in CLP: cadmium sulphate, chloride, fluoride & iodide not expected as either very soluble and/or compound's industrial usage not related to site history (edit as required)

chromium in chromium(III) compounds {chromium(III) oxide (worst case)}

Reasonable case species based on hazard statements/molecular weight. Industrial sources include: tanning, pigment in paint, inks and glass (edit as required)

chromium in chromium(VI) compounds {chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex}

Worst case species based on hazard statements/molecular weight (edit as required)

copper {dicopper oxide; copper (I) oxide}

Reasonable case CLP species based on hazard statements/molecular weight and insolubility in water. Industrial sources include: oxidised copper metal, brake pads, pigments, antifouling paints, fungicide. (edit as required) Worse case copper sulphate is very soluble and likely to have been leached away if ever present and/or not enough soluble sulphate detected. (edit as required)

lead {lead chromate}

Worst case CLP species based on hazard statements/molecular weight (edit as required)

mercury {mercury dichloride}

Worst case CLP species based on hazard statements/molecular weight (edit as required)

molybdenum {molybdenum(VI) oxide}

Worst case CLP species based on hazard statements/molecular weight (edit as required)

nickel {nickel chromate}

Worst case CLP species based on hazard statements/molecular weight (edit as required)

selenium {nickel selenate}

Worst case CLP species based on hazard statements/molecular weight (edit as required)

zinc {zinc chromate}

Worst case CLP species based on hazard statements/molecular weight (edit as required)

cyanides {salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex}

Harmonised group entry used as most reasonable case as complex cyanides and those specified elsewhere in the annex are not likely to be present in this soil: [Note conversion factor based on a worst case compound: sodium cyanide] (edit as required)

Appendix C: Version

HazWasteOnline Classification Engine: EU WM3 1st Edition v1.1.NI using the EU LoW
HazWasteOnline Classification Engine Version: 2022.103.5089.9622 (13 Apr 2022)
HazWasteOnline Database: 2022.103.5089.9622 (13 Apr 2022)

This classification utilises the following guidance and legislation:
WM3 v1.1.NI - Waste Classification - 1st Edition v1.1.NI - Jan 2021
CLP Regulation - Regulation 1272/2008/EC of 16 December 2008
1st ATP - Regulation 790/2009/EC of 10 August 2009
2nd ATP - Regulation 286/2011/EC of 10 March 2011
3rd ATP - Regulation 618/2012/EU of 10 July 2012
4th ATP - Regulation 487/2013/EU of 8 May 2013
Correction to 1st ATP - Regulation 758/2013/EU of 7 August 2013
5th ATP - Regulation 944/2013/EU of 2 October 2013
6th ATP - Regulation 605/2014/EU of 5 June 2014
WFD Annex III replacement - Regulation 1357/2014/EU of 18 December 2014
Revised List of Waste 2014 - Decision 2014/955/EU of 18 December 2014
7th ATP - Regulation 2015/1221/EU of 24 July 2015
8th ATP - Regulation (EU) 2016/918 of 19 May 2016
9th ATP - Regulation (EU) 2016/1179 of 19 July 2016
10th ATP - Regulation (EU) 2017/776 of 4 May 2017
HP14 amendment - Regulation (EU) 2017/997 of 8 June 2017
13th ATP - Regulation (EU) 2018/1480 of 4 October 2018
14th ATP - Regulation (EU) 2020/217 of 4 October 2019
15th ATP - Regulation (EU) 2020/1182 of 19 May 2020
The Chemicals (Health and Safety) and Genetically Modified Organisms (Contained Use)(Amendment etc.) (EU Exit) Regulations 2020 - UK: 2020 No. 1567 of 16th December 2020
The Waste and Environmental Permitting etc. (Legislative Functions and Amendment etc.) (EU Exit) Regulations 2020 - UK: 2020 No. 1540 of 16th December 2020
17th ATP - Regulation (EU) 2021/849 of 11 March 2021

HazWasteOnline™

Waste Classification Report

HazWasteOnline™ classifies waste as either **hazardous** or **non-hazardous** based on its chemical composition, related legislation and the rules and data defined in the current UK or EU technical guidance (Appendix C) (note that HP 9 Infectious is not assessed). It is the responsibility of the classifier named below to:

a) understand the origin of the waste
b) select the correct List of Waste code(s)
c) confirm that the list of determinands, results and sampling plan are fit for purpose
d) select and justify the chosen metal species (Appendix B)
e) correctly apply moisture correction and other available corrections
f) add the meta data for their user-defined substances (Appendix A)
g) check that the classification engine is suitable with respect to the national destination of the waste (Appendix C)

To aid the reviewer, the laboratory results, assumptions and justifications managed by the classifier are highlighted in pale yellow.

MIYXP-G1C5Y-ENGSH

Job name

22-001-18 Dalguise Phase 2

Description/Comments

9 No. Composite Samples from 5 No. Trial Pits.

Project

22-001-18

Site

Dalguise

Classified by

Name:
Austin Hynes
Date:
09 Jun 2023 14:51 GMT
Telephone:
+353 (0)21 4345366

Company:
O'Callaghan Moran & Associates
Unit 15 Melbourne Business Park,
Model Farm Road
Cork

HazWasteOnline™ provides a two day, hazardous waste classification course that covers the use of the software and both basic and advanced waste classification techniques. Certification has to be renewed every 3 years.

HazWasteOnline™ Certification: **CERTIFIED**

Course	**Date**
Hazardous Waste Classification	06 Oct 2022

Next 3 year Refresher due by Oct 2025

Purpose of classification

7 - Disposal of Waste

Address of the waste

Dalguise House, Clifton Lane, Monkstown, Co. Dublin **Post Code** NA

SIC for the process giving rise to the waste

41202 Construction of domestic buildings

Description of industry/producer giving rise to the waste

Site Investigation

Description of the specific process, sub-process and/or activity that created the waste

Excavation

Description of the waste

Soil and Stone

Job summary

#	Sample name	Depth [m]	Classification Result	Hazard properties	Page
1	TP12	0.5-1.0	Non Hazardous		3
2	TP13	0.2-0.6	Non Hazardous		6
3	TP13[2]	0.6-1.0	Non Hazardous		9
4	TP14	0.25-0.9	Non Hazardous		12
5	TP14[2]	1.0-1.2	Non Hazardous		15
6	TP15	0.2-0.7	Non Hazardous		18
7	TP15[2]	0.7-1.0	Non Hazardous		21
8	TP16	0.2-0.9	Non Hazardous		24
9	TP16[2]	0.9-1.2	Non Hazardous		27

Related documents

#	Name	Description
1	OCM Waste Stream Updated 2021	waste stream template used to create this Job

Report

Created by: Austin Hynes

Created date: 09 Jun 2023 14:51 GMT

Classification of sample: TP12

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:	**TP12**	LoW Code:	
Sample Depth:	**0.5-1.0 m**	Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Moisture content:	**8.3%** (no correction)	Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 8.3% No Moisture Correction applied (MC)

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	antimony { antimony trioxide }	051-005-00-X	215-175-0	1309-64-4		<2 mg/kg	1.197	<2.394 mg/kg	<0.000239 %		<LOD
2	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		14 mg/kg	1.32	18.485 mg/kg	0.00185 %		
3	boron { diboron trioxide }	005-008-00-8	215-125-8	1303-86-2		<0.4 mg/kg	3.22	<1.288 mg/kg	<0.000129 %		<LOD
4	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		2.5 mg/kg	1.142	2.856 mg/kg	0.000286 %		
5	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		26 mg/kg	1.462	38 mg/kg	0.0038 %		
6	chromium in chromium(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8				<0.5 mg/kg	2.27	<1.135 mg/kg	<0.000113 %		<LOD
7	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		33 mg/kg	1.126	37.154 mg/kg	0.00372 %		
8	lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	49 mg/kg	1.56	76.431 mg/kg	0.0049 %		
9	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		0.1 mg/kg	1.353	0.135 mg/kg	0.0000135 %		
10	molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		3.6 mg/kg	1.5	5.401 mg/kg	0.00054 %		
11	nickel { nickel chromate }	028-035-00-7	238-766-5	14721-18-7		56 mg/kg	2.976	166.671 mg/kg	0.0167 %		
12	selenium { nickel selenate }	028-031-00-5	239-125-2	15060-62-5		1.4 mg/kg	2.554	3.575 mg/kg	0.000358 %		
13	zinc { zinc chromate }	024-007-00-3	236-878-9	13530-65-9		110 mg/kg	2.774	305.156 mg/kg	0.0305 %		
14	TPH (C6 to C40) petroleum group			TPH		<10 mg/kg		<10 mg/kg	<0.001 %		<LOD
15	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
16	benzene	601-020-00-8	200-753-7	71-43-2		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		**<LOD**
17	toluene	601-021-00-3	203-625-9	108-88-3		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		**<LOD**
18	ethylbenzene	601-023-00-4	202-849-4	100-41-4		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		**<LOD**
19	xylene	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		**<LOD**
20	cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				0.9 mg/kg	1.884	1.696 mg/kg	0.00017 %		
21	naphthalene	601-052-00-2	202-049-5	91-20-3		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		**<LOD**
22	acenaphthylene		205-917-1	208-96-8		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		**<LOD**
23	acenaphthene		201-469-6	83-32-9		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		**<LOD**
24	fluorene		201-695-5	86-73-7		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		**<LOD**
25	phenanthrene		201-581-5	85-01-8		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		**<LOD**
26	anthracene		204-371-1	120-12-7		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		**<LOD**
27	fluoranthene		205-912-4	206-44-0		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		**<LOD**
28	pyrene		204-927-3	129-00-0		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		**<LOD**
29	benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		**<LOD**
30	chrysene	601-048-00-0	205-923-4	218-01-9		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		**<LOD**
31	benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		**<LOD**
32	benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		**<LOD**
33	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		**<LOD**
34	indeno[123-cd]pyrene		205-893-2	193-39-5		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		**<LOD**
35	dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		**<LOD**
36	benzo[ghi]perylene		205-883-8	191-24-2		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		**<LOD**
37	phenol	604-001-00-2	203-632-7	108-95-2		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		**<LOD**
38	polychlorobiphenyls; PCB	602-039-00-4	215-648-1	1336-36-3		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		**<LOD**
								Total:	0.0643 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: TP13

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:
TP13
Sample Depth:
0.2-0.6 m
Moisture content:
19%
(no correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 19% No Moisture Correction applied (MC)

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	antimony { antimony trioxide }	051-005-00-X	215-175-0	1309-64-4		<2 mg/kg	1.197	<2.394 mg/kg	<0.000239 %		<LOD
2	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		12 mg/kg	1.32	15.844 mg/kg	0.00158 %		
3	boron { diboron trioxide }	005-008-00-8	215-125-8	1303-86-2		<0.4 mg/kg	3.22	<1.288 mg/kg	<0.000129 %		<LOD
4	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		1.6 mg/kg	1.142	1.828 mg/kg	0.000183 %		
5	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		25 mg/kg	1.462	36.539 mg/kg	0.00365 %		
6	chromium in chromium(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8				<0.5 mg/kg	2.27	<1.135 mg/kg	<0.000113 %		<LOD
7	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		27 mg/kg	1.126	30.399 mg/kg	0.00304 %		
8	lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	36 mg/kg	1.56	56.153 mg/kg	0.0036 %		
9	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		0.09 mg/kg	1.353	0.122 mg/kg	0.0000122 %		
10	molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		2.5 mg/kg	1.5	3.75 mg/kg	0.000375 %		
11	nickel { nickel chromate }	028-035-00-7	238-766-5	14721-18-7		44 mg/kg	2.976	130.956 mg/kg	0.0131 %		
12	selenium { nickel selenate }	028-031-00-5	239-125-2	15060-62-5		1.3 mg/kg	2.554	3.32 mg/kg	0.000332 %		
13	zinc { zinc chromate }	024-007-00-3	236-878-9	13530-65-9		93 mg/kg	2.774	257.996 mg/kg	0.0258 %		
14	TPH (C6 to C40) petroleum group			TPH		<10 mg/kg		<10 mg/kg	<0.001 %		<LOD
15	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
16	benzene	601-020-00-8	200-753-7	71-43-2		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
17	toluene	601-021-00-3	203-625-9	108-88-3		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
18	ethylbenzene	601-023-00-4	202-849-4	100-41-4		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
19	xylene	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
20	cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				<0.5 mg/kg	1.884	<0.942 mg/kg	<0.0000942 %		<LOD
21	naphthalene	601-052-00-2	202-049-5	91-20-3		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
22	acenaphthylene		205-917-1	208-96-8		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
23	acenaphthene		201-469-6	83-32-9		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
24	fluorene		201-695-5	86-73-7		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
25	phenanthrene		201-581-5	85-01-8		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
26	anthracene		204-371-1	120-12-7		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
27	fluoranthene		205-912-4	206-44-0		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
28	pyrene		204-927-3	129-00-0		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
29	benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
30	chrysene	601-048-00-0	205-923-4	218-01-9		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
31	benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
32	benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
33	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
34	indeno[123-cd]pyrene		205-893-2	193-39-5		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
35	dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
36	benzo[ghi]perylene		205-883-8	191-24-2		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
37	phenol	604-001-00-2	203-632-7	108-95-2		0.19 mg/kg		0.19 mg/kg	0.000019 %		
38	polychlorobiphenyls; PCB	602-039-00-4	215-648-1	1336-36-3		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
								Total:	0.0533 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: TP13[2]

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:	**TP13[2]**	LoW Code:	
Sample Depth:	**0.6-1.0 m**	Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Moisture content:	**18%** (no correction)	Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 18% No Moisture Correction applied (MC)

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	antimony { antimony trioxide }	051-005-00-X	215-175-0	1309-64-4		<2 mg/kg	1.197	<2.394 mg/kg	<0.000239 %		<LOD
2	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		9.6 mg/kg	1.32	12.675 mg/kg	0.00127 %		
3	boron { diboron trioxide }	005-008-00-8	215-125-8	1303-86-2		<0.4 mg/kg	3.22	<1.288 mg/kg	<0.000129 %		<LOD
4	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		1.3 mg/kg	1.142	1.485 mg/kg	0.000149 %		
5	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		18 mg/kg	1.462	26.308 mg/kg	0.00263 %		
6	chromium in chromium(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8				<0.5 mg/kg	2.27	<1.135 mg/kg	<0.000113 %		<LOD
7	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		21 mg/kg	1.126	23.644 mg/kg	0.00236 %		
8	lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	34 mg/kg	1.56	53.034 mg/kg	0.0034 %		
9	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		0.08 mg/kg	1.353	0.108 mg/kg	0.0000108 %		
10	molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		2 mg/kg	1.5	3 mg/kg	0.0003 %		
11	nickel { nickel chromate }	028-035-00-7	238-766-5	14721-18-7		35 mg/kg	2.976	104.169 mg/kg	0.0104 %		
12	selenium { nickel selenate }	028-031-00-5	239-125-2	15060-62-5		0.86 mg/kg	2.554	2.196 mg/kg	0.00022 %		
13	zinc { zinc chromate }	024-007-00-3	236-878-9	13530-65-9		80 mg/kg	2.774	221.932 mg/kg	0.0222 %		
14	TPH (C6 to C40) petroleum group			TPH		<10 mg/kg		<10 mg/kg	<0.001 %		<LOD
15	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD

#		Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
16		benzene	601-020-00-8	200-753-7	71-43-2		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
17		toluene	601-021-00-3	203-625-9	108-88-3		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
18	●	ethylbenzene	601-023-00-4	202-849-4	100-41-4		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
19		xylene	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
20		cyanides { ● salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				<0.5	mg/kg	1.884	<0.942	mg/kg	<0.0000942 %		<LOD
21		naphthalene	601-052-00-2	202-049-5	91-20-3		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
22	●	acenaphthylene		205-917-1	208-96-8		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
23	●	acenaphthene		201-469-6	83-32-9		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
24	●	fluorene		201-695-5	86-73-7		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
25	●	phenanthrene		201-581-5	85-01-8		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
26	●	anthracene		204-371-1	120-12-7		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
27	●	fluoranthene		205-912-4	206-44-0		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
28	●	pyrene		204-927-3	129-00-0		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
29		benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
30		chrysene	601-048-00-0	205-923-4	218-01-9		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
31		benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
32		benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
33		benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
34	●	indeno[123-cd]pyrene		205-893-2	193-39-5		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
35		dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
36	●	benzo[ghi]perylene		205-883-8	191-24-2		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
37		phenol	604-001-00-2	203-632-7	108-95-2		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
38	●	polychlorobiphenyls; PCB	602-039-00-4	215-648-1	1336-36-3		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
											Total:	0.0446 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: TP14

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:		LoW Code:	
TP14		Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:			
0.25-0.9 m		Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)
Moisture content:			
18% (no correction)			

Hazard properties

None identified

Determinands

Moisture content: 18% No Moisture Correction applied (MC)

#	Determinand / EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1	antimony { antimony trioxide } 051-005-00-X	215-175-0	1309-64-4		<2	mg/kg	1.197	<2.394	mg/kg	<0.000239 %		**<LOD**
2	arsenic { arsenic trioxide } 033-003-00-0	215-481-4	1327-53-3		10	mg/kg	1.32	13.203	mg/kg	0.00132 %		
3	boron { diboron trioxide } 005-008-00-8	215-125-8	1303-86-2		<0.4	mg/kg	3.22	<1.288	mg/kg	<0.000129 %		**<LOD**
4	cadmium { cadmium oxide } 048-002-00-0	215-146-2	1306-19-0		1.3	mg/kg	1.142	1.485	mg/kg	0.000149 %		
5	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }	215-160-9	1308-38-9		21	mg/kg	1.462	30.693	mg/kg	0.00307 %		
6	chromium in chromium(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex } 024-017-00-8				<0.5	mg/kg	2.27	<1.135	mg/kg	<0.000113 %		**<LOD**
7	copper { dicopper oxide; copper (I) oxide } 029-002-00-X	215-270-7	1317-39-1		22	mg/kg	1.126	24.77	mg/kg	0.00248 %		
8	lead { lead chromate } 082-004-00-2	231-846-0	7758-97-6	1	27	mg/kg	1.56	42.115	mg/kg	0.0027 %		
9	mercury { mercury dichloride } 080-010-00-X	231-299-8	7487-94-7		0.07	mg/kg	1.353	0.0947	mg/kg	0.00000947 %		
10	molybdenum { molybdenum(VI) oxide } 042-001-00-9	215-204-7	1313-27-5		2	mg/kg	1.5	3	mg/kg	0.0003 %		
11	nickel { nickel chromate } 028-035-00-7	238-766-5	14721-18-7		35	mg/kg	2.976	104.169	mg/kg	0.0104 %		
12	selenium { nickel selenate } 028-031-00-5	239-125-2	15060-62-5		0.96	mg/kg	2.554	2.452	mg/kg	0.000245 %		
13	zinc { zinc chromate } 024-007-00-3	236-878-9	13530-65-9		76	mg/kg	2.774	210.835	mg/kg	0.0211 %		
14	TPH (C6 to C40) petroleum group		TPH		<10	mg/kg		<10	mg/kg	<0.001 %		**<LOD**
15	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane 603-181-00-X	216-653-1	1634-04-4		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		**<LOD**

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
16	benzene	601-020-00-8	200-753-7	71-43-2		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
17	toluene	601-021-00-3	203-625-9	108-88-3		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
18	ethylbenzene	601-023-00-4	202-849-4	100-41-4		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
19	xylene	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
20	cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				<0.5 mg/kg	1.884	<0.942 mg/kg	<0.0000942 %		<LOD
21	naphthalene	601-052-00-2	202-049-5	91-20-3		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
22	acenaphthylene		205-917-1	208-96-8		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
23	acenaphthene		201-469-6	83-32-9		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
24	fluorene		201-695-5	86-73-7		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
25	phenanthrene		201-581-5	85-01-8		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
26	anthracene		204-371-1	120-12-7		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
27	fluoranthene		205-912-4	206-44-0		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
28	pyrene		204-927-3	129-00-0		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
29	benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
30	chrysene	601-048-00-0	205-923-4	218-01-9		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
31	benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
32	benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
33	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
34	indeno[123-cd]pyrene		205-893-2	193-39-5		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
35	dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
36	benzo[ghi]perylene		205-883-8	191-24-2		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
37	phenol	604-001-00-2	203-632-7	108-95-2		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
38	polychlorobiphenyls; PCB	602-039-00-4	215-648-1	1336-36-3		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
								Total:	0.0434 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
•	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: TP14[2]

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:		LoW Code:	
TP14[2]		Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:		Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)
1.0-1.2 m			
Moisture content:			
12% (no correction)			

Hazard properties

None identified

Determinands

Moisture content: 12% No Moisture Correction applied (MC)

#	Determinand EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1	antimony { antimony trioxide } 051-005-00-X	215-175-0	1309-64-4		<2	mg/kg	1.197	<2.394	mg/kg	<0.000239 %		<LOD
2	arsenic { arsenic trioxide } 033-003-00-0	215-481-4	1327-53-3		12	mg/kg	1.32	15.844	mg/kg	0.00158 %		
3	boron { diboron trioxide } 005-008-00-8	215-125-8	1303-86-2		<0.4	mg/kg	3.22	<1.288	mg/kg	<0.000129 %		<LOD
4	cadmium { cadmium oxide } 048-002-00-0	215-146-2	1306-19-0		1.2	mg/kg	1.142	1.371	mg/kg	0.000137 %		
5	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }	215-160-9	1308-38-9		18	mg/kg	1.462	26.308	mg/kg	0.00263 %		
6	chromium in chromium(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex } 024-017-00-8				<0.5	mg/kg	2.27	<1.135	mg/kg	<0.000113 %		<LOD
7	copper { dicopper oxide; copper (I) oxide } 029-002-00-X	215-270-7	1317-39-1		21	mg/kg	1.126	23.644	mg/kg	0.00236 %		
8	lead { lead chromate } 082-004-00-2	231-846-0	7758-97-6	1	33	mg/kg	1.56	51.474	mg/kg	0.0033 %		
9	mercury { mercury dichloride } 080-010-00-X	231-299-8	7487-94-7		0.14	mg/kg	1.353	0.189	mg/kg	0.0000189 %		
10	molybdenum { molybdenum(VI) oxide } 042-001-00-9	215-204-7	1313-27-5		2.3	mg/kg	1.5	3.45	mg/kg	0.000345 %		
11	nickel { nickel chromate } 028-035-00-7	238-766-5	14721-18-7		31	mg/kg	2.976	92.264	mg/kg	0.00923 %		
12	selenium { nickel selenate } 028-031-00-5	239-125-2	15060-62-5		0.94	mg/kg	2.554	2.401	mg/kg	0.00024 %		
13	zinc { zinc chromate } 024-007-00-3	236-878-9	13530-65-9		75	mg/kg	2.774	208.061	mg/kg	0.0208 %		
14	TPH (C6 to C40) petroleum group		TPH		<10	mg/kg		<10	mg/kg	<0.001 %		<LOD
15	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane 603-181-00-X	216-653-1	1634-04-4		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD

#		Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
16		benzene	601-020-00-8	200-753-7	71-43-2		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		**<LOD**
17		toluene	601-021-00-3	203-625-9	108-88-3		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		**<LOD**
18		ethylbenzene	601-023-00-4	202-849-4	100-41-4		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		**<LOD**
19		xylene	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		**<LOD**
20		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				<0.5	mg/kg	1.884	<0.942	mg/kg	<0.0000942 %		**<LOD**
21		naphthalene	601-052-00-2	202-049-5	91-20-3		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		**<LOD**
22		acenaphthylene		205-917-1	208-96-8		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		**<LOD**
23		acenaphthene		201-469-6	83-32-9		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		**<LOD**
24		fluorene		201-695-5	86-73-7		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		**<LOD**
25		phenanthrene		201-581-5	85-01-8		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		**<LOD**
26		anthracene		204-371-1	120-12-7		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		**<LOD**
27		fluoranthene		205-912-4	206-44-0		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		**<LOD**
28		pyrene		204-927-3	129-00-0		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		**<LOD**
29		benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		**<LOD**
30		chrysene	601-048-00-0	205-923-4	218-01-9		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		**<LOD**
31		benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		**<LOD**
32		benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		**<LOD**
33		benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		**<LOD**
34		indeno[123-cd]pyrene		205-893-2	193-39-5		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		**<LOD**
35		dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		**<LOD**
36		benzo[ghi]perylene		205-883-8	191-24-2		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		**<LOD**
37		phenol	604-001-00-2	203-632-7	108-95-2		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		**<LOD**
38		polychlorobiphenyls; PCB	602-039-00-4	215-648-1	1336-36-3		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		**<LOD**
											Total:	0.0423 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: TP15

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:		LoW Code:	
TP15		Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:			
0.2-0.7 m		Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)
Moisture content:			
17% (no correction)			

Hazard properties

None identified

Determinands

Moisture content: 17% No Moisture Correction applied (MC)

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1	antimony { antimony trioxide }	051-005-00-X	215-175-0	1309-64-4		<2	mg/kg	1.197	<2.394	mg/kg	<0.000239 %		<LOD
2	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		9.8	mg/kg	1.32	12.939	mg/kg	0.00129 %		
3	boron { diboron trioxide }	005-008-00-8	215-125-8	1303-86-2		0.48	mg/kg	3.22	1.546	mg/kg	0.000155 %		
4	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		0.95	mg/kg	1.142	1.085	mg/kg	0.000109 %		
5	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		14	mg/kg	1.462	20.462	mg/kg	0.00205 %		
6	chromium in chromium(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8				<0.5	mg/kg	2.27	<1.135	mg/kg	<0.000113 %		<LOD
7	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		22	mg/kg	1.126	24.77	mg/kg	0.00248 %		
8	lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	38	mg/kg	1.56	59.273	mg/kg	0.0038 %		
9	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		0.11	mg/kg	1.353	0.149	mg/kg	0.0000149 %		
10	molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		1.8	mg/kg	1.5	2.7	mg/kg	0.00027 %		
11	nickel { nickel chromate }	028-035-00-7	238-766-5	14721-18-7		24	mg/kg	2.976	71.43	mg/kg	0.00714 %		
12	selenium { nickel selenate }	028-031-00-5	239-125-2	15060-62-5		0.78	mg/kg	2.554	1.992	mg/kg	0.000199 %		
13	zinc { zinc chromate }	024-007-00-3	236-878-9	13530-65-9		62	mg/kg	2.774	171.997	mg/kg	0.0172 %		
14	TPH (C6 to C40) petroleum group			TPH		<10	mg/kg		<10	mg/kg	<0.001 %		<LOD
15	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD

#		Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
16		benzene	601-020-00-8	200-753-7	71-43-2		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
17		toluene	601-021-00-3	203-625-9	108-88-3		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
18		ethylbenzene	601-023-00-4	202-849-4	100-41-4		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
19		xylene	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
20		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				<0.5	mg/kg	1.884	<0.942	mg/kg	<0.0000942 %		<LOD
21		naphthalene	601-052-00-2	202-049-5	91-20-3		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
22		acenaphthylene		205-917-1	208-96-8		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
23		acenaphthene		201-469-6	83-32-9		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
24		fluorene		201-695-5	86-73-7		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
25		phenanthrene		201-581-5	85-01-8		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
26		anthracene		204-371-1	120-12-7		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
27		fluoranthene		205-912-4	206-44-0		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
28		pyrene		204-927-3	129-00-0		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
29		benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
30		chrysene	601-048-00-0	205-923-4	218-01-9		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
31		benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
32		benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
33		benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
34		indeno[123-cd]pyrene		205-893-2	193-39-5		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
35		dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
36		benzo[ghi]perylene		205-883-8	191-24-2		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		<LOD
37		phenol	604-001-00-2	203-632-7	108-95-2		0.14	mg/kg		0.14	mg/kg	0.000014 %		
38		polychlorobiphenyls; PCB	602-039-00-4	215-648-1	1336-36-3		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
											Total:	0.0362 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: TP15[2]

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:
TP15[2]
Sample Depth:
0.7-1.0 m
Moisture content:
19%
(no correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 19% No Moisture Correction applied (MC)

#	Determinand / EU CLP index number / EC Number / CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1	antimony { antimony trioxide } 051-005-00-X / 215-175-0 / 1309-64-4		<2	mg/kg	1.197	<2.394	mg/kg	<0.000239 %		<LOD
2	arsenic { arsenic trioxide } 033-003-00-0 / 215-481-4 / 1327-53-3		12	mg/kg	1.32	15.844	mg/kg	0.00158 %		
3	boron { diboron trioxide } 005-008-00-8 / 215-125-8 / 1303-86-2		0.47	mg/kg	3.22	1.513	mg/kg	0.000151 %		
4	cadmium { cadmium oxide } 048-002-00-0 / 215-146-2 / 1306-19-0		1.1	mg/kg	1.142	1.257	mg/kg	0.000126 %		
5	chromium in chromium(III) compounds { chromium(III) oxide (worst case) } 215-160-9 / 1308-38-9		19	mg/kg	1.462	27.77	mg/kg	0.00278 %		
6	chromium in chromium(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex } 024-017-00-8		<0.5	mg/kg	2.27	<1.135	mg/kg	<0.000113 %		<LOD
7	copper { dicopper oxide; copper (I) oxide } 029-002-00-X / 215-270-7 / 1317-39-1		23	mg/kg	1.126	25.895	mg/kg	0.00259 %		
8	lead { lead chromate } 082-004-00-2 / 231-846-0 / 7758-97-6	1	35	mg/kg	1.56	54.594	mg/kg	0.0035 %		
9	mercury { mercury dichloride } 080-010-00-X / 231-299-8 / 7487-94-7		0.2	mg/kg	1.353	0.271	mg/kg	0.0000271 %		
10	molybdenum { molybdenum(VI) oxide } 042-001-00-9 / 215-204-7 / 1313-27-5		2.4	mg/kg	1.5	3.6	mg/kg	0.00036 %		
11	nickel { nickel chromate } 028-035-00-7 / 238-766-5 / 14721-18-7		34	mg/kg	2.976	101.193	mg/kg	0.0101 %		
12	selenium { nickel selenate } 028-031-00-5 / 239-125-2 / 15060-62-5		0.96	mg/kg	2.554	2.452	mg/kg	0.000245 %		
13	zinc { zinc chromate } 024-007-00-3 / 236-878-9 / 13530-65-9		76	mg/kg	2.774	210.835	mg/kg	0.0211 %		
14	TPH (C6 to C40) petroleum group TPH		<10	mg/kg		<10	mg/kg	<0.001 %		<LOD
15	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane 603-181-00-X / 216-653-1 / 1634-04-4		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number									
16		benzene 601-020-00-8	200-753-7	71-43-2		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		**<LOD**
17		toluene 601-021-00-3	203-625-9	108-88-3		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		**<LOD**
18	●	ethylbenzene 601-023-00-4	202-849-4	100-41-4		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		**<LOD**
19		xylene 601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		**<LOD**
20		cyanides { ● salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex } 006-007-00-5				<0.5	mg/kg	1.884	<0.942	mg/kg	<0.0000942 %		**<LOD**
21		naphthalene 601-052-00-2	202-049-5	91-20-3		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		**<LOD**
22	●	acenaphthylene	205-917-1	208-96-8		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		**<LOD**
23	●	acenaphthene	201-469-6	83-32-9		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		**<LOD**
24	●	fluorene	201-695-5	86-73-7		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		**<LOD**
25	●	phenanthrene	201-581-5	85-01-8		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		**<LOD**
26	●	anthracene	204-371-1	120-12-7		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		**<LOD**
27	●	fluoranthene	205-912-4	206-44-0		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		**<LOD**
28	●	pyrene	204-927-3	129-00-0		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		**<LOD**
29		benzo[a]anthracene 601-033-00-9	200-280-6	56-55-3		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		**<LOD**
30		chrysene 601-048-00-0	205-923-4	218-01-9		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		**<LOD**
31		benzo[b]fluoranthene 601-034-00-4	205-911-9	205-99-2		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		**<LOD**
32		benzo[k]fluoranthene 601-036-00-5	205-916-6	207-08-9		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		**<LOD**
33		benzo[a]pyrene; benzo[def]chrysene 601-032-00-3	200-028-5	50-32-8		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		**<LOD**
34	●	indeno[123-cd]pyrene	205-893-2	193-39-5		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		**<LOD**
35		dibenz[a,h]anthracene 601-041-00-2	200-181-8	53-70-3		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		**<LOD**
36	●	benzo[ghi]perylene	205-883-8	191-24-2		<0.01	mg/kg		<0.01	mg/kg	<0.000001 %		**<LOD**
37		phenol 604-001-00-2	203-632-7	108-95-2		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		**<LOD**
38	●	polychlorobiphenyls; PCB 602-039-00-4	215-648-1	1336-36-3		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		**<LOD**
										Total:	0.044 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: TP16

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:
TP16
Sample Depth:
0.2-0.9 m
Moisture content:
17%
(no correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 17% No Moisture Correction applied (MC)

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1	antimony { antimony trioxide }	051-005-00-X	215-175-0	1309-64-4		<2	mg/kg	1.197	<2.394	mg/kg	<0.000239 %		<LOD
2	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		12	mg/kg	1.32	15.844	mg/kg	0.00158 %		
3	boron { diboron trioxide }	005-008-00-8	215-125-8	1303-86-2		0.56	mg/kg	3.22	1.803	mg/kg	0.00018 %		
4	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		1.1	mg/kg	1.142	1.257	mg/kg	0.000126 %		
5	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		17	mg/kg	1.462	24.846	mg/kg	0.00248 %		
6	chromium in chromium(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8				<0.5	mg/kg	2.27	<1.135	mg/kg	<0.000113 %		<LOD
7	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		20	mg/kg	1.126	22.518	mg/kg	0.00225 %		
8	lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	44	mg/kg	1.56	68.632	mg/kg	0.0044 %		
9	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		0.12	mg/kg	1.353	0.162	mg/kg	0.0000162 %		
10	molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		2.1	mg/kg	1.5	3.15	mg/kg	0.000315 %		
11	nickel { nickel chromate }	028-035-00-7	238-766-5	14721-18-7		30	mg/kg	2.976	89.288	mg/kg	0.00893 %		
12	selenium { nickel selenate }	028-031-00-5	239-125-2	15060-62-5		0.93	mg/kg	2.554	2.375	mg/kg	0.000238 %		
13	zinc { zinc chromate }	024-007-00-3	236-878-9	13530-65-9		70	mg/kg	2.774	194.19	mg/kg	0.0194 %		
14	TPH (C6 to C40) petroleum group			TPH		<10	mg/kg		<10	mg/kg	<0.001 %		<LOD
15	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD

#		Determinand EU CLP index number / EC Number / CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
16		benzene 601-020-00-8 / 200-753-7 / 71-43-2		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
17		toluene 601-021-00-3 / 203-625-9 / 108-88-3		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
18	●	ethylbenzene 601-023-00-4 / 202-849-4 / 100-41-4		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
19		xylene 601-022-00-9 / 202-422-2 [1], 203-396-5 [2], 203-576-3 [3], 215-535-7 [4] / 95-47-6 [1], 106-42-3 [2], 108-38-3 [3], 1330-20-7 [4]		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
20		cyanides { ● salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex } 006-007-00-5		<0.5 mg/kg	1.884	<0.942 mg/kg	<0.0000942 %		<LOD
21		naphthalene 601-052-00-2 / 202-049-5 / 91-20-3		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
22	●	acenaphthylene 205-917-1 / 208-96-8		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
23	●	acenaphthene 201-469-6 / 83-32-9		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
24	●	fluorene 201-695-5 / 86-73-7		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
25	●	phenanthrene 201-581-5 / 85-01-8		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
26	●	anthracene 204-371-1 / 120-12-7		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
27	●	fluoranthene 205-912-4 / 206-44-0		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
28	●	pyrene 204-927-3 / 129-00-0		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
29		benzo[a]anthracene 601-033-00-9 / 200-280-6 / 56-55-3		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
30		chrysene 601-048-00-0 / 205-923-4 / 218-01-9		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
31		benzo[b]fluoranthene 601-034-00-4 / 205-911-9 / 205-99-2		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
32		benzo[k]fluoranthene 601-036-00-5 / 205-916-6 / 207-08-9		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
33		benzo[a]pyrene; benzo[def]chrysene 601-032-00-3 / 200-028-5 / 50-32-8		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
34	●	indeno[123-cd]pyrene 205-893-2 / 193-39-5		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
35		dibenz[a,h]anthracene 601-041-00-2 / 200-181-8 / 53-70-3		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
36	●	benzo[ghi]perylene 205-883-8 / 191-24-2		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
37		phenol 604-001-00-2 / 203-632-7 / 108-95-2		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
38	●	polychlorobiphenyls; PCB 602-039-00-4 / 215-648-1 / 1336-36-3		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
						Total:	0.0414 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: TP16[2]

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:		LoW Code:	
TP16[2]		Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:			
0.9-1.2 m		Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)
Moisture content:			
13% (no correction)			

Hazard properties

None identified

Determinands

Moisture content: 13% No Moisture Correction applied (MC)

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1	antimony { antimony trioxide }	051-005-00-X	215-175-0	1309-64-4		<2	mg/kg	1.197	<2.394	mg/kg	<0.000239 %		<LOD
2	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		14	mg/kg	1.32	18.485	mg/kg	0.00185 %		
3	boron { diboron trioxide }	005-008-00-8	215-125-8	1303-86-2		<0.4	mg/kg	3.22	<1.288	mg/kg	<0.000129 %		<LOD
4	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		1.2	mg/kg	1.142	1.371	mg/kg	0.000137 %		
5	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		26	mg/kg	1.462	38	mg/kg	0.0038 %		
6	chromium in chromium(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8				<0.5	mg/kg	2.27	<1.135	mg/kg	<0.000113 %		<LOD
7	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		26	mg/kg	1.126	29.273	mg/kg	0.00293 %		
8	lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	54	mg/kg	1.56	84.23	mg/kg	0.0054 %		
9	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		0.13	mg/kg	1.353	0.176	mg/kg	0.0000176 %		
10	molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		2.5	mg/kg	1.5	3.75	mg/kg	0.000375 %		
11	nickel { nickel chromate }	028-035-00-7	238-766-5	14721-18-7		37	mg/kg	2.976	110.122	mg/kg	0.011 %		
12	selenium { nickel selenate }	028-031-00-5	239-125-2	15060-62-5		1.4	mg/kg	2.554	3.575	mg/kg	0.000358 %		
13	zinc { zinc chromate }	024-007-00-3	236-878-9	13530-65-9		84	mg/kg	2.774	233.028	mg/kg	0.0233 %		
14	TPH (C6 to C40) petroleum group			TPH		<10	mg/kg		<10	mg/kg	<0.001 %		<LOD
15	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD

#		Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
16		benzene	601-020-00-8	200-753-7	71-43-2		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		**<LOD**
17		toluene	601-021-00-3	203-625-9	108-88-3		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		**<LOD**
18	•	ethylbenzene	601-023-00-4	202-849-4	100-41-4		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		**<LOD**
19		xylene	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		**<LOD**
20		cyanides { • salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				<0.5 mg/kg	1.884	<0.942 mg/kg	<0.0000942 %		**<LOD**
21		naphthalene	601-052-00-2	202-049-5	91-20-3		0.072 mg/kg		0.072 mg/kg	0.0000072 %		
22	•	acenaphthylene		205-917-1	208-96-8		0.04 mg/kg		0.04 mg/kg	0.000004 %		
23	•	acenaphthene		201-469-6	83-32-9		0.062 mg/kg		0.062 mg/kg	0.0000062 %		
24	•	fluorene		201-695-5	86-73-7		0.039 mg/kg		0.039 mg/kg	0.0000039 %		
25	•	phenanthrene		201-581-5	85-01-8		0.24 mg/kg		0.24 mg/kg	0.000024 %		
26	•	anthracene		204-371-1	120-12-7		0.098 mg/kg		0.098 mg/kg	0.0000098 %		
27	•	fluoranthene		205-912-4	206-44-0		0.49 mg/kg		0.49 mg/kg	0.000049 %		
28	•	pyrene		204-927-3	129-00-0		0.46 mg/kg		0.46 mg/kg	0.000046 %		
29		benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		0.24 mg/kg		0.24 mg/kg	0.000024 %		
30		chrysene	601-048-00-0	205-923-4	218-01-9		0.26 mg/kg		0.26 mg/kg	0.000026 %		
31		benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		0.29 mg/kg		0.29 mg/kg	0.000029 %		
32		benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		0.11 mg/kg		0.11 mg/kg	0.000011 %		
33		benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		0.35 mg/kg		0.35 mg/kg	0.000035 %		
34	•	indeno[123-cd]pyrene		205-893-2	193-39-5		0.27 mg/kg		0.27 mg/kg	0.000027 %		
35		dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		0.08 mg/kg		0.08 mg/kg	0.000008 %		
36	•	benzo[ghi]perylene		205-883-8	191-24-2		0.35 mg/kg		0.35 mg/kg	0.000035 %		
37		phenol	604-001-00-2	203-632-7	108-95-2		0.26 mg/kg		0.26 mg/kg	0.000026 %		
38	•	polychlorobiphenyls; PCB	602-039-00-4	215-648-1	1336-36-3		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		**<LOD**
									Total:	0.0511 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
CLP: Note 1	Only the metal concentration has been used for classification

Appendix A: Classifier defined and non EU CLP determinands

chromium(III) oxide (worst case) (EC Number: 215-160-9, CAS Number: 1308-38-9)

Description/Comments: Data from C&L Inventory Database
Data source: https://echa.europa.eu/information-on-chemicals/cl-inventory-database/-/discli/details/33806
Data source date: 17 Jul 2015
Hazard Statements: Acute Tox. 4; H332 , Acute Tox. 4; H302 , Eye Irrit. 2; H319 , STOT SE 3; H335 , Skin Irrit. 2; H315 , Resp. Sens. 1; H334 , Skin Sens. 1; H317 , Repr. 1B; H360FD , Aquatic Acute 1; H400 , Aquatic Chronic 1; H410

TPH (C6 to C40) petroleum group (CAS Number: TPH)

Description/Comments: Hazard statements taken from WM3 1st Edition 2015; Risk phrases: WM2 3rd Edition 2013
Data source: WM3 1st Edition 2015
Data source date: 25 May 2015
Hazard Statements: Flam. Liq. 3; H226 , Asp. Tox. 1; H304 , STOT RE 2; H373 , Muta. 1B; H340 , Carc. 1B; H350 , Repr. 2; H361d , Aquatic Chronic 2; H411

ethylbenzene (EC Number: 202-849-4, CAS Number: 100-41-4)

EU CLP index number: 601-023-00-4
Description/Comments:
Additional Hazard Statement(s): Carc. 2; H351
Reason for additional Hazards Statement(s):
03 Jun 2015 - Carc. 2; H351 hazard statement sourced from: IARC Group 2B (77) 2000

salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex

EU CLP index number: 006-007-00-5
Description/Comments: Conversion factor based on a worst case compound: sodium cyanide
Additional Hazard Statement(s): EUH032 >= 0.2 %
Reason for additional Hazards Statement(s):
14 Dec 2015 - EUH032 >= 0.2 % hazard statement sourced from: WM3, Table C12.2

acenaphthylene (EC Number: 205-917-1, CAS Number: 208-96-8)

Description/Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 17 Jul 2015
Hazard Statements: Acute Tox. 4; H302 , Acute Tox. 1; H330 , Acute Tox. 1; H310 , Eye Irrit. 2; H319 , STOT SE 3; H335 , Skin Irrit. 2; H315

acenaphthene (EC Number: 201-469-6, CAS Number: 83-32-9)

Description/Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 17 Jul 2015
Hazard Statements: Eye Irrit. 2; H319 , STOT SE 3; H335 , Skin Irrit. 2; H315 , Aquatic Acute 1; H400 , Aquatic Chronic 1; H410 , Aquatic Chronic 2; H411

fluorene (EC Number: 201-695-5, CAS Number: 86-73-7)

Description/Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 06 Aug 2015
Hazard Statements: Aquatic Acute 1; H400 , Aquatic Chronic 1; H410

phenanthrene (EC Number: 201-581-5, CAS Number: 85-01-8)

Description/Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 06 Aug 2015
Hazard Statements: Acute Tox. 4; H302 , Eye Irrit. 2; H319 , STOT SE 3; H335 , Carc. 2; H351 , Skin Sens. 1; H317 , Aquatic Acute 1; H400 , Aquatic Chronic 1; H410 , Skin Irrit. 2; H315

anthracene (EC Number: 204-371-1, CAS Number: 120-12-7)

Description/Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 17 Jul 2015
Hazard Statements: Eye Irrit. 2; H319 , STOT SE 3; H335 , Skin Irrit. 2; H315 , Skin Sens. 1; H317 , Aquatic Acute 1; H400 , Aquatic Chronic 1; H410

fluoranthene (EC Number: 205-912-4, CAS Number: 206-44-0)

Description/Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 21 Aug 2015
Hazard Statements: Acute Tox. 4; H302 , Aquatic Acute 1; H400 , Aquatic Chronic 1; H410

pyrene (EC Number: 204-927-3, CAS Number: 129-00-0)

Description/Comments: Data from C&L Inventory Database; SDS Sigma Aldrich 2014
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 21 Aug 2015
Hazard Statements: Skin Irrit. 2; H315 , Eye Irrit. 2; H319 , STOT SE 3; H335 , Aquatic Acute 1; H400 , Aquatic Chronic 1; H410

indeno[123-cd]pyrene (EC Number: 205-893-2, CAS Number: 193-39-5)

Description/Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 06 Aug 2015
Hazard Statements: Carc. 2; H351

benzo[ghi]perylene (EC Number: 205-883-8, CAS Number: 191-24-2)

Description/Comments: Data from C&L Inventory Database; SDS Sigma Aldrich 28/02/2015
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 23 Jul 2015
Hazard Statements: Aquatic Acute 1; H400 , Aquatic Chronic 1; H410

polychlorobiphenyls; PCB (EC Number: 215-648-1, CAS Number: 1336-36-3)

EU CLP index number: 602-039-00-4
Description/Comments: Worst Case: IARC considers PCB Group 1; Carcinogenic to humans;

POP specific threshold from ATP1 (Regulation 756/2010/EU) to POPs Regulation (Regulation 850/2004/EC). Where applicable, the calculation method laid down in European standards EN 12766-1 and EN 12766-2 shall be applied.
Additional Hazard Statement(s): Carc. 1A; H350
Reason for additional Hazards Statement(s):
29 Sep 2015 - Carc. 1A; H350 hazard statement sourced from: IARC Group 1 (23, Sup 7, 100C) 2012

Appendix B: Rationale for selection of metal species

antimony {antimony trioxide}

Worst case CLP species based on hazard statements/molecular weight and low solubility. Industrial sources include: flame retardants in electrical apparatus, textiles and coatings (edit as required)

arsenic {arsenic trioxide}

Reasonable case CLP species based on hazard statements/molecular weight and most common (stable) oxide of arsenic. Industrial sources include: smelting; main precursor to other arsenic compounds (edit as required)

boron {diboron trioxide}

Reasonable case CLP species based on hazard statements/ molecular weight, physical form and low solubility. Industrial sources include: fluxing agent for glass/enamels; additive for fibre optics, borosilicate glass (edit as required)

cadmium {cadmium oxide}

Reasonable case CLP species based on hazard statements/molecular weight, very low solubility in water. Industrial sources include: electroplating baths, electrodes for storage batteries, catalysts, ceramic glazes, phosphors, pigments and nematocides. (edit as required) Worst case compounds in CLP: cadmium sulphate, chloride, fluoride & iodide not expected as either very soluble and/or compound's industrial usage not related to site history (edit as required)

chromium in chromium(III) compounds {chromium(III) oxide (worst case)}

Reasonable case species based on hazard statements/molecular weight. Industrial sources include: tanning, pigment in paint, inks and glass (edit as required)

chromium in chromium(VI) compounds {chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex}

Worst case species based on hazard statements/molecular weight (edit as required)

copper {dicopper oxide; copper (I) oxide}

Reasonable case CLP species based on hazard statements/molecular weight and insolubility in water. Industrial sources include: oxidised copper metal, brake pads, pigments, antifouling paints, fungicide. (edit as required) Worse case copper sulphate is very soluble and likely to have been leached away if ever present and/or not enough soluble sulphate detected. (edit as required)

lead {lead chromate}

Worst case CLP species based on hazard statements/molecular weight (edit as required)

mercury {mercury dichloride}

Worst case CLP species based on hazard statements/molecular weight (edit as required)

molybdenum {molybdenum(VI) oxide}

Worst case CLP species based on hazard statements/molecular weight (edit as required)

nickel {nickel chromate}

Worst case CLP species based on hazard statements/molecular weight (edit as required)

selenium {nickel selenate}

Worst case CLP species based on hazard statements/molecular weight (edit as required)

zinc {zinc chromate}

Worst case CLP species based on hazard statements/molecular weight (edit as required)

cyanides {salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex}

Harmonised group entry used as most reasonable case as complex cyanides and those specified elsewhere in the annex are not likely to be present in this soil: [Note conversion factor based on a worst case compound: sodium cyanide] (edit as required)

Appendix C: Version

HazWasteOnline Classification Engine: WM3 1st Edition v1.1.NI - Jan 2021
HazWasteOnline Classification Engine Version: 2023.111.5569.10274 (22 Apr 2023)
HazWasteOnline Database: 2023.111.5569.10274 (22 Apr 2023)

This classification utilises the following guidance and legislation:
WM3 v1.1.NI - Waste Classification - 1st Edition v1.1.NI - Jan 2021
CLP Regulation - Regulation 1272/2008/EC of 16 December 2008
1st ATP - Regulation 790/2009/EC of 10 August 2009
2nd ATP - Regulation 286/2011/EC of 10 March 2011
3rd ATP - Regulation 618/2012/EU of 10 July 2012
4th ATP - Regulation 487/2013/EU of 8 May 2013
Correction to 1st ATP - Regulation 758/2013/EU of 7 August 2013
5th ATP - Regulation 944/2013/EU of 2 October 2013
6th ATP - Regulation 605/2014/EU of 5 June 2014
WFD Annex III replacement - Regulation 1357/2014/EU of 18 December 2014
Revised List of Waste 2014 - Decision 2014/955/EU of 18 December 2014
7th ATP - Regulation 2015/1221/EU of 24 July 2015
8th ATP - Regulation (EU) 2016/918 of 19 May 2016
9th ATP - Regulation (EU) 2016/1179 of 19 July 2016
10th ATP - Regulation (EU) 2017/776 of 4 May 2017
HP14 amendment - Regulation (EU) 2017/997 of 8 June 2017
13th ATP - Regulation (EU) 2018/1480 of 4 October 2018
14th ATP - Regulation (EU) 2020/217 of 4 October 2019
15th ATP - Regulation (EU) 2020/1182 of 19 May 2020
The Chemicals (Health and Safety) and Genetically Modified Organisms (Contained Use)(Amendment etc.) (EU Exit) Regulations 2020 - UK: 2020 No. 1567 of 16th December 2020
The Waste and Environmental Permitting etc. (Legislative Functions and Amendment etc.) (EU Exit) Regulations 2020 - UK: 2020 No. 1540 of 16th December 2020
17th ATP - Regulation (EU) 2021/849 of 11 March 2021
18th ATP - Regulation (EU) 2022/692 of 16 February 2022

Appendix 4

Excavation Plan

O'Callaghan Moran & Associates

O'Callaghan Moran & Associates,
Unit 15 Melbourne Business Park,
Model Farm Road, Cork.
Tel. (021) 4345366

Email: info@ocallaghanmoran.com

Title:

Excavation Plan 0.0-1.0m

Client:

IGSL Limited

O'Callaghan Moran & Associates,
Unit 15 Melbourne Business Park,
Model Farm Road, Cork.
Tel. (021) 4345366
Email: info@ocallaghanmoran.com

Title:

Excavation Plan 1.0-2.0m

Client:

IGSL Limited

O'Callaghan Moran & Associates

O'Callaghan Moran & Associates,
Unit 15 Melbourne Business Park,
Model Farm Road, Cork.
Tel. (021) 4345366
Email: info@ocallaghanmoran.com

Title:

Excavation Plan 2.0-3.0m

Client:

IGSL Limited

APPENDIX 9.4

EIA SCREENING REPORT IN RESPECT OF LANDS AT DALGUISE HOUSE, MONKSTOWN ROAD, MONKSTOWN

(PREPARED BY JOHN SPAIN ASSOCIATES, 2020)

EIA SCREENING REPORT

In respect of

Lands at Dalguise House, Monkstown Road, Monkstown

Prepared by

John Spain Associates

On behalf of

Lulani Dalguise Ltd.

March 2020

JSA John Spain Associates
Planning & Development Consultants
Chartered Town Planners & Chartered Surveyors

39 Fitzwilliam Place, Dublin 2
Telephone: (01) 662 5803
E-mail info@johnspainassociates.com

1.0 INTRODUCTION

1.1 On behalf of the applicant, Lulani Dalguise Ltd., 20 Upper Mount Street, Dublin 2, we hereby submit this Environmental Impact Assessment Screening Report to assess the potential impacts on the environment of the proposed SHD residential development and associated creche at Dalguise House, Monkstown Road, Monkstown, County Dublin.

1.2 The purpose of this report is to provide An Bord Pleanala with the information required under Schedule 7A of the Planning and Development Regulations 2001, as amended, to enable the Board to determine in light of the criteria set out under Schedule 7 of these regulations whether the proposed development is likely to have significant effects on the environment, the application can be determined without an Environmental Impact Assessment Report (EIAR) having being submitted.

1.3 The development will consist of a residential development on the lands at Dalguise House (Protected Structure RPS No. 870). The proposed development will comprise of 300 dwelling units, including the conversion of 'Dalguise House' into two dwellings and a creche, 8 new apartment blocks of 276 units, ranging in height from 5 to 9 storeys and 22 houses, (including the conversion of stable yard and refurbishment of an existing gate lodge), within a site area of circa 3.66 hectares, with a gross floor area of 30,587 sqm. The proposal includes:

- the demolition of an existing modern dwelling, known as the White Lodge, located on the entrance avenue;

- the demolition of a modern swimming pool structure adjoining the East wing of Dalguise House and the removal of a non-original, residential garage structure adjoining the walled garden to the South-West of Dalguise House and the removal of a number of structures to the South of the Walled Garden and creation of new openings in the wall;

- the conversion of Dalguise House to 2 no. houses and a crèche (195sqm) in the basement;

- the demolition of some structures and conversion of other existing structures within the Stable Yard to the South-West of the site to 1 no. 3-bed house and a garden pavilion;

- the refurbishment of the existing single storey brick gate lodge for use as a single dwelling; the change of use of the existing two storey gate lodge on Monkstown Road to a Concierge / Site Manager's office;

- 276 apartments in a mix of 1, 2 and 3-bed units arranged in 8 no. blocks around a series of landscaped communal amenity spaces;

- Block A will be 7 storeys (6 storeys over podium) and consists of 23 no. 1 bed units and a communal room;

- Block B will be 8 storeys (7 storeys over podium) and consist of 13 no. 1 bed units,17 no. 2-beds and 2 no. 3 beds;

- Block C will be 8 storeys (7 storeys over podium) and consist of 13 no. 1 bed units, 17 no. 2-beds and 2 no. 3 beds;

- Block D will be 7 storeys (6 storeys over podium) and consist of 4 no. 1 bed units, 19 no. 2-beds and 3 no. 3 beds;

- Block E will be 9 storeys (8 storeys over podium) and consist of 11 no. 1 bed units, 19 no. 2-bed units and 2 no. 3-bed units with communal facilities located at podium level including residents' Leisure Suite, Residents Business Centre and Multi-function Room;

- Block F will be 6 storeys and consist of 20 no. 1 beds, 27 no. 2-beds and 4 no. 3 bed units;

- Block G will be 6 storeys and consist of 16 no. 1-bed units, 24 no. 2-bed units and 4 no. 3 bed units;

- Block H will be 5 storeys and consist of 5 no. 1-bed units, 27 no. 2-bed units and 4 no. 3-bed units:

- All apartments will have balconies or terraces, and the balconies or terraces are on all elevations;

- 20 no. terrace/semi-detached houses (3 no. 3-bed houses located to the North- West of the site and 9 no. 3-bed houses and 8 no. 4-bed houses located to the South and South-West of the site);

- the relocation and refurbishment of an existing glasshouse/vinery within the site and the removal of an existing greenhouse off site;

- a total of circa. 314 no. car parking spaces (244 no. car parking spaces located in basement & under croft locations, with 70 no. surface parking spaces) and 14 no. motorcycle spaces;

- a total of circa 654 no. bicycle parking spaces (502 residential spaces and 146 visitors' spaces);

- amendments to car parking arrangements granted under Reg. Ref.: D16A/0724, ABP Ref: 248219;

- associated site works including 2 no. ESB substations, plant areas & communal refuse storage facilities.

Vehicular and pedestrian access and egress is facilitated at two points on the Monkstown Road, through the existing Dalguise entrance and Purbeck Lodge, where a new bridge crossing will be provided over the Stradbrook stream. Future pedestrian accesses are also indicated at boundaries with Arundel, Richmond Park, and the former Cheshire Home site, subject to agreement. The proposed development includes all ancillary site works.

1.4 The subject lands are comprised of the lands of Dalguise House, which is a protected structure (RPS No. 870). The site, extending to circa 3.66 hectares, is accessed from Monkstown Road. A second access is proposed via the internal access road serving the residential development of Purbeck Lodge, which adjoins the site to the north east. The development at Purbeck Lodge (DRLCC Reg. Ref.: D16A/0724) is in the control of the applicant and the access route is included in the proposals as a wayleave. The proposals include a slight reconfiguration of the surface car parking arrangement at Purbeck Lodge to allow access to the subject lands.

1.5 From Monkstown Road, the site falls to the Stradbrook Stream which forms the northern edge of the main body of the site and then rises to a high point where Dalguise House is located (circa 12 metre difference). It then falls to the south. The site is surrounded by two storey, residential housing estates.

1.6 . Purbeck is a recently developed site consisting of Purbeck Lodge and seven other residential units. It is noted that planning permission was granted by An Bord Pleanála on 7th January 2019 under DRLCC Ref: D17A/0590 (ABP Ref: 301203) for a residential development comprising 56 units over 2 no. blocks extending to 4-storeys, at Cheshire Home, Richmond Park, which adjoins the site to the east. There is currently an appeal before An Bord Pleanála ABP 305843-19 on the same site for a proposed four storey development of 72 units. Should this be permitted, the combined number of units would be 372 units plus the existing 8 units at Purbeck.

2.0 EIA SCREENING METHODOLOGY

Legislation & Guidance

2.1 This EIA Screening exercise has been carried out in accordance with the following legislation and guidance documents:

- Planning and Development Act 2000 (as amended);
- European Union (Planning & Development) (Environmental Impact Assessment) Regulations 2018;
- Planning and Development Regulations 2001 (as amended);
- Planning and Development (Housing) and Residential Tenancies Act 2016;
- Directive 2011/92/EU as amended by Directive 2014/52/EU;
- Environmental Impact Assessment of Projects – Guidance on Screening (EU Commission, 2017)
- Transposition of 2014 EIA Directive (2014/52/EU) in the Land Use Planning and EPA Licensing Systems – Key Issues Consultation Paper (2017:DoHPCLG)
- Guidelines on the information to be contained in Environmental Impact Assessment Reports (draft) (EPA 2017);
- Environmental Impact Assessment – Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment (2018; DoECLG);
- Preparation of guidance documents for the implementation of EIA directive (Directive 2011/92/EU as amended by 2014/52/EU) – Annex I to the Final Report (COWI, Milieu; April 2017);
- Guidance for Consent Authorities regarding Sub-threshold Development (2003; DoEHLG).

2.2 Using the above documentation it has been possible to carry out a desktop EIAR Screening using the best available guidance while operating within the applicable legislation. It is noted that Directive 2014/52/EU has been transposed into Irish Legislation through the Planning & Development (Amended) Act and Planning and Development Regulations 2001, as amended. The methodology employed in this screening exercise is in accordance with the EIA Guidelines published in August 2018 by the DoHPLG and the contents of Schedule 7 and 7A of the Planning and Development Regulations 2001, as amended.

2.3 Mitigation measures for the proposed development during the construction phase are set out in various reports including, the Site Specific Outline Construction Management Plan (CMP), in the Construction and Operational Waste Management Plan by Benchmark, the Ecological Impact Assessment Report by Openfield, the Bat Impact Assessment Report by Wildlife Surveys and Arborist Impact Assessment Report by the Treefile. A list of the main mitigation measures is contained in Appendix 2.

2.4 In the event that the screening determination carried out by the Board reaches the conclusion that the proposed development is not likely to have significant effects on the environment, the Board's attention is specifically drawn to the requirement that the Board's screening determination must comply with the requirements of Article 299C(2) of the Planning and Development Regulations, as amended, which provides:

> *"(2) (a) Paragraph (b) applies where the screening determination is that the proposed development would not be likely to have significant effects on the environment and the applicant has provided, under article 299B(1)(c), a*

description of the features, if any, of the proposed development and the measures, if any, envisaged to avoid or prevent what might otherwise have been significant adverse effects on the environment of the development.

(b) The Board shall specify such features, if any, and such measures[1], if any, in the screening determination."

2.5 This EIA Screening Statement and the proposed development has been informed by accompanying application documents including the following:

- Site Specific Outline Construction Management Plan prepared by Benchmark Property;
- Construction and Operational Waste Management Plan prepared by Benchmark
- Engineering Services Report & Drawings prepared by Benchmark Property
- Site Specific Flood Risk Assessment by McCloy Consulting;
- Property;
- Site Investigation Report prepared by Benchmark Property;
- Transport Impact Assessment prepared by TPS Consulting;
- AA Screening and Ecological Impact Statement by Openfield Ecological Services;
- Hydrological and Hydrogeological Quantitative Risk Assessment by AWN
- Bat Impact Assessment by Wildlife Surveys;
- Arborist Impact Assessment by the Treefile;
- Landscape Design Rational by Dermot Foley Landscape Architects
- Visual Impact Assessment, Architectural Impact Assessment and Sunlight and Daylight Analysis by Arc Architectural Consulting Ltd.

EIA Study Team and Guarantee of Competency and Independence

2.6 This *Environment Impact Assessment Screening Statement* was completed by John Spain Associates (JSA) with the assistance of a project team led by JSA. The project team are:

Topic	**Consultancy**
Population and Human Health	JSA and others
Biodiversity	Openfield Ecological Services Wildlife Surveys The Treefile Dermot Foley Landscape Architects
Lands and soils	Benchmark Property Services Ground Investigations Ireland
Water	Benchmark Property Services AWN Consulting McCloy Consulting
Air and Climate, Microclimate	Benchmark Property Services Arc Architecture Consulting
Landscape	Arc Architecture Consulting Dermot Foley Landscape Architects
Material Assets	Benchmark Property Services TPS Consulting JSA

[1] Commonly referred to as mitigation measures.

Archaeology, Architecture and Cultural Heritage	Archaeology and Built Heritage Arc Architecture Consulting
Vulnerability of the Project	McCloy Consulting Benchmark Property Services TPS, Roadplan
Interactions	JSA

2.7 This EIAR Screening Statement has been prepared by Mary Mac Mahon, Executive Director with John Spain Associates, and approved by John Spain, Managing Director. Mary Mac Mahon is a qualified town planner since 1992, with qualifications including a Pg. Dip. in EIA/SEA Mgt. (UCD, 201), Postgraduate Diploma in Environmental Engineering (TCD 2013) and Diploma Environmental and Planning Law (LSI 2014). She was previously a board member of An Bord Pleanála. John Spain (BBS, MRUP, MSCS, MRTPI, MIPI) has 30 years' experience of planning and development consultancy in Ireland and the UK.

2.8 Both are experienced in the preparation of screening reports and EIARs in the context of large scale SID and SHD projects.

EIA Thresholds

2.9 Schedule 5 of the Planning and Development Regulations 2001 (as amended) sets out the thresholds for which if a project exceeds, must be subject to an Environmental Impact Assessment.

2.10 Part 2 of Schedule 5 lists the following that may be relevant to the proposal:

10. Infrastructure projects –

(b) (i) ***Construction of more than 500 dwelling units****;*

(iv) ***Urban development which would involve an area greater than*** *2 hectares in the case of a business district, 1****0 hectares in the case of other parts of a built-up area*** *and 20 hectares elsewhere;*

(In this paragraph, 'business district' means a district within a city or town in which the predominant land use is retail or commercial use).'

15. Any project listed in this Part which does not exceed a quantity, area or other limit specified in this Part in respect of the relevant class of development but which would be likely to have significant effects on the environment, having regard to the criteria set out in Schedule 7.'

2.11 The proposal relates to the provision of 300 no. residential units. The proposed development is therefore below the threshold of a mandatory EIAR requirement relative to unit numbers. Taking account of Purbeck (8 no. units) the permitted development east of the site at the former Richmond Cheshire Home site of 56 units, the combined total of 364 units remains well below the 500 unit threshold. If permission is granted for the proposed 72 units at the former Richmond Cheshire Home site, the combined total is 380 residential units instead. Again, this remains well below the 500 unit threshold, which is of particular relevance in the context of cumulative impact.

2.12 The application site area is circa 3.72 hectares which is significantly below the threshold for an urban context of 10ha.

2.13 The application is accompanied by the series of reports in Paragraph 2.5. These reports consider the perceived environmental impact of the proposed 300 no. unit development.

2.14 Section No. 15, above, relates to projects likely to have significant effects on the environment having regard to Schedule 7. The following section and basis of this screening is to screen for the requirement of EIAR on a sub-threshold project as the proposal does not exceed any other threshold in Schedule 5.

Sub Threshold Projects Requiring an Environmental Impact Assessment Report

2.15 An Environmental Impact Assessment Report (EIAR) is required to accompany an application for permission for strategic housing development of a class set out in Schedule 5 of the Planning and Development Regulations 2001 (as amended) which equals or exceeds, as the case may be, a limit, quantity or threshold set for that class of development. As seen above, the relevant thresholds have not been exceeded in the present case.

2.16 An EIAR will be required in respect of sub-threshold strategic housing development where the Board considers that the proposed development would be likely to have significant effects on the environment[2].

2.17 Sub-threshold development means '*development of a type set out in Part 2 of Schedule 5 [*in the Planning and Development Regulations, 2001 (as amended)] *which does not equal or exceed, as the case may be, a quantity, area or other limit specified in that Schedule in respect of the relevant class of development'.*

2.18 Schedule 7A of the Planning and Development Regulations 2001 (as amended) requires the information to be provided by the applicant or developer for the purposes of screening sub-threshold development for environmental impact assessment, as set out below;

1. A description of the proposed development, including in particular—

(a) a description of the physical characteristics of the whole proposed development and, where relevant, of demolition works, and
(b) a description of the location of the proposed development, with particular regard to the environmental sensitivity of geographical areas likely to be affected.

2. A description of the aspects of the environment likely to be significantly affected by the proposed development.

3. A description of any likely significant effects, to the extent of the information available on such effects, of the proposed development on the environment resulting from—
(a) the expected residues and emissions and the production of waste, where relevant, and
(b) the use of natural resources, in particular soil, land, water and biodiversity.

4. The compilation of the information at paragraphs 1 to 3 shall take into account, where relevant, the criteria set out in Schedule 7.

2.19 Schedule 7A (4) refers to Schedule 7 which provides a list of criteria for determining whether development listed in part 2 of schedule 5 should be subject to an environmental impact assessment.

2.20 The criteria under Schedule 7 is grouped under three broad headings:

- Characteristics of proposed development;
- Location of proposed development; and
- Types and characteristics of potential impacts.

2.21 Section 3 below provides the information required by Schedule 7A for the purposes of screening sub-threshold development for environmental impact assessment and takes into account, where relevant, the criteria outlined in Schedule 7.

2.22 The information to be provided by the applicant or developer for the purposes of screening sub-threshold development for environmental impact assessment is set out under Schedule 7A of the *Planning and Development Regulations* 2001, as amended (in particular by the 2018 *European Union (Planning and Development) (Environment Impact Assessment) Regulations for present purposes)*. Paragraph 4 of Schedule 7A

[2] See S172 (1)(b) of the Planning and Development Act, 2000, as amended.

requires that: `*The compilation of the information at paragraphs 1 to 3 shall take into account, where relevant, the criteria set out in Schedule 7*.'

3.0 EIA SCREENING STATEMENT

3.1 The following sections provide the information as required by Schedule 7A for the purposed of screening sub-threshold development for environmental impact assessment.

Site Description

3.2 The subject site is located in the Monkstown area of south county Dublin and falls within the administrative area of Dun Laoghaire Rathdown County Council. The greenfield site extends to circa 3.72 ha and forms part of the wider curtilage of Dalguise House, a protected structure which is located approximately 80 metres south of the boundary of the subject site. The site is currently accessed via a driveway from an existing point of entry from the R119 Monkstown Road. The site adjoins the new development at Purbeck Lodge on Monkstown Road, which will provide a new road access to the site. Residential development is the predominant land use in the surrounding area.

3.3 The site comprises Dalguise House, 2 gate lodges and a dwelling house, walled garden and associated buildings and garden lands, extends to approximately 3.72 hectares and is in the control of the applicant. There is significant tree coverage and the site benefits from visual screening from the surrounding area.

3.4 The site is highly accessible (from a public transport perspective) and lies within 400m of Salthill & Monkstown Train Station, 200m from Monkstown village and 1.5km west of Dun Laoghaire town centre. Blackrock is located approximately 1.5km to the west. Bus stops on Monkstown Road are located within 200 metres of the site, served by routes 7, 7a, 7d and 703, providing links to Brides Glen and Loughlinstown Park to the south, as well as Mountjoy Square, and Dublin airport to the north.

3.5 The site also benefits from nearby recreational facilities including seafront parks, walkways and cycleways and Seapoint sea bathing facility as well as playing fields at Blackrock RFC to the south west and DLR Leisure Services at Monkstown located approximately 500 metres to the south. The site location is marked in red in Figure 1.

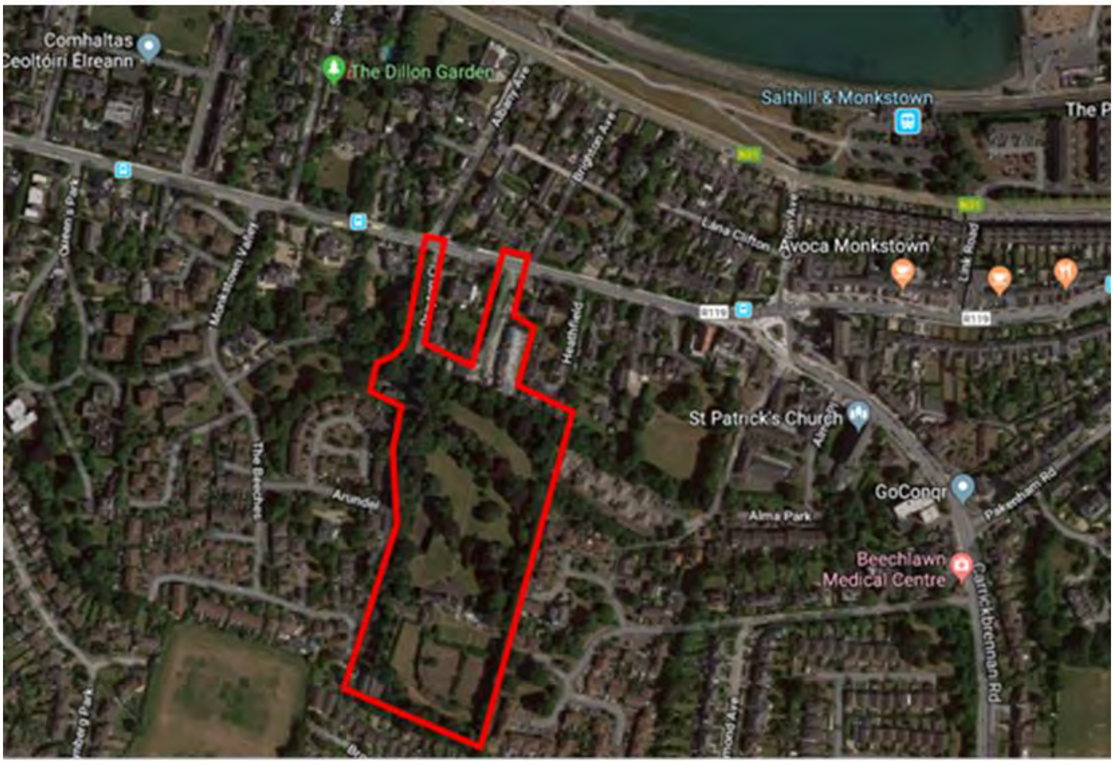

Figure 1: Aerial photograph of application site outlined in red and surrounding area (Google Maps)

Figure 2: Section through site (HR Architect's Design Statement)

3.6 The subject lands are greenfield in nature and currently occupied by woodland tree belts which define the perimeters of the main body of the site. The site branches to the north, incorporating a strip of land within the Purbeck Lodge development (D16A/0724). This has been included for access purposes to link to the R119 Monkstown Road and is included as wayleave within the proposals.

Description of Proposed Development

3.7 The purpose of the description of development provided here is to relate the proposed development to the baseline conditions present on site. The proposed development will comprise of 300 no. residential units and a creche. It includes the demolition of one dwelling and conversion of Dalguise House into two residential units with the creche located in the basement. There will be some demolition, including the swimming pool annex and garage structures (921 tonnes of material in total). A number of small sheds located on the southern side of the walled gardens will also be removed. The gate lodge at the entrance to the site will be converted to a concierge / site manager's office and the structures in the stable yard will be converted to a dwelling. A vinery will be relocated within the walled garden.

3.8 In terms of new build, 276 apartments will be provided in 8 blocks, largely concentrated in the northern half of the site, with one block located behind Dalguise House. Twenty dwellings are located on the southern part of the site. Most of these dwellings back onto existing dwellings.

3.9 Access to the site will be by two entrances. The existing entrance to Dalguise House will provide for an ingress access only. Egress will be taken through the residential development at Purbeck Lodge. Purbeck Lodge will remain two way but only residents of Blocks A, B and C can use this access for entrance. A one way connection will link to the main Dalguise Avenue. This will enable a point of entry to the site from Monkstown Road to the north, with a bridge proposed across the Stradbrook Stream, which divides the main body of the site from the development at Purbeck Lodge. A minor reconfiguration of the car parking layout at Purbeck Lodge is included within proposals in order to provide access to the site.

3.10 The proposed development was heavily influenced by the desire to preserve original site feature and maximise tree retention. The natural topography is used to conceal basement and under-croft car parking while minimising excavation works. The site is divided into three character areas. The first is around the Stradbrook Stream. The second area is to the front of Dalguise House and the third area includes the house and lands to the south.

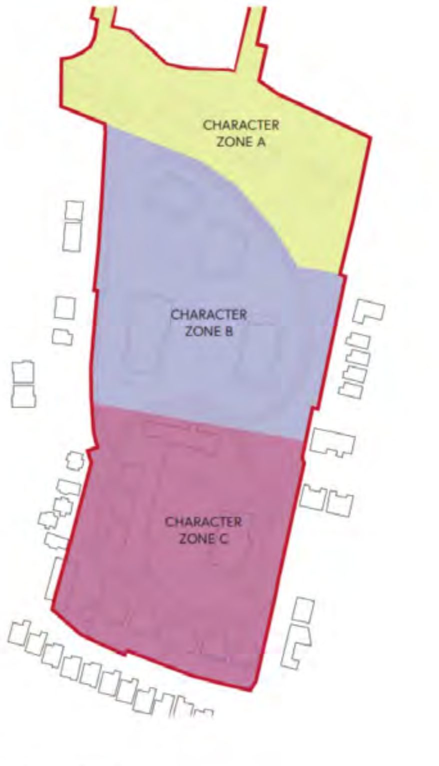

Diagram showing character zones

Figure 3: Character Areas Source:**HR Architect's Design Statement**

3.11 The Stradbrook Stream area (Character Area Zone 1) consists of three blocks of 87 units. Two of the blocks are seven storeys and one is 8 storeys. The height includes podium parking at base. There is visitor parking opposite the blocks and a potential connection to the adjoining site (Cheshire Homes, which has a permission to redevelop the existing nursing home to 56 no. residential units under D17A/0590). A new bridge will traverse the Stradbrook Stream. The access and apartment blocks are outside the flood zone associated with the stream. Block A will provide for social housing specifically designed for older people under as required under section 96 of the Planning & Development Act 2000, as amended.

3.12 The main body of the site, south of Purbeck Lodge, Character Area Zone B, is currently bounded by a line of trees. It is proposed to retain a significant number of trees within the site, as well as removing a number of trees including a significant number of poor quality trees to facilitate the proposals. The proposed development will incorporate substantial compensatory planting to help consolidate and provide continuity with the existing character of the site, with an overall net gain of trees on site.

3.13 The second character area contains Blocks D, E, F and G. Blocks D and E are on podium (7 and 9 storeys, respectively). Blocks F and G, are located closer to Dalguise House and are lower (6 storeys over basement).

3.14 The third character area contains Dalguise House and creche, Block H (5 storeys) and the remainder of the housing (Character Zone C).

3.15 Public and communal open space will be provided through the scheme. A woodland walk, formal open space and the walled garden will provide for different experiences. Site coverage is 19%, While there will be some tree removal, replacement planting will be provided so the current 364 trees on site will increase to 405 trees.

3.16 Connections to the wider area can be made, subject to agreement with adjoining landowners. These are indicated on the Site Plan accompanying this application.

3.17 This application is accompanied by detailed drawings and a design statement, prepared by Horan Rainsford Architects, which provides a rationale for the design of the proposed scheme and the dwelling types proposed. The proposed residential apartment units are considered to be of a high quality contemporary design, with an appropriate palette of materials for this location, which will ensure that the scheme makes a positive contribution to the area.

3.18 For further detail on the design rationale, please refer to the architectural drawings, design statement and the landscape drawings which accompany this application.

4.0 EIA SCREENING STATEMENT

Introduction

4.1 The following sections provide the information as required by Schedule 7A for the purposes of screening sub-threshold development for environmental impact assessment.

(A) A description of the proposed development, including in particular:

(a) a description of the physical characteristics of the whole proposed development and, where relevant, of demolition works, and

(b) a description of the location of the proposed development, with particular regard to the environmental sensitivity of geographical areas likely to be affected.

Physical Characteristics of the Proposed Development

4.2 A full description of the proposed development is provided at Paragraph 1.5 above. The proposed development will comprise of 300 no. residential units across 7 apartment blocks and dwelling units, 314 no. car parking spaces, 14 no. Motor bike spaces and 652 no. bicycle parking spaces. The height varies from single storey to 9 storeys. The gross floor area is 30,681 sqm. The site coverage is 19%, plot ratio is 1:0.83 and density is circa 81 units per hectare. This is not a large-scale project or overly dense in an urban context. The proposed development involves the demolition of an existing dwelling, swimming pool annex and garden structures (649 square metres).

4.3 The proposed development is compatible with its surrounding land uses and compliant with the site's zoning Objective A within the *Dun Laoghaire Rathdown Development Plan 2016-2022*, which seeks to protect and improve residential amenity.

4.4 In zoning the land for residential use under the *Dun Laoghaire Rathdown County Development Plan 2016 - 2022*, the Planning Authority have assessed the nature of the site to ascertain its capacity to accommodate residential development and merit a zoning as designated. A Strategic Environmental Assessment (SEA) was carried out in relation to the Development Plan. The zoning was unchanged following the SEA review.

4.5 Water supply and wastewater will be provided via the public mains network. Water supply will be via a new Irish Watermain 160 dia. MDPE Irish Water pipe in Monkstown Road. This will be connected through an existing 150 dia MDPE in Purbeck Lodge which will be extended through the site. The disposal of foul water from the site is separated from that of surface water and the required connection point has been approved by Irish Water and DLRCC. This comprises connecting to the existing sewer system implemented as part of the Purbeck Lodge development which adjoins the site to the north.

Demolition and Excavation

4.6 There is limited demolition involved (649 square metres). The volume of excavation is of the order of 31,620 cubic metres for the purposes of building a basement. This will give rise to circa 55,661.45 tonnes of waste from the site.

Use of natural resources

4.7 A Site Investigation Report has been undertaken by Ground Investigations Ireland. Laboratory Testing has been carried out on samples of the ground/soil on the site and the results have found that the soil material is above the inert limits as outlined within the European Council Directive 1999 131/EC Article 16 Annex II.

4.8 An estimation of the soil to be removed from the site has been calculated in the Construction and Operational Waste Management Plan prepared by Benchmark. Some 55,572 tonnes of Stones and Soil will be removed from the site to a licenced disposal site.

4.9 The proposed development will require 161,274 litres of drinking water per day. The source of the potable water is Poulaphouca reservoir.

Pollution and Nuisances

4.10 The risk of pollution has been considered in Section 4 of the Site Specific Outline Construction Management Plan, the Hydrological and Hydrogeological Quantitative Riak Assessment and the AA Screening Report. The Stradbrook Stream is located to the north of the site and this will be protected during construction, by double silt fences and other measures.

4.11 For further detail on the physical characteristics of the proposed development please refer to the architectural drawings, design statement and the landscape drawings which accompany this planning application. Figure 4, below, notes the proposed layout of the scheme. Please see the Proposed Site Layout Plan for details.

Figure 4 – Proposed Site layout plan

<u>Location of Proposed Development</u>

4.12 The site is located in the Monkstown area of south county Dublin and falls within the administrative area of Dun Laoghaire Rathdown County Council. The greenfield site extends to circa 3.72 ha and forms part of the wider curtilage of Dalguise House, a protected structure which is located approximately 80 metres south of the red boundary of the subject site. The site is currently accessed via a narrow laneway from an existing point of entry from the R119 Monkstown Road. The site is bounded by a series of walls and fences, with a tree line behind the boundary. These trees are of various quality and include Leyland cyprus trees. Residential development is the predominant land use in the surrounding area.

4.13 The site is highly accessible (from a public transport perspective) and lies within of 400m of Salthill & Monkstown Train Station, 200m from Monkstown village and 1.5km west of Dun Laoghaire town centre. Blackrock is located approximately 1.5km to the west. Bus stops on Monkstown Road are located within 200 metres of the site, served by routes 7, 7a, 7d and 703, providing links to Brides Glen and Loughlinstown Park to the south, as well as Mountjoy Square, and Dublin airport to the north.

4.14 The main body of the site, south of Purbeck Lodge, is currently bounded by a line of trees. The site branches to the north, incorporating a strip of land within the Purbeck Lodge to gain access to the R119 Monkstown Road.

4.15 The site falls in elevation moving south from Monkstown Road, with the Stradbrook Stream marking the northern boundary of the main body of the site, south of the Purbeck Lodge development which is close to completion. The elevation of the site then rises from the temporary hollow associated with the body of water, moving south towards Dalguise House.

4.16 The proposed development is in a suburban environment on land zoned for residential development. In this regard the proposed residential accommodation use is considered wholly appropriate with adjoining residential land use.

4.17 There is an objective on the site to protect trees and woodlands. This objective has been carefully considered during design stage, to minimise impacts on trees and make certain trees a feature on the site. There are 364 no. trees on site at present. Of these, 174 no. trees will be retained and 246 no. new trees will be planted. A significant proportion of trees are 51 no. are Category ‘U’ trees, suitable for removal. One hundred and thirty-nine trees will be removed for the proposed development.

4.18 The site contains a Protected Structure, Dalguise House. The house is situated at the summit of the site. The layout of the proposed development has been designed to ensure that the protected structure is not adversely affected by the proposed development. Part of the access road to the site is located in the Monkstown Architectural Conservation Area. Please see the Architectural Heritage Impact Assessment and Visual Impact Assessment for further details.

Biodiversity

4.19 An Ecological Impact Assessment and Bat Impact Assessment Report have been prepared to accompany this application. There are no habitats present on the site that are listed under Annex 1 of the Habitats Directive. However, bats are using the site for foraging and mating purposes. The site was surveyed for winter bird use and none were recorded.

4.20 The site is not located within or directly adjacent to any Natura 2000 areas. There are two Natura areas within a 2km radius of the site: the main body of the site is approximately 350m from the boundary of the South Dublin Bay and River Tolka Estuary (site code: 4024) and the South Dublin Bay SAC (site code: 0210). The Poulaphouca Reservoir SPA, from which drinking water supply for this development will originate, is also considered to fall within the zone of influence of this project, as drinking water is abstracted from this source.

4.21 As noted within the accompanying reports prepared Openfield Ecological Consultants, while the site is within 350m of the SPA/SAC of Dublin Bay and River Tolka Estuary, there is intervening residential development and the DART line. There is a direct pathway from the site by way of the Stradbrook Stream. There are indirect pathways to Natura 2000 sites in the Dublin Bay via foul and surface water sewers.

4.22 These potential impacts are addressed further below where reference is also made to the Hydrological and Hydrogeological Quantitative Risk Assessment prepared by AWN and to the AA Screening report prepared by Openfield, both of which reports accompany this application.

4.23 The proposed development will utilise two existing road accesses. The original entrance to Dalguise House will become a one way entrance and the access at Purbeck Lodge will operate as the main egress from the site. Purbeck Lodge will remain two way to facilitate access to the existing dwellings and Blocks B and C.

4.24 In terms of the '*relative abundance, quality and regenerative capacity of natural resources in the area*', the proposed development will not, individually or in combination with other projects, significantly impact on the integrity of the natural resources in the area, having regard to the nature and extent of the proposed development and the character of the receiving environment and the surrounding area. The area in the immediate vicinity of the proposed development has absorption capacity in terms of any environmental effects of the proposed scheme.

(B) A description of the aspects of the environment likely to be significantly affected by the proposed development.

4.25 This section is intended to provide a clear statement on the aspects of the environment that are likely to be affected by the proposed development. The likely significant impacts of the proposed development on the aspects of the environment will be addressed later in this report.

Population & Human Health

4.26 European Commission guidance relating to the implementation of the 2014 Directive, in reference to Human Health, states, '*Human health is a very broad factor that would be highly project dependent. The notion of human health should be considered in the context of other factors in Article 3(1) of the EIA Directive and thus environmentally related health issues (such as health effects caused by the release of toxic substances to the environment, health risks arsing from major hazards associated with the project, effects caused by changes in disease vectors caused by the project, changes in living conditions, effects on vulnerable groups, exposure to traffic noise or air pollutants) are obvious aspects to study.*[3]'

4.27 The Draft EPA Guidelines on the information to be contained in environmental impact assessment reports states that '*in an EIAR, the assessment of impacts on population and human health should refer to the assessments of those factors under which*

[3] Environmental Impact Assessment of Projects: Guidance on the preparation of the Environmental Impact Assessment Report, European Commission, 2017 http:/ec.europa.eu/environment/eia/ria-support.htm

human health effects might occur, as addressed elsewhere in the EIAR e.g. under the environmental factors of air, water, soil etc[4]*.'*

4.28 The subject site is located in an area zoned for residential development, proximate to high quality public transport services. The subject site is zoned for residential use, as set out in the *Dun Laoghaire County Development Plan, 2016-2022*.

4.29 In terms of Core Strategy, the site comes within the Major Centre of Dun Laoghaire. The plan notes that housing supply has failed to meet targets set in the Regional Planning Guidelines. While a key strand of the overall Settlement Strategy focuses on the continued promotion of sustainable development through positively encouraging infill development thereby maximizing efficiencies from already established physical and social infrastructure, targets are provided for areas outside of Dun Laoghaire Rathdown.

4.30 Section 8.2.12.1 of the plan deals with childcare provision and how applications will be assessed. The application will generate a requirement for child care. There is a requirement for 42 no. childcare spaces to be provided within the proposed development.

4.31 There may be possible short-term nuisances to human beings from noise, vibration and dust during construction and from construction related traffic. The construction works include ground preparation works, development of site infrastructure, construction of buildings and hardstanding areas and landscaping of the site including open soft landscaped areas. There will be increased traffic arising from the proposed development. This may adversely affect the road network in the area. There may be a risk of traffic accident.

4.32 There will be a short term increase on construction employment during the construction period. There will employment associated with the management of the state and in the childcare facility in the long term.

Biodiversity

4.33 The proposed development will involve the felling of the trees on site. The number of trees to be felled relating to the proposed development are 139, plus another 51 trees will be removed due to their condition. The Ecological Impact Assessment (ECIA) prepared by Openfield Ecological Consultants finds that the site is generally grasslands with trees and artificial habitats within a built-up area. The tree lines are high value and provide habitat for birds and bats. However overall, the site is of low, local ecological value. Mitigation measures are proposed to deal with habitat loss, disturbance to birds' nests and bats.

4.33 The area of woodland along the stream is to be retained although some trees in this area are to be removed due to poor condition. There will be a walkway installed along the Stradbrook Stream. The loss of these habitats is considered to be minor negative.

4.34 A new vehicle crossing will pass over the Stradbrook Stream This will be installed as a single span box culvert and will be fully fish passable (although it should be noted that the Stradbrook Stream is not of salmonid quality). There will also be two additional outfalls for the discharge of surface water. The loss of habitat will result in impacts to biodiversity however as so many of the trees are non-native, and the site has been

[4] Guidelines on the information to be contained in environmental impact assessment reports, EPA, 2017 (draft)

assessed as of low local ecological value, the effect on flora and fauna will be minor negative.

4.35 The direct mortality of species during demolition. This impact is most acute during the bird breeding season which can be assumed to last from March to August inclusive. This may affect a number of locally common countryside birds and trees or buildings being used as bat roosts. At least one tree was confirmed as a roost for Leisler's Bat and this is scheduled for removal.

4.36 Pollution of water courses through the ingress of silt, oils and other toxic substances is considered. Run-off during the construction phase may enter the Stradbrook Stream. This could arise from movement of soil during construction as well as the installation of a new vehicle crossing. While this is not a watercourse of fisheries significance, silt fencing, settlement ponds will prevent run-off entering the water course. The storage of hydrocarbons will not be located within 10 metres of the watercourse.

4.37 A Bat Impact Assessment Report has been carried out at the subject lands. This report, prepared by Wildlife Surveys, notes that bats are foraging in the site, but activity levels are low. There is a mating roost in close proximity to the entrance to Dalguise House, and there are number of large, mature trees have good potential for bat roosting and feeding and outbuildings.

4.38 Separately an AA Screening Report has been prepared, informed by a Hydrological and Hydrogeological Quantitative Risk Assessment. The pathways to Natura 2000 sites from sources on site and the in-combination effects on Ringsend Waste Water Treatment Plant are also considered. The AA Screening Report finds that in the absence of mitigation measures, the possibility of any significant impacts on any European Sites, whether arising from the project itself or in combination with other plans and projects, can be excluded beyond a reasonable scientific doubt on the basis of the best scientific knowledge available.

4.39 A specific local objective to protect trees and woodland exists at the site. A tree survey prepared by the Tree File notes the proposed retention of a significant number of trees existing on site at present. There are 364 no. trees on site at present. Of these, 174 no. trees will be retained and 246 no. new trees will be planted. It should be noted that there are 2 no Category A trees on the site. These have been retained and are important features in the landscaping plan. A compensatory planting scheme is proposed within the application site, as noted by the Landscaping Drawings and Report as prepared by Dermot Foley Landscape Architects.

Lands and Soils

4.40 The subject lands are generally undeveloped at present. The Stradbrook Stream runs west to east across the northern part of the main body of the site.

4.41 A site investigation by Ground Investigations Ireland was undertaken in September 2018. This found that the subsoil is relatively shallow and there are pockets of rock close to the surface.

4.42 Bulk excavation of the basement will occur, should planning permission be granted. This will involve the excavation of 31,620 cubic metres. These will give rise to circa 55,661.45 tonnes of waste from the site. Borehole samples have been sent for classification and have been found inert.

Water

4.43 The proposed development is not located adjacent to any significant watercourse. The Stradbrook Stream bisects the site on the east-west axis towards its outfall at Dun Laoghaire and into Dublin Bay. There is a risk of pollution to the stream arising from construction works. The increase is flood levels arising from climate change will also be addressed.

4.44 The proposed development has been designed in order to comply with the Greater Dublin Drainage Study (GDDS), as well as other relevant guidance. This is detailed further within the accompanying Engineering Services Report prepared by Benchmark Property.

4.45 The disposal of foul water from the site is separated from that of surface water and the required connection point has been approved by Irish Water and DLRCC. This comprises a 150mm diameter pipe connecting to the existing sewer system implemented as part of the Purbeck Lodge development which adjoins the site to the north.

4.46 During the operational phase there is an indirect pathway from the site to Dublin Bay via the foul sewer and Ringsend Wastewater Treatment Plant.

4.47 Part of the site comes within an area that is subject to flooding. Most of the site is located within Flood Zone C, for the purposes of the *Flood Risk Management Guidelines*, 2009. However, part of the site by the Stradbrook Stream is within Zones A and B.

Air & Climate

4.48 The EPA maintain an air quality monitoring station at Glenageary in Dun Laoghaire. The air quality is listed Index 1 – Good. There are no air quality issues on the site at present. The issue of dust arising from construction will be addressed under the next section.

Noise & Vibration

4.49 There may be noise and vibration during the construction phase. Shallow pockets of rock have been found on site. These will generate some noise during rock breaking.

Landscape

4.50 The northern part of the site falls within the Coastal Fringe Zone – a 500 metre buffer from the coast. Blocks A, B and C would come within this zoning. The *Dun Laoghaire-Rathdown Development Plan 2016-2022* recommends that where buildings would exceed the prevailing height in its immediate surroundings, an urban design statement and impact assessment may be required. This should assess views from the sea. The Monkstown Architectural Conservation Area also affects the entrance roads to the site

4.51 An objective to protect trees and woodland exists at Dalguise. The nature of the current tree presence has been detailed within the accompanying Tree Survey Report prepared by the Tree File. A number of trees in poor condition and of lesser biodiversity value are proposed to be removed as part of the development. Some trees are being removed to improve the quality of aspect of surrounding housing, which have been adversely affected by leylandii trees at boundary locations.

Material Assets

4.52 The land on which the site is situated is a material asset. It has been zoned for residential development through the appropriate process, and as such, the use of this material asset in a manner compatible with the zoning designation, is entirely appropriate.

4.53 The accompanying Transport Impact Assessment (TIA) prepared by TPS Consulting identifies that the Monkstown Road is operating at circa 65% capacity and that there will be sufficient practical reserve capacity at the junctions with Monkstown Road and Purbeck Lodge to accommodate the traffic associated with the 300 no. residential units. The proposed peak levels of departure in the morning are anticipated to be 52 and the peak levels of arrivals will be 46 no. vehicles.

Archaeology, Architecture and Cultural Heritage

4.54 Archaeology and Built Heritage have undertaken a desk study and a review the ground investigations report.

4.55 The subject site is Dalguise House, a Protected Structure (RPS No. 870). A small portion of the northern part of the subject site, comprising the main entrance and access road within the Purbeck Lodge development falls within the Monkstown Road part of the Monkstown Architectural Conservation Area.

4.56 An *Architectural Heritage Impact Assessment* and a *Visual Impact Assessment* by ARC Architectural Consulting are included.

Vulnerability of the project to risks of major accidents and/ or disasters

4.57 The subject lands are not proximate to any Seveso/COMAH designated sites.

4.58 The ECFRAMS and ICPSS indicates that part of the subject site is within Flood Zone A and B. The lands are zoned residential under the 2016 county development plan, following a strategic flood risk assessment. Once this test is passed, the Guidelines refer to the need to focus on siting and design issues that minimise residual risk and do not add to risk elsewhere.

4.59 A series of modelling and flood risk scenarios have been carried out in collaboration and consultation with Dun Laoghaire Rathdown County Council and the proposed flood risk strategy has been approved by the local authority. This is assessed in greater detail within the accompanying SSFRA prepared by McCloy Consulting which accompanies this submission.

4.60 The SSFRA finds the proposed development is safe from flooding and the measures to make it safe do not add to the flood risk elsewhere.

4.61 The site benefits from two accesses, from the original entrance to Dalguise House as well as the new access from Purbeck Lodge. This increases the resilience of the proposed development in any emergency event.

4.62 In regard to traffic safety, the site has been subject to a road safety audit, which finds the accesses to the site provide safe access.

4.63 The physical characteristics of the site do not require specialist construction methods. The SSOCMP describes standard construction practices.

The inter-relationship between the above factors

4.64 The above demonstrates that the interrelationship between different aspects of the environment have been considered in assessing the proposed development. The relationship between construction, dust, noise, and threat of pollution has been considered in terms of biodiversity and human health. The issue of flooding, climate change and human health has been considered. The interrelationship between architectural heritage, landscape assessment and retention of trees have been assessed. Traffic safety and human health has been considered. No impacts are likely to exacerbate the impacts on the environment from this proposed development.

(C) A description of any likely significant effects, to the extent of the information available on such effects, of the proposed development on the environment resulting from -

(a) the expected residues and emissions and the production of waste, where relevant, and

(b) the use of natural resources, in particular soil, land, water and biodiversity.

4.65 The EPA *Draft Guidelines on the information to be contained in Environmental Impact Assessment Reports* 2017 require that the direct, indirect, cumulative and residual impacts of the proposed development for both the construction and operational stages are described. The identified quality, significance and duration of effects for each aspect are categorised, as set out below. Quality refers to the nature of the impact, significance of effects refers to the degree that these will impact on the site and surrounding area and duration refers to how long the effects are likely to last for. A direct impact is an impact the development will give rise to. An indirect impact is similar to a secondary impact – it may result in consequences not in the immediate vicinity of the site. Cumulative impacts are impacts that arise in conjunction with other consented developments. Residual impacts are those which remain after mitigation measures have been applied. Where relevant, impacts arising from the proposed development will assessed on this basis.

Table 1.1 Quality of Potential Effects

Quality of Effects	Definition
Negative	A change which reduces the quality of the environment
Neutral	No effects or effects that are imperceptible, within the normal bounds of variation or within the margin of forecasting error.
Positive	A change that improves the quality of the environment

The significance of an effect on the receiving environment are described as follows:

Table 1.2 Significance of Effects

Significance of Effects on the Receiving Environment	Description of Potential Effects
Imperceptible	An effect capable of measurement but without significant consequences.
Not Significant	An effect which causes noticeable changes in the character of the environment but without significant consequences.
Slight	An effect which causes noticeable changes in the character of the environment without affecting its sensitivities.
Moderate	An effect that alters the character of the environment in a manner that is consistent with existing and emerging baseline trends.
Significant	An effect which, by its character, magnitude, duration or intensity alters a sensitive aspect of the environment.
Very Significant	An effect which, by its character, magnitude, duration or intensity significantly alters a sensitive aspect of the environment.
Profound	An effect which obliterates sensitive characteristics.

The duration of effects as described in the Draft EPA Guidelines are:

Table 1.3 Duration of Effects

Duration of Impact	Definition
Momentary	Effects lasting from seconds to minutes
Brief	Effects lasting less than a day
Temporary	Effects lasting one year or less
Short-term	Effects lasting one to seven years
Medium-term	Effects lasting seven to fifteen years
Long-term	Effects lasting fifteen to sixty years
Permanent	Effects lasting over sixty years
Reversible	Effects that can be undone, for example through remediation or restoration

4.66 The proposed development is located in a suburban context, surrounded by other residential uses. The proposed use is therefore consistent and compatible with land in such a location. The works during the construction phase are likely to have a minor impact on the immediate area.

4.67 Having regard to the necessity to take into account the criteria under Schedule 7 , where relevant for the purposes of compiling the relevant information on the likely effects of the proposed development, reference should be made to "*the likely significant effects on the environment of proposed development in relation to criteria set out under paragraphs 1 and 2, with regard to the impact of the project on the factors specified in paragraph (b)(i)(I) to (V) of the definition of 'environmental impact assessment report' in section 171A of the Act, taking into account*" and the characteristics of the impacts, which are addressed further below. Under Section 171A of the Planning and Development Act 2000, as amended, *t*he effects of the proposed development on the following factors needs to be evaluated in an "environmental impact assessment":

i. "population and human health;
ii. biodiversity, with particular attention to species and habitats protected under the Habitats Directive and the Birds Directive;
iii. land, soil, water, air and climate;
iv. material assets, cultural heritage and the landscape;

v. the interaction between the factors mentioned in clauses (I) to (IV)"

4.68 The above topics are considered below.

Population & Human Health

4.69 The proposed development will provide much needed housing. A range of units are proposed from one bed units to three bed apartments and houses. The range of housing provided will help meet different housing demands in the county. The long term impact is considered positive, moderate and long term in duration.

4.70 A childcare facility will be provided on site. The facility will cater for up to 52 children, which exceeds the childcare requirements of the site. This will enable the wider community benefit from this facility. The long term impact is considered positive, moderate and long term in duration.

4.71 The proposed development provides for an extensive area of open space, woodland walks and play areas. This will encourage active use, with consequential health benefits. The long term impact is considered positive, moderate and long term in duration.

4.72 A Traffic Impact Assessment has been carried out by TPS. This found that there is sufficient capacity in the road network to accommodate the increase in traffic arising from the development, as currently Monkstown Road is operating at circa 65% capacity. The proposed peak levels of departure in the morning are anticipated to be 52 and the peak levels of arrivals will be 46 no. vehicles. The impact is estimated to be long term, slight, negative in effect.

4.73 Roadplan Consulting carried out a Quality Audit, which includes a walking and road safety audit; access and cycle non-motorised User Audit. This identifies any road safety issues within the site. The scheme has been designed to slow traffic speeds down within the site. The impact is estimated to long term, moderate and positive in effect.

4.74 The site is in walking distance of the Dart Station and public transport. This will reduce the reliance on private vehicular use. The long term impact is considered positive, moderate and long term in duration.

4.75 There will be short term, slight negative impacts during the construction period arising from noise, vibration dust and construction traffic, but these can be mitigated, as set out in the construction management plan. A site specific construction traffic management plan will be prepared by the contractor and submitted to the planning authority. Appendix 2.

Biodiversity

4.75 The impact on Biodiversity has been considered in the Ecological Impact Assessment Report (EcIA). The report states that the site is not part of the Natura 2000 network. It does not contain any Annex 11 habitats. A survey was carried out for invasive plant species and none were found. The application site is grassland with trees and artificial habitats within a built-up area. High value treelines and woodland provide habitat for common breeding birds and foraging areas for bats.

4.76 The EcIA notes that a Bat Impact Assessment had been carried out and that while four bat species were found to use the site, (Common Pipistrelle, Soprano Pipistrelle, Leisler's Bat and Brown Long-eared Bat), they were not found in large numbers. One mating roost was found. In terms of impacts, some loss of feeding will occur for individual bats (possibly no greater than two to three individuals of each species) when the mature vegetation is removed or greatly reduced. This will have a moderate long-term negative effect on individual bats but no measurable impact upon any bat species. Mitigation measures proposed are:

All mature trees shall be checked for bat usage immediately prior to felling.

If bats are found at any stage of the tree felling or building work, work must cease, and the bat specialist assigned to the project and NPWS ranger must be contacted.

The mating perch tree shall be inspected thoroughly by a bat specialist in line with the derogation approved by NPWS
and any resident bats taken into protective care until the tree has been removed. The bat(s) if any are present, will be released once all tree felling has been completed. A minimum of one bat box shall be in place prior to this procedure.
All buildings shall be checked for the presence of bats by a bat specialist prior to demolition. Should bats be noted within any building, the building is thus a bat roost and a derogation must be acquired from NPWS.

NPWS shall be notified immediately and no demolition may proceed for such a building until a licence is acquired and a conservation plan is in place to ensure that bats are excluded or removed to safety until the buildings have been removed.

14 bat boxes shall be placed on any remaining trees, mature re-located trees or new buildings to compensate for the loss of a mating perch and any other potential loss of roost. Schwegler type 2FN bat boxes are proposed and these can be purchased from sites such as www.nhbs.com or www.wildcare.co.uk
The bat boxes should be placed at least 3 metres high. The trees chosen should have no underlying branches as bats need to drop to fly out. Where these are unavailable, equivalent bat boxes shall be installed.

Lighting shall be kept from any bat boxes and remaining mature tree canopies to allow bat feeding, commuting and roosting.

4.77 The BIA report states:

“Bat activity did not indicate large numbers of bats and it is probable that individual bats are here for extended periods rather than a large number of bats. One mating roost was found in a tree close to the pedestrian path at the main entrance leading to Dalguise House. A number of mature trees have good potential for roosting bats including the mating perch beech, an oak tree and other beech trees. Large conifers within the site offer good cover but are much less suitable as roosts. The loss of the mating roost is considered a long term, slight negative impact, prior to mitigation. Post mitigation, the impact is considered to be long term, negligible, neutral.

4.78 Some loss of feeding will occur for individual bats including common pipistrelles and Leisler’s bats (possibly no greater than two to three individuals of each species) when the mature vegetation is removed or greatly reduced. This will have a moderate long-term negative effect on individual bats following mitigation but no measurable impact upon any bat species.

4.79 One of the buildings showed evidence of bats but are considered to offer the highest potential within this area.

4.80 A derogation licence been obtained in relation to the mating roost located in a beech tree. In the event that further roosts are discovered following pre-felling / pre-demolition examination, a further derogation licence will be obtained".

4.81 The EcIA states that the proposed development will remove trees on the site. The removal of habitats including buildings, amenity grassland, treelines and individual trees. These are predominantly of negligible or low local value. Following an arboricultural assessment 364 trees and 14 groups or lines of trees were identified. This is made up of 2 category 'A' trees, 149 category 'B' trees, 165 category 'C' trees and 52 category 'U' trees (unsuitable for retention). Following consideration of the condition of the trees and the design implications the following trees are to be removed: 1 of the category 'A' trees (a Dawn Redwood Metasequoia glyptostroboides); 67 category 'B' trees, 70 category 'C' trees and all of the category 'U' trees in addition to sections of treeline.

4.82 The area of woodland along the stream is to be retained although some trees in this area are to be removed due to poor condition. There will be a walkway installed along the Stradbrook Stream. The loss of these habitats is considered to be minor negative.

4.83 The new vehicle crossing will pass over the Stradbrook Stream will be installed as a single span box culvert and will be fully fish passable (although it should be noted that the Stradbrook Stream is not of salmonid quality). There will also be two additional outfalls for the discharge of surface water. The loss of habitat will result in impacts to biodiversity however as so many of the trees are non-native, and the site has been assessed as of low local ecological value, the effect on flora and fauna will be minor negative.

4.84 There will be direct mortality of species during demolition. This impact is most acute during the bird breeding season which can be assumed to last from March to August inclusive. This may affect a number of locally common countryside birds and trees or buildings being used as bat roosts. At least one tree was confirmed as a roost for Leisler's Bat and this is scheduled for removal. Refer to above regarding the mitigation measures.

4.85 Mitigation measures are provided. These relate to loss of vegetation (which is predominantly non-native and so providing fewer resources to native biodiversity) will result in some loss of feeding areas for and and/or nesting areas for birds. New planting has been proposed which will reinforce existing treelines and clusters of trees within areas of open space. This will include approximately 230 new trees including stand-alone, parkland style Scots Pine and Beech as well as native and/or pollinator-friendly species including Hawthorn, Strawberry Tree and Hazel. This will be supplemented with stretches of native hedgerow and extensive meadow grassland areas where grass will be cut only once or twice a year. These measures will retain the wildlife character of the site and are predicted to offset any loss of habitat which will occur during the construction phase.

4.86 Pollution of water courses through the ingress of silt, oils and other toxic substances. Run-off during the construction phase may enter the Stradbrook Stream. This will arise from movement of soil during construction as well as the installation of a new vehicle crossing. While this is not a water course of fisheries significance, best practice will be followed to ensure that pollution does not occur.

4.87 Deliberate disturbance of a bird's nest is prohibited unless under licence from the National Parks and Wildlife Service. If possible, site clearance works should proceed outside the nesting season, i.e. from September to February inclusive. If this is not possible, vegetation must first be inspected by a suitably qualified ecologist. If a nest is encountered then works must stop, until such time as nesting has ceased. Otherwise, a derogation licence must be sought from the NPWS to allow the destruction of the nest.

4.77 In relation to Herons to avoid disturbance, the developer has agreed that no site clearance works will commence during the nesting and pre-nesting season. This can normally be presumed to last from March to August but in February birds are choosing and defending nest sites in preparation for egg laying. Works will therefore only commence after nesting has ceased (which normally happens in July but is something which should be confirmed by an ecologist) and no later than January.

4.78 An exclusion zone will be established around the trees with robust hoarding. This will ensure that heavy good vehicles do not approach the trees within the site boundary. It will also prevent the use of this area for storage of materials or equipment. These measures are included in the root zone protection plan for trees to be retained as part of the development. These have been incorporated into Benchmark's SSOCMP in Section 4.0 concerning Ecologicial and Environmental considerations.

4.79 *A suitably qualified ecologist will inspect the site prior to the commencement of works to ensure these mitigation measures are fulfilled. A further inspection will be carried out during the following nesting season to evaluate the use of the trees. The ecologist will liaise with site personnel to address day-to-day issues which may arise and propose further mitigation as required.*

4.80 *Pollution prevention during construction: Construction will follow guidance from Inland Fisheries Ireland (IFI, 2016) for the protection of fish habitat. Surface run off from the site will only be discharged to the Stradbrook Stream via a settlement pond so that only silt-free water will enter the environment. Elsewhere the stream will be protected by a robust silt fence. Again, this has been incorporated into Benchmarls' SSOCMP dealing with works in proximity to the Stradbrook Stream.*

4.81 *Dangerous substances, such as oils, fuels etc., will be stored in a bunded zone a minimum of 10 metres from the stream. Emergency contact numbers for the Local Authority Environment Section, Inland Fisheries Ireland, the Environmental Protection Agency and the National Parks and Wildlife Service will be displayed in a prominent position within the site compound. These agencies will be notified immediately in the event of a pollution incident.*

4.82 *The installation of the vehicle crossing of the Stradbrook will be undertaken 'in the dry', i.e. stream water will be pumped around the works area to avoid scouring of loss of excessive sediment.*

4.83 *The installation of surface water headwalls will not be undertaken in wet weather. Concrete will be quick-curing and will be poured behind a temporary bunded areas. Under no circumstances should water contaminated with concrete be allowed to enter the Stradbrook Stream.*

4.84 *Site personnel will be trained in the importance of preventing pollution and the mitigation measures described here to ensure same.*

4.85 *The site manager will be responsible for the implementation of these measures. They will be inspected on at least a daily basis for the duration of works, and a record of these inspections will be maintained.* See section 11 of the SSOCMP by Benchmark Property under separate cover.

Lands and Soils

4.86 The proposed development will require the excavation and removal of 55,661.45 tonnes of soil from the site. The impact will be long term, slight and negative. The removal will give rise to noise and dust as part of the construction. These emissions will be controlled to an acceptable level through the construction management plan. The impact will be short term

4.87 Some rock breaking will be required. This will be carried out by stone crushers. This will give rise to noise and dust. The impact will be temporary, slight and negative.

Water

4.88 The proposed development will be served by potable water from a public water supply. The impact will be long term, moderate and positive.

4.89 Foul water from the proposed development will flow to the West Pier treatment plant / pumping station and on the Ringsend Wastewater Treatment Plant. The Ringsend Wastewater Treatment Plant. The AWN report demonstrates that the proposed development will not have a negative impact in the receiving waters in Dublin. The report states:

"*This WWTP is required to operate under an EPA licence (D0034-01) and to meet environmental legislative requirements. The plant has received planning (2019) and will be upgraded with increased treatment capacity over the next five years. The peak foul discharge calculated for the proposed development is well within the capacity of the WWTP. Even without treatment at the Ringsend WWTP, the peak effluent discharge, calculated for the proposed development, would equate to 0.096% of the licensed discharge (peak hydraulic capacity) at Ringsend WWTP and would not impact on the overall water quality within Dublin Bay and therefore would not have an impact on the current Water Body Status (as defined within the Water Framework Directive). (Note: the average effluent discharge equates to approx. 0.023% of the licensed discharge (peak hydraulic capacity) at Ringsend WWTP). Recent water quality assessment of Dublin Bay also shows that Dublin Bay on the whole, currently has an 'unpolluted' water quality status (EPA, 2019)".(Page 12:2020)*

4.90 The AA screening report by Openfield notes that there has been no negative impacts on biodiversity arising from exceedances in the Ringsend Wastewater Treatment Plant. The impacts will be long term, slight and neutral.

4.91 In terms of surface water, the drainage from the site has been designed to accommodation a 1% AEP /100 year event plus an allowance for climate change. the proposed SUDS method of water disposal at the site will ensure that no negative impacts to surface water leaving the site will arise due to the attenuation measures planned. This is confirmed in the AWN report and Natura Impact Statement prepared by Openfield. The impacts will be long term, slight and positive.

4.92 During construction, the risk of pollution to the Stradbrook Stream will be minimised by the use of silt fences to prevent contaminants from entering the stream. A settlement pond will ensure the surface run off during construction will ensure that pollutant will be captured before discharge to the Stradbrook Stream. Mitigation measures are proposed in the site specific construction management plan. AWN note that in the event of any failure, the suspended solids will naturally settle within 0.5 km of the site, which is before the outfall to Dublin Bay. The impact would be negative, imperceptible and brief.

4.93 At operation stage, an oil/petrol interceptor within the sealed basement car park will prevent pollution from vehicles in the proposed development. There would no effects.

4.94 A Site Specific Flood Risk Assessment prepared by McCloy Consulting accompanies this request, detailing an appropriate strategy for the attenuation and disposal of storm waters in the event of flooding. A Justification Test was undertaken in accordance with the said Guidelines. Furthermore the SUDS strategy employed will attenuate storm flows across the site, thereby reducing flood risk downstream of the site. Swales have been incorporated into the landscape design.

4.95 The assessment of flooding has taken climate change into account. The siting of development on the site has taken account of the Stradbrook Stream and greater flows arising from climate change, as can be seen in the Site Specific Flood Risk Assessment by McCloy Consulting. Furthermore, the SUDS strategy employed on site will attenuate rainfall, thus reducing surface water flows across the site during storm events.

4.96 Both the proposed drainage and flooding strategies have been discussed with by Dun Laoghaire Rathdown County Council prior to the submission of this request.

4.97 Water quality is not likely to be significantly affected by the proposed development.

Air and Climate

4.98 During construction the proposed development will give rise to dust. Mitigation measures proposed in the accompanying construction management plan will ensure dust suppression techniques so as to remain within acceptable levels. These include road sweeping, wheels washing and covered vehicles. The impact will be short term, slight and negative.

4.99 During operation, the proposed development will not give rise to impacts on air.

4.100 The volume of traffic generated by the proposed development during peak hour times is low and unlikely to add to air pollution. The site is proximate to high quality public transport services reduce the need for travel by vehicle.

4.101 A Sunlight and Daylight Assessment has been prepared by Arc Architectural Consultants Limited. It finds the proposed development will give rise to imperceptible or moderate impacts on access to sunlight outside the site, save for two dwellings on Heathfield, which are also impacted in terms of daylight (letters of support for the development are provided by the owners of these dwellings, as the removal of the evergreen trees are considered favourably). The open space in the proposed development performs well within the site, giving access to sunlight at different times during the day.

Noise & Vibration

4.102 During the construction phase, it is anticipated that there will be a number of HGV's to and from the site. Excavators will be employed to move existing ground and piling rigs will be used for foundation work following which standard construction tools and methods will be employed for general construction and landscaping. All works on site shall comply with the relevant standard which gives detailed guidance on the control of noise and vibration from construction activities.

4.103 A vibration monitoring scheme will be deployed for the duration of the works. Baseline levels will be monitored for vibration prior to any works commencing on site and will continue through demolition phase to completion. Vibrations monitors will be continuous throughout the process.

4.104 It is considered that there will be no significant noise or vibration effects on the environment during the operational phase and construction phase subject to standard construction mitigation measures. These mitigation measures are set out in the SSOCMP prepared by Benchmark.

4.105 Any impacts from noise and vibration will be temporary and slight, subject ot implementation of the construction mitigation measures,

Landscape

4.106 The landscape has been a formative influence on the design of the proposed development. The Architectural Design Statement prepared by Horan Rainsford Architects provide a rational for the layout of the proposed development, taking into account the protected structure on the site, the need to maintain heritage features, the topography of the site and the preservation of trees.

4.107 The loss of tress will be mitigated by replacement and additional planting implemented as part of the development. This tree retention and planting plan is detailed within the Landscaping Design Rationale and Drawings prepared by Dermot Foley Landscape Architects.

4.108 Cranes will be visible from the site during construction. This will have a temporary negative impact.

4.109 Arc Architectural Consultants Ltd have prepared a visual impact assessment, which also considers the impact on the Monkstown Architectural Conservation Area. It finds that the visual impacts of the scheme is are long term in duration and none to moderate in terms of impact – even from the protected view from Dun Laoghaire Pier.

Material Assets

4.110 There will be some waste materials produced in the construction of the proposed scheme which will be disposed of using licensed waste disposal facilities and contractors. The scale of the waste production in conjunction with the use of licensed waste disposal facilities and contractors does not cause concern for likely significant effects on the environment. The accompanying COWMP details the methodologies employed for the control, management, monitoring and disposal of waste from the site. The plan sets out the measures used is to maximise the quantity of waste recycled by providing sufficient waste recycling infrastructure, waste reduction initiatives and waste collection and waste management information to the residents of the development.

4.111 There will be no large scale use of natural resources. The main use of natural resources will be land. The subject lands are greenfield lands which are zoned for residential. The proposed development involves a land take of 3.66 hectares.

4.112 Other resources used will be construction materials which will be typical raw materials used in construction of residential developments. The scale and quantity of the materials used will not be such that would cause concern in relation to significant effects on the environment.

4.113 Operational Waste management at the development is to be carried out in accordance with all relevant statutory requirements, including where applicable, the requirements of DLRCC Waste Bye-Laws, Waste Management Act 1996, as amended, and Regulations made thereunder, Protection of the Environment Act 2003 as amended, Litter Pollution Act 2003, as amended Full details of the proposed waste management strategy are set out in the COWMP and the Life Cycle Report prepared by Benchmark submitted with this application.

4.114 The following mitigation measures are proposed:

- Dedicated communal waste storage areas have been allocated for the residents within the development design.
- The waste storage area has been/will be appropriately sized to accommodate the estimated waste arisings.
- Waste will be collected from the designated temporary waste collection areas by permitted waste contractors and removed off-site for re-use, recycling, recovery and/or disposal.
- A strategy for segregation at source, storage and collection of wastes generated within the development during the operational phase has been prepared.

4.115 Provided the COWMP is implemented and a high rate of reuse, recycling and recovery is achieved, the predicted effect of the operational phase on the environment will be long-term, neutral and imperceptible

4.116 Likely haul routes are identified in the SSOCMP, to be agreed with DLRCC upon a grant of permission. A Traffic Management Plan will be prepared by the contractor, dealing with pinch points on the site. This plan will deal with the private vehicles of site workers, construction vehicles and material delivery vehicles.

4.117 The construction phase of the proposed development will provide for the temporary employment of construction workers which is likely to provide benefits for local businesses providing retail or other services to construction workers and potentially could create some additional employment in the area.

4.118 Upon completion, the operational phase will provide an important material asset for the area in terms of high quality residential units with an element of social housing. It will also provide for a childcare facility, which will benefit the wide community. The long impacts are significant and positive.

Cultural Heritage

4.119 The report prepared by ABH concludes that the risk of encountering archaeological deposits during construction is moderate to low. Test trenching is recommended, should permission for the proposed development be granted.

4.120 Dalguise House is a Protected Structure (RPS 870). A small portion of the northern part of the subject site, comprising the main entrance and access road within the Purbeck Lodge development falls within the Monkstown Road part of the Monkstown Architectural Conservation Area. Arc Architectural Consulting Ltd note that the architectural features of value on the site are being retained. Views of the site from the Monkstown ACA are generally of limited visibility, oblique and intermittent. Protected structures external to the site will not be adversely affected by the proposed development. While the change to the setting of Dalguise House will be significant, but in line with emerging policy to densify development in the existing built envelope.

4.121 The Architectural Heritage Impact Assessment concludes:

> *"The loss of any original fabric from the Dalguise House, however small, will be give rise to negative effects of the architectural heritage of the house, but the removal of non-original fabric may give rise to positive effects. The change in the setting of the house will be considerable, giving rise to 'moderate' effects on the architectural heritage of the house, if the subject proposed development is regarded as consistent with emerging local and national policy. The demolition of White Lodge and of a modern swimming pool structure beside Dalguise House will give rise to 'slight' positive effects on Dalguise House and its setting. Works to the gate lodges, the wall of the walled garden, the buildings in the stable yard and the glasshouse / vinery will give rise to 'moderate' positive effects on the architectural heritage of these structures themselves and on the heritage of the Dalguise lands. The providing of long term sustainable use for Dalguise House and the other retained structures will also give rise to 'moderate' positive effects architectural heritage."*

Vulnerability of the project to risks of major accidents and/ or disasters

4.122 Part of the subject site is located within Flood Zone A/B and the rest is in Flood Zone C. Due to the location of part of the site within the flood zone, flooding is potential risk.

4.123 A Site Specific Flood Risk Assessment (FRA) prepared by McCloy Consulting Engineers included with this planning application has concluded that the development meets the requirements of the FRA Guidelines and that the proposed development is appropriate to this flood zoning. The residences have been located in Flood Zone C, so there is not risk to the units. The access roads are in Flood Zone C, save for the bridge and this is above flood levels. Car parking areas are at 16.20 mOD, so no further mitigation measures are proposed. Only open amenity areas and a pedestrian walkway (which is considered water compatible in the OPW Flood Risk Management Guidelines.

4.124 Hydraulic modelling was undertaken as part of the FRA to assess the potential impact of the proposed development downstream of the site. The proposal does not have any downstream effect. The proposed development increases flooding upstream of the proposed bridge but this is contained within the site, after accounting for effects of climate change. The 1% AEP plus CC flood level of the bridge is 15.57 mOD and the 0.1% AEP is 15.60 mOD. The soffit of the bridge is 15.88 mOD. The road embankment and retaining wall rises from 16.49 mOD ot 18.19 mOD. In terms of residual risk, as the FFL of the proposed development is greater than climate change and culvert blockages levels, it is resilient to flood risk scenarios.

4.125 In this regard it is considered that vulnerability of the proposed development to the risk of major accidents or disasters is considered to be slight.

The interaction between the factors mentioned in clauses (I) to (IV)"

4.126 It is considered that any of the previously identified relatively minor impacts could not in themselves be considered significant nor would they cumulatively result in a likely significant effect on the environment. The inter-relationship between the above factors are summarised in the table below.

Table of Interactions

Interaction	Population & Human Health		Biodiversity		Land & Soils		Air & Climate		Noise & Vibration		Water		Archaeology, Architecture & Cultural Heritage		Landscape and Visual Impact		Material Assets: Traffic, Waste, & Utilities	
	Construction	Operation	Construction	Operation	Construction	Operation	Construction	Operation	Construction	Operation	Construction	Operation	Construction	Operation	Construction	Operation	Construction	Operation
Population & Human Health					✓	✓	✓	✓	✓	✓	✓	✓			✓	✓	✓	✓
Biodiversity					✓		✓	✓	✓		✓	✓						
Land & Soils							✓				✓						✓	
Air & Climate																	✓	✓
Noise & Vibration																	✓	✓
Water																		
Archaeology, Architecture & Cultural Heritage																✓		
Landscape																		
Material Assets: Traffic, Waste, & Utilities																		

✓ Interaction

4.127 In relation to cumulative impact, the proposed development is located in a regeneration area, which contains a number of ongoing construction projects such as those set out below:

4.128 The National Planning Framework is the Government's plan to cater for the extra one million people that will be living in Ireland, the additional two thirds of a million people working in Ireland and the half a million extra homes needed in Ireland by 2040.

4.129 National investment planning, the sectoral investment and policy frameworks of departments, agencies and the local government process will be guided by these strategic outcomes in relation to the practical implementation of Ireland 2040. The NPF sets out the importance of development within existing urban areas by *"making better use of under-utilised land including 'infill' and 'brownfield' and publicly owned sites together with higher housing and job densities, better services by existing facilities and public transport".*

4.130 Objective 3a of the NPF states that it is a national policy objective to *"deliver at least 40% of all new homes nationally within the built up envelope of existing urban settlements".* The proposed development is a strategically located underutilised site in the centre of an existing urban settlement adjacent to a quality bus corridor and in close proximity to the M50 and Dublin Airport. The proposed development is therefore compliant with the objective of the NPF.

4.131 There will likely be potential for dust and noise produced during the demolition and construction phases. This will be managed by ensuring construction work largely operates within the approved hours of construction.

4.132 Mitigation measures set out in the Specific Outline Construction Management Plan, prepared by Benchmark Properties will be implemented, and attached to this report. Implementation of mitigation measures will be monitored.

4.133 It is likely that a minor impact from noise and vibration, dust and pollution during the construction phase will occur. Air and Climate are not likely to be significantly affected by the proposed development.

4.134 However construction works in an urban environment are entirely normal and working hours will be limited generally to hours set by condition or as otherwise agreed. The frequency of vehicles accessing the site will vary throughout the construction phase.

4.135 The construction impacts will not be of such a quantity significance that would warrant the completion of a sub threshold EIAR. Impacts from construction traffic, noise, vibration and dust will be subject to mitigation measures as set out in the Site Specific Outline Construction Management Plan prepared by Benchmark. The impacts are considered to be short term, local and minor.

4.136 In terms of public health, it is considered that the construction and operation of the proposed development will not give rise to operational impacts that would be likely to cause significant effects in terms of population and human health

Biodiversity, with particular attention to species and habitats protected under the Habitats Directive and the Birds Directive;

4.137 The subject site is not located within or directly adjacent to any SAC or SPA. There a direct hydrological pathway and an indirect pathway via the public sewer etc. However no appropriate assessment issues arise due to distance and in the case of the foul discharge, the volume is insignificant.

4.138 The Ecological Impact Assessment Statement concludes that after mitigation, no significant residual effects are likely to arise to biodiversity arising from this project.

4.139 There will be some waste materials produced in the construction of the proposed scheme which will be disposed of using licensed waste disposal facilities and contractors. The scale of the waste production in conjunction with the use of licensed waste disposal facilities and contractors does not cause concern for likely significant effects on the environment.

4.140 The accompanying Construction & Operational Waste Management Plan, prepared by Benchmark Properties, sets out the measures used in the responsible disposal of waste arising from the construction of the development. The majority of waste generated at the construction phase will be excavated material, with surplus construction materials and cuts also anticipated.

4.141 Other resources used will be construction materials which will be typical raw materials used in construction of residential developments. The scale and quantity of the materials used will not be such that would cause concern in relation to significant effects on the environment.

4.142 The Waste Management Plan also includes a strategy for the disposal of waste within the operational phase of the development. This is to maximise the quantity of waste recycled by providing sufficient waste recycling infrastructure, waste reduction initiatives and waste collection and waste management information to the residents of the development.

4.143 All works carried out will be done so in accordance with the Site Specific Outline Construction Management Plan and Construction Waste Management Plan, prepared by Benchmark Properties, submitted alongside this request for pre-application consultation.

4.144 The works during construction or the operational phase are not of such a scale or extent that would be considered to be likely to cause significant effects on the environment in the geographic area or on any considerable quantum of the population in the vicinity.

(D) The compilation of the information at paragraphs 1 to 3 shall take into account, where relevant, the criteria set out in Schedule 7.

4.145 Schedule 7 of the regulations details the criteria for determining whether development listed in part 2 of Schedule 5 should be subject to an environmental impact assessment. The criteria under Schedule 7 is grouped under three broad headings as discussed below.

1. Characteristics of the Proposed Development

The characteristics of proposed development, in particular –	Response
(a) the size and design of the whole of the proposed development	The proposed development consists of 300 no. residential units on a site area of 3.66 hectares. The gross floor area is 30,681 sqm. The 5 to 9 storey apartment blocks provide an appropriate and compatible form of development within an urban area on lands close to high quality public transport which are currently zoned for residential purposes. The scale and height of the development is designed to make optimum use of the site's topography and size in order to mitigate visual impacts upon the surrounding area. The development is considered to be of appropriate density, having regard to the protected structure and existing trees on site. In doing so, the proposal will contribute to achieving compact growth in appropriate urban locations which are accessible to public transport. The proposal is considered to be compatible with its immediate adjoining land uses, which are predominantly residential. The suitability of the site for residential development is established by its land use zoning for residential and district centre uses. In zoning the land for these uses, the Planning Authority will have thoroughly assessed the nature of the site in order to ascertain its capacity to accommodate such development. The size and design of the proposed development is not likely to cause significant effects on the environment, with comprehensive landscaping and tree planting on site to ensure biodiversity is preserved and enhanced as far as possible. The development plan was subject to Strategic Environmental Assessment, which found that all the recommendations of the SEA and AA assessment have been integrated into the plan.
(b) cumulation with other existing development and/or development the subject of a consent for proposed development for the purposes of section 172(1A) (b) of the Act and/or development the subject of any development consent for the purposes of the Environmental Impact Assessment Directive by or under any other enactment	The subject site is greenfield in nature, currently zoned for residential development. A review of the planning history and adjoining planning permissions reveal a number of other residential land uses: at Purbeck Lodge comprising 7 no. residential units (DLRCC Ref: D16A/0724) adjoining the site to the north, and Cheshire Home (DLRCC Ref: D17A/0590, ABP Ref: 301203), comprising 56 no. residential apartment units across 4 no. blocks to the east.
(c) the nature of any associated demolition works	The demolition works are very limited and the buildings being demolished are domestic in scale. Mitigation measures proposed in the SSOCMP address both dust and noise.

(d) the use of natural resources in particular, land, soil, water and biodiversity	There will be no significant use of natural resources. The main use of natural resources will be land. The subject lands are greenfield lands which are zoned for residential use. The proposed development site extends to approximately 3.66 hectares, with the main source of waste anticipated to arise from excavation of the site. Some 31,620 cubic metres of soil will be removed from site. Other resources used will be construction materials which will be typical raw materials used in construction of residential developments. The scale and quantity of the materials used will not be such that would cause concern in relation to significant effects on the environment. The construction or operation of the scheme would not use such a quantity of water to cause concern in relation to significant effects on the environment. Any loss of habitat resulting from the removal of trees will be replaced planting within the associated landscaping scheme, with bat habitats maintained through the implementation of bat roosting boxes throughout the site. The use of natural resources in relation to the proposed development is not likely to cause significant effects on the environment.
(e) the production of waste	There will be waste materials produced in the construction of the proposed scheme. Waste will be disposed of in a responsible manner using licensed waste disposal facilities and contractors. The scale of the waste production in conjunction with the use of licensed waste disposal facilities and contractors does not cause concern for likely significant effects on the environment. The accompanying Site Specific Outline Construction and Operational Waste Management Plan prepared by Benchmark Property details the methodologies employed for the control, management, monitoring and disposal of waste from the site. This Plan also sets out the measures used during the operational phase of the development to maximise the quantity of waste recycled, by providing sufficient waste recycling infrastructure, waste reduction initiatives and waste collection and waste management information to the residents of the development. Having regard to the mitigation measures proposed, the production of waste will be limited in the proposed development.
(f) pollution and nuisances	There will likely be potential for dust and noise and vibration produced during the demolition and construction phases. This will be managed by ensuring construction work largely operates within the approved hours of construction. Standard dust and noise prevention mitigation measures as described in the Site Specific Outline Construction Management Plan prepared by Benchmark Property will be employed and monitored. As such, pollution and nuisances are not considered likely to have the potential to cause significant effects on the environment. All works on the site will be completed in accordance with the content of the Site Specific Outline Construction Management Plan prepared by Benchmark Property. Specific mitigation measures have been put in place to minimise risk to the Stradbrook Stream.

(g) the risk of major accidents and/or disasters which are relevant to the project concerned, including those caused by climate change, in accordance with scientific knowledge	Standard construction practices will be employed throughout the construction phase. There are no technologies or substances to be used in the development which may cause concern for having likely significant effects on the environment. The subject lands are not proximate to any Seveso/COMAH designated sites. The ECFRAMS and ICPSS indicates that the subject site is within Flood Zone A and is therefore 'Highly Vulnerable' to flood risk. A comprehensive Site Specific Flood Risk Assessment has been carried out by Benchmark Property, including a Justification Test. This testing and modelling has been carried out in collaboration with DLRCC and approved by the local authority prior to the submission of this request. The potential impact of climate change has been allowed for in the design of the surface water drainage network and storage system, with an allowance for a 10% increase in rainfall intensities, as recommended by the GDSDS (Greater Dublin Strategic Drainage Study). All drainage infrastructure will be included within the red line boundary of the site and in accordance with the provision of SUDS.
(h) the risk to human health (for example due to water contamination or air pollution).	There is no impact on air pollution expected from the development outside of the potential dust impact during construction, and therefore the risk to human health is considered negligible in this regard. In terms of potential water contamination, interceptors will prevent pollutants or sediments from discharging into water courses. Standard mitigation measures will be employed in relation to all potential risks to human health arising during the construction phase as set out in the Site Specific Outline Construction Management Plan prepared by Benchmark Property. Wastewater will be connected to the existing foul sewer to the north of the site and therefore water contamination leading to a risk to human health will not occur.

2. Location of Proposed Development

The environmental sensitivity of geographical areas likely to be affected by proposed development, with particular regard to:	Response
(a) the existing and approved land use;	The existing use on the site is greenfield lands included in the curtilage of Dalguise House. The proposed use as a residential development is compatible with the land use zoning of the subject lands.
(b) the relative abundance, availability, quality and regenerative capacity of natural resources (including soil, land, water and biodiversity) in the area and its underground.	As stated in the Ecological Impact Assessment, the lands are generally low ecological value, save for the tree line. The perimeter tree line is generally being retained and augmented, adding the ecological value of the site. The AA Screening Report finds thatcan be concluded that the possibility of any significant impacts on any European Sites, whether arising from the project itself or in combination with other plans and projects, can be excluded beyond a reasonable scientific doubt on the basis of the best scientific knowledge available. There will be no significant likely effects on the environment in relation to natural resources in the area. This has been addressed further above. The main use of natural resources will be land. The land is zoned for residential and the proposal is considered to be an efficient use of this greenfield land resource in an established residential area. The scale of natural resources used both in construction and operation is not such that it is likely to cause concern in terms of significant likely effects on the environment. Mitigation measures relative to woodland and bat habitats will be implemented in accordance with the accompanying Tree Survey Report, Landscaping Report & Drawings, and Bat Impact Assessment Report submitted alongside this request. There will be no significant loss of soil, land, water or biodiversity.
(c) the absorption capacity of the natural environment, paying particular attention to the following areas:	
(i) Wetlands, riparian areas and river mouths;	Part of the proposed development lies within a riparian strip. The proposed development involves some works to ensure that the flood storage capacity of the site is retained while the residential development is confined to Flood Zone C.
(ii) Coastal Zones and the marine environment;	The northern portion of the site of the proposed development is within 500 metres of the coast, within the Coastal Fringe Buffer in the Dun Laoghaire Rathdown Development Plan 2016-2022. However, the impact of the proposed development is visual in nature and considered none to moderate. The site is not located within or directly adjacent to any SACs and SPAs.

	There is a direct hydrological connection to the coast. However the HHQRA and AA Screening find that without mitigation measures, the possibility of any significant impacts on any European Sites, whether arising from the project itself or in combination with other plans and projects, can be excluded beyond a reasonable scientific doubt on the basis of the best scientific knowledge available.
(iii) Mountain and forest areas;	The proposed development is not within or directly connected to any mountain or forest areas. There is no known pathway between the site and mountain or forest areas.
(iv) Nature reserves and parks;	The proposed development is not within or directly connected to any nature reserves or parks. There is no known pathway between the site and nature reserves or parks.
(v) Areas classified or protected under legislation, including Natura 2000 areas designated pursuant to the Habitats Directive and the Birds Directive;	The proposed development is not located within or directly adjacent to any SAC or SPA. However, as there are pathways to these sites, an AA Screening Report have been prepared. The AA Screening Report finds thatcan be concluded that the possibility of any significant impacts on any European Sites, whether arising from the project itself or in combination with other plans and projects, can be excluded beyond a reasonable scientific doubt on the basis of the best scientific knowledge available.
(vi) Areas in which there has already been a failure to meet the environmental quality standards laid down in legislation of the European Union and relevant to the project, or in which it is considered that there is such a failure;	The site is not known to be located within or connected to such an area.
(vii) Densely populated areas; and	The proposed development is located on zoned lands within an existing built up area, with a primary established residential land use. The proposed land use is compatible with the zoning objectives and existing development and uses in the vicinity. The absorption capacity is not considered to be significantly affected.
(viii) Landscapes and sites of historical, cultural or archaeological significance.	The subject lands are part of Dalguise House, a Protected Structure (RPS No. 870). A small portion of the northern part of the subject site, comprising the access roads, falls within the Monkstown Road part of the Monkstown Architectural Conservation Area. Reports have been prepared in regard to the archaeological potential of the site. An Architectural Heritage Impact Assessment and Visual Impact Assessment has also been prepared with accompanying Photomontages. These demonstrate that the site can accommodate the proposed development without significant adverse effects.
Conclusion	It is considered that the natural and built environment in this area has the capacity to absorb the proposed residential development.

3. Type and Characteristics of Potential Impacts

The likely significant effects on the environment of proposed development in relation to criteria set out under paragraphs 1 and 2, with regard to the impact of the project on the factors specified in paragraph (b)(i)(I) to (V) of the definition of 'environmental impact assessment report' in section 171A of the Act, taking into account—	Response
(a) the magnitude and spatial extent of the impact (for example geographical area and size of the population likely to be affected);	The site size is c 3.66ha. The site is located on a greenfield site in a suburban location with an established residential land use. The works during the construction phase may have a minor impact on the immediate area, however, works will be carried out in accordance with the Outline Construction Management Plan to ensure impacts are minimised. The works during construction or the operational phase are not of such a scale or extent that would be considered to be likely to cause significant effects on the relevant aspects of environment (specified in paragraph (b)(i)(I) to (V) of the definition of 'environmental impact assessment report' in section 171A of the Act) with particular reference to the impacts on human health and the population in the vicinity.
(b) the nature of the impact;	The construction impacts have potential to cause nuisance associated with noise, dust and traffic. The Site Specific Outline Construction Management Plan will put in place measures to avoid, reduce or mitigate impacts. With mitigation measures in place any impacts are likely to be short term, minor and local. The operational phase will result in the development of permanent residential accommodation, compatible with the established predominant land use in the area. The proposed development will give rise to a small increase in traffic during operational phase. This will be a minor adverse, local, long term impact.
(c) the transboundary nature of the impact;	There are no construction phase or operational phase transboundary impacts. Any minor impacts will be contained in the immediate vicinity of the site. The subject lands are not located on any geographical or other boundary of relevance to assessment of likely significant effects on the relevant aspects of the environment.
(d) the intensity and complexity of the impact;	The intensity and complexity of the construction phase is in keeping with modern construction projects. Following mitigation, it is likely that the impacts of the construction phase will be minor. The operational phase of the development is moderate in scale and no significant negative impacts are likely.
(e) the probability of the impact;	It is likely that minor impact will arise from noise and during the construction phase will occur. However, construction activity in an urban environment is entirely normal and working hours will be limited generally to hours set by condition or as otherwise agreed. All works carried out will be done so in accordance with approved management plans.

	In summary, some level of construction impacts on the relevant aspects of the environment is highly probable, but these will be mitigated by the implemented Outline Construction Management Plan.
(f) the expected onset, duration, frequency and reversibility of the impact;	The construction impacts will commence within approximately 6 months of planning approval; they will be short-medium term, over a period of c. 2 years and restricted by planning conditions in terms of the hours of operation. The frequency of the minor impacts will vary throughout the construction phase; however, the impact is considered to be short term, local and minor. No permanent negative impacts on the relevant aspects of the environment are anticipated as a result of the construction phase of the project. No significant negative impacts are likely. The development will be occupied all year round and impacts will be irreversible.
(g) the cumulation of the impact with the impact of other existing and/or approved projects;	Planning permission has been granted on lands to the east at Cheshire Home (DLRCC Ref: D17A/0590; ABP Ref: 301203), comprising 56 no. residential units. This could increase to 72 units if another permission is granted. The subject site is zoned land designated for residential use and is surrounded by zoned lands. The development of lands in the area is to be expected, in the context of the Development Plan. It is considered that cumulative impacts with other existing and/or approved projects are not likely to cause significant effects on the on the relevant aspects of the environment.
(h) the possibility of effectively reducing the impact.	Appropriate mitigation measures will be undertaken in order to reduce likely significant effects on the environment arising from the proposed development. Any mitigation measures to manage noise, dust and/or pollution during the construction phase will be implemented in accordance with the site specific construction management plan submitted with the application.

5.0 SUMMARY & CONCLUSIONS

5.1 This Environmental Impact Assessment Screening Report has been prepared to accompany the Strategic Housing Development Pre-Application Consultation Request to An Bord Pleanála for the development of 300 no. unit residential development and creche on the lands of Dalguise House, Monkstown Road, Monkstown, County Dublin, a protected structure.

5.2 The purpose of this report is to provide to An Bórd Pleanála with the information required under Schedule 7A of the Planning and Development Regulations 2001, as amended, to enable The Board to determine in light of the criteria set out under Schedule 7 of those regulations whether the proposed development is likely to have significant effects on the environment. If it determines that the proposed development is not likely to have significant effects on the environment, the application can be determined without an Environmental Impact Assessment Report (EIAR) having been submitted.

5.3 The report has assessed the potential impact of the proposed development on the environment in response to Section 6 of the pre-application consultation application form. The proposed development is substantially below the thresholds of a mandatory EIAR. The screening exercise has been completed in this report and the methodology used has been informed by the available guidance, legislation and directives.

5.4 It is considered that a sub threshold EIAR is not required for the proposed residential development for the following reasons (in summary) set out in this screening exercise:

- The proposal falls significantly below the thresholds of Schedule 5 of the Planning and Development Regulations 2001 (as amended);
- The site makes optimum use of a suburban greenfield land resource in close proximity to existing residential development and utilises existing servicing provision.
- The Ecological Impact Assessment and AA screening outlines that adverse effects on the integrity of the Natura 2000 network from the proposed development, whether considered on its own or in combination with other plans or projects, can be excluded following implementation of the mitigation measures to be applied.
- The development will be connected to public services such as water, foul and storm sewers.
- The proposed drainage and flood risk strategy will contribute to improved retention of surface water on site.
- The level of demolition involved will not create any significant impacts on the environment. A Appropriate Assessment has been undertaken which confirms that the likelihood or risk of significant effects to the Natura 2000 network, either alone or in combination with other plans or projects, can be excluded.
- Standard construction practices as described in the Site Specific Outline Construction Management Plan prepared by Benchmark Property can be employed to mitigate any risk of adverse impacts during the construction phase arising from noise, dust or pollution.

- No identified impact in this screening exercise, cumulatively or individually is considered to likely cause significant effects on the environment.

5.5 In the event that the screening determination carried out by the Board reaches the conclusion that the proposed development is not likely to have significant effects on the environment, the Board's attention is specifically drawn to the requirement that the Board's screening determination must comply with the requirements of Article 299C(2) of the Planning and Development Regulations, as amended, which provides:

> *"(2) (a) Paragraph (b) applies where the screening determination is that the proposed development would not be likely to have significant effects on the environment and the applicant has provided, under article 299B(1)(c), a description of the features, if any, of the proposed development and the measures, if any, envisaged to avoid or prevent what might otherwise have been significant adverse effects on the environment of the development.*
>
> *(b) The Board shall specify such features, if any, and such measures[5], if any, in the screening determination."*

5.6 In conclusion, it is considered that the proposed development will not have any significant impacts on the environment. Main recommended mitigation measures are set out at in Appendix 2 of this report and will be employed throughout the construction and operational phase of the development with the result that the proposed development will not create any significant impacts on the quality of the surrounding environmentt.

[5] Commonly referred to as mitigation measures.

Appendix 1

Location of Designated Environmental Sites within 15km Radius of Subject Site (red circle) and the Ringsend Waste Water Treatment Plant (green circle) – Source: Openfield Ecological Services

Appendix 2: Main Mitigation Measures

These can be found in the Site Specific Outline Construction Management Plan, which is bound separately to this report.

APPENDIX 10.1

HYDROLOGICAL & HYDROGEOLOGICAL QUALITATIVE RISK ASSESSMENT

(PREPARED BY BYRNELOOBY, 2023)

Development of Land at Monkstown Road, Dublin, Dalguise House

Hydrological & Hydrogeological Qualitative Risk Assessment

GEDV Monkstown Owner Limited

May 2023
Revision 00

BYRNELOOBY

IRELAND | UK | UAE | BAHRAIN | KSA

Document Control

Project: Development of Land at Monkstown Road, Dublin, Dalguise House

Document: Hydrological & Hydrogeological Qualitative Risk Assessment

Client: GEDV Monkstown Owner Limited

Report Number: W3683-BLP-XX-XX-RP-Z-04

Document Checking:

Revision	Revision/ Review Date	Details of Issue	Authorised		
			Prepared By	Checked By	Approved By
00	May 2023	DRAFT	D.Rehill	A.Gormley	M.Gohery
Disclaimer: Please note that this report is based on specific information, instructions, and information from our Client and should not be relied upon by third parties.					

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Contents

1 Introduction

ByrneLooby (BLA), has been commissioned by GEDV Monkstown Owner Limited to prepare a Hydrological & Hydrogeological Qualitative Risk Assessment for the proposed residential development at Dalguise House, Monkstown Road, Co. Dublin.

1.1 Site Location & Hydrological Setting

The subject site consists of Dalguise House and its associated lands and extends to c3.58 hectares. The site is located off Monkstown Road, which provides the primary vehicular access. The site is currently laid out with the main house to the south centre, ancillary buildings, and a large area of landscaped gardens. The site is bound by existing, established housing estates to the north, south, east and west (see Figure 1). The Stradbrook Stream runs along the northern boundary of the site, and the site level general falls towards the stream. Dalguise House is at the high point of the site, with a ground floor level of c29.14mOD. The level along the northern boundary of the site, at the bank of the stream, varies from 15.26mOD to 16.16mOD. The southwestern corner of the site is at 22.4mOD, and the ground profile rises to the south-eastern corner at 27.24mOD. The level of Monkstown Road at the existing site entrance is c19.2mOD.

Figure 1 – Location of proposed development site (*Source Google*)

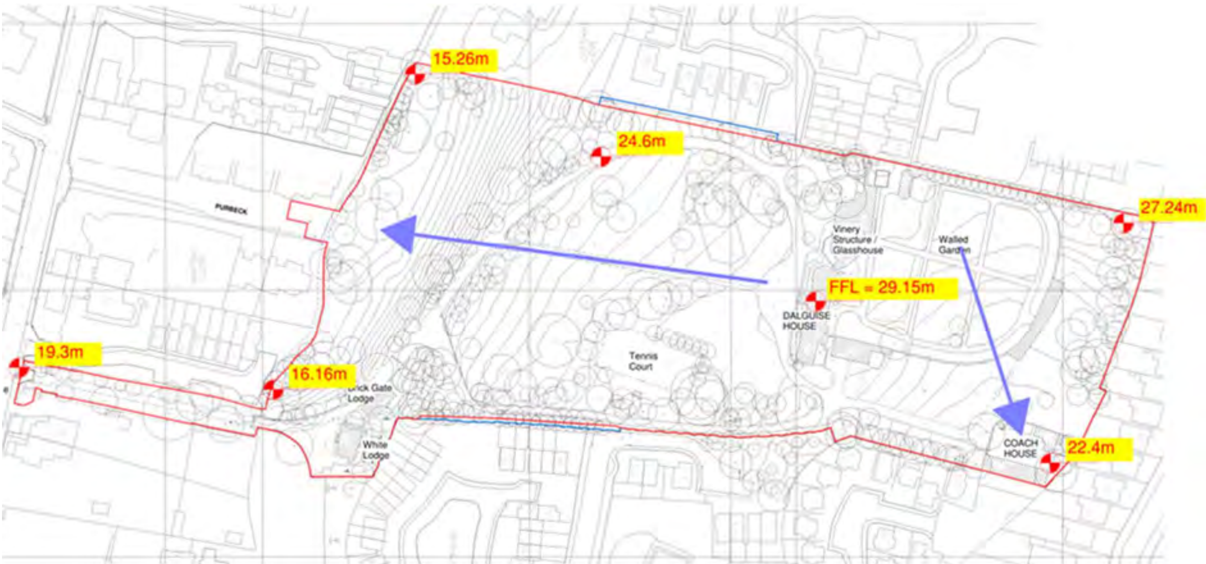

Figure 2 – Topographical Survey with key levels highlighted (falls in site indicated)

The EPA (2022) on-line database indicates one watercourse in the study area, the Stradbrook Stream (EPA name is Brewery Stream EPA code IE_EA_09B130400), flowing along the northern site boundary and is partially culverted along its route. It has a confluence with the Mikie Brien stream in Monkstown prior to reaching its outfall at Dun Laoghaire (located east of the proposed development).

Figure 2 – Stradbrook Stream Location (source: EPA.ie)

An assessment of the hydrological characteristics of the watercourse (McCloy Consulting, 2022)., including review of local topography, surface water drainage records and a site visit, indicated that the Stradbrook Stream at the site is fed by a 1200 mm pipe which constitutes the outfall from the upstream surface water drainage network. Natural hydrology in the upstream network is modified such that the former watercourse effectively no longer exists, and its function has been replaced by the artificial surface water drainage network.

1.2 Objective of Report

The scope of this desk top review is to confirm any hydrological pathway to a Natura 2000 sites and determine the risks to water quality based on the construction and operation of the proposed development.

In particular, this review considers the possible impact of construction run-off and domestic sewage from the proposed development on water quality and overall water body status within Dublin Bay habitats SAC/ SPA/ pNHA which is located to the north east of the proposed development.

This report has been prepared by Jackelyn Wren, Senior Environmental Specialist at ByrneLooby. Jackelyn is an Affiliate Member of IEMA with a Honours Bachelor of Arts Degree in Geography, and eight years' professional experience in the preparation of Environmental Impact Assessment (EIA) Reports in Ireland and the Middle East. Jackelyn has worked on numerous projects varying in environmental restrictions and working with different government bodies, e.g Amaala Service Marinas, an ultra-luxury destination along Saudi Arabia's northwestern coast, Saggart Reservoir, Dublin, Ireland, completing Environmental Impact Assessment (EIA), Waste Management Plan (WMP) and Oil Spill Contingency Plan (OSCP).

1.3 Description of Existing Drainage

The Irish Water records indicate an existing public combined sewer running under on the line of the Stradbrook/Monkstown Stream. This 450mm dia. vitrified clay (VC) sewer flows easterly towards Carrickbrennan Road. A further 450mm dia. Irish Water/ DLRCC Vitrified Clay (VC) combined line, exists, which runs from the Monkstown Valley development onto the application site, current entrance/exit roadway, and onto Monkstown Road, down Albany Avenue before connecting onto a main combined line on Seapoint Avenue was noted. Finally, the existing Dalguise House is served by a separate septic tank and percolation area located in the lands outside to the Walled Garden on the western boundary.

There is no attenuation of rainwater run-off and this drains to the Stradbrook Stream or percolates to ground. The Stradbrook Stream (EPA name is Brewery Stream EPA code

IE_EA_09B130400) discharges to an outfall at Dun Laoghaire into Dublin Bay. As such there is a direct open-water linkage between the proposed development and Dublin Bay.

1.4 Description of Proposed Drainage / Watermain

Proposed Stormwater Drainage

The proposed foul water connection will be separated from the surface water network throughout the development resulting in an overall improvement in storm water quality discharging from the site. Surface water discharge will be into the Stradbrook Stream via two new dedicated surface water outfall pipes (served by a simple gravity drainage system). The separation of foul and stormwater will result in improved water quality discharging to the stream.

To ensure maintenance of high-quality run-off, SUDS measures (Greater Design Strategic Drainage Study -Dublin City Council, and Dun-Laoghaire Rathdown County Council) are incorporated in a surface water treatment train approach for the development.

The SUDS element within the proposed development consists of blue roofs over all apartment blocks, permeable paving, swales and filter strips along road/pavement areas and specific attenuation tanks with flow control devices to control discharged to greenfield levels prior to development. The proposed basement car park areas will have a series of gullies and drainage channels cast into the floor slab which will cater for limited amounts of run-off that may enter the proposed car park through ramps, service ventilation opens etc. and from vehicles. The outflow will discharge through a petrol interceptor to remove any contaminants and will flow to sumps containing a duty and standby pumping system which will lift the collected water via a rising main to the nearest foul manhole on the main gravity system.

During construction, mitigation measures include a settlement pond to ensure adequate settlement of solids prior to discharge to the receiving stream water. The stream will also be protected by a robust silt fence.

Proposed Foul Drainage

Two new connections to foul sewer will be created for the proposed development. Foul effluent from the proposed development discharges to the Irish Water drainage system, where it flows under gravity to the treatment plant/pumping station at the West Pier in Dun Laoghaire. From there it Is pumped to the wastewater treatment plant at Ringsend in Dublin. The calculated flows from the development to the foul sewer network for connection 1 has a peak capacity flow 7.4 l/s. As noted, any run-off from basement parking areas will discharge to the foul sewer via a petrol interceptor.

Water Supply

There is an existing 160 diameter Irish Water watermain on Monkstown Road. In order to provide water supply to the proposed site an additional 150mm diameter watermain was laid through the site and terminated adjacent to the Stradbrook / Monkstown Stream to facilitate the subject site. In addition, Aside from the connection to the existing 160mm dia HPPE watermain, Irish Water have also requested in the pre-connection enquiry a secondary connection to the southeast of the site outside of the site boundaries to an existing 100mm dia uPVC water main, including the installation of a control valve and bulk meter. This connection is to remain closed during normal operations.

2 Assessment Of Baseline Water Quality, River Flow And Water Body Status

A reliable Conceptual Site Model (CSM) requires an understanding of the existing hydrological and hydrogeological setting. This is described below for the proposed development site and surrounding hydrological and hydrogeological environments.

2.1 Hydrological Catchment Description

The proposed development site lies within the Liffey River and Dublin Bay Catchment 09. The Stradbrook Stream (EPA, 2019) runs on the northern boundary of the development (EPA name is Brewery Stream EPA code IE_EA_09B130400).

The Dublin Bay waterbody (EPA online site code: 00206) includes Special Area of Conservation (SAC), Special Protection Area (SPA), and proposed Natural Heritage Area (pNHA). The Environmental Protection Agency (EPA, 2019) on-line mapping presents the available water quality status information for water bodies in Ireland.

Dublin Bay has a WFD status (2016 – 2021) of 'Good'. Dublin Bay waterbody has a WFD risk score of 'Not at risk'. The ecological status of transitional and coastal water bodies during 2016-2021 for Dublin Bay is classed as 'good' (taken from Map 4.1 EPA, 2019). The most recent surface water quality data for the Dublin Bay for the 2018–2020 assessment on trophic status of estuarine and coastal waters indicate that they are 'Unpolluted' (based on Map 10, EPA, 2018)'. Under the 2015 'Trophic Status Assessment Scheme' classification of the EPA, 'Unpolluted' means there have been no breaches of the EPA's threshold values for nutrient enrichment, accelerated plant growth, or disturbance of the level of dissolved oxygen normally present. The Liffey Estuary Lower Transitional Waterbody has a WFD status of 'Moderate' and a WFD Risk Score of 'At Risk' (2016-2021), the Tolka Estuary Transitional Waterbody has a WFD status of 'Poor' and a WFD Score of 'At Risk' (2016-2021), and the North Bull Island Transitional Waterbody has a WFD status of 'Moderate' and a WFD Score of 'Review' (2016-2021).

The Stradbrook Stream (WFD name Brewery Stream_010) (EPA code IE_EA_09B130400) has a WFD ecological status or potentialof 'poor' and a risk still 'under review' (2016-2021). It is significantly culverted, hence the poor ecological status.

The current EPA (2022) bathing water quality report has classified nearby Seapoint as 'excellent quality' from 2019-2022. The EPA rates beaches as follows: Excellent, Good, Sufficient and Poor. The 2022 status is based on the assessment of bacteriological results for the period 2019 to 2022. Seapoint has achieved an Excellent Water Quality rating for the four consecutive years

2019 to 2022. Annual water quality ratings are generally calculated using monitoring results over a four-year period and are assessed against stringent bacterial limits to protect bather health. The 2023 monthly data has continued to indicate excellent status and that there is no likelihood of significant effects on Bathing Water quality at the Seapoint beach as a result of the Proposed Development

2.2 Aquifer Description & Superficial Deposits

The Geological Survey of Ireland GSI (2023) classifies the bedrock beneath the overall site and the surrounding area as Type 2p microcline porphyritic Formation which comprises Granite with microcline phenocrysts.

The GSI also classifies the principal aquifer types in Ireland as:

- Lk - Locally Important Aquifer - Karstified
- Ll - Locally Important Aquifer - Bedrock which is Moderately Productive only in Local Zones
- Lm - Locally Important Aquifer - Bedrock which is Generally Moderately Productive
- Pl - Poor Aquifer - Bedrock which is Generally Unproductive except for Local Zones
- Pu - Poor Aquifer - Bedrock which is Generally Unproductive
- Rkd - Regionally Important Aquifer (karstified diffuse)

Presently, from the GSI (2023) National Bedrock Aquifer Map, the GSI classifies the bedrock aquifer beneath the subject site as a Poor aquifer (Pl), i.e. 'bedrock which is generally unproductive except in local zones'.

The proposed development lies within the Kilcullen Groundwater Body (GWB, IE_EA_G_003). Presently, the groundwater body in the region of the site is classified under the WFD status 2016-2021 (EPA, 2021) as 'good'. The WFD risk score system indicates the GWB as 'At risk'.

Aquifer vulnerability is a term used to represent the intrinsic geological and hydrological characteristics that determine the ease with which groundwater may be contaminated generally by human activities. The GSI (2023) guidance presently classifies the bedrock aquifer vulnerability in the region of the subject site as 'moderate' which indicates a general thick overburden depth potential of 5 - 10m, indicating relatively good protection of the underlying aquifer by low permeability subsoil. This desk study data was confirmed by cable percussion drilled boreholes at the site, which were drilled to a maximum depth of 6 m. The aquifer vulnerability class in the region of the site is presented as Figure 3 below.

Figure 3 – Aquifer Vulnerability (source: GSI.ie)

The GSI/ Teagasc (2019) mapping database of the quaternary sediments in the area of the subject site indicates the principal subsoil type in the study area is gravels derived from limestone (GLs), and the underlying subsoil namely *made ground* which reflects the urbanised land use in the immediate area.

3 CONCEPTUAL SITE MODEL

A conceptual site model (CSM) is developed based on a good understanding of the hydrological and hydrogeological environment, plausible sources of impact and knowledge of receptor requirements. This in turn allows possible Source Pathway Receptor (S-P-R) linkages to be identified. If no S-P-R linkages are identified, then there is no risk to identified receptors.

3.1 Assessment of Plausible Sources

The contractor shall provide all necessary accommodation, material handling and secure storage for their operations. The Contractor's compound and storage area shall be located on the Dalguise lands, within the wall garden area, with construction access from the existing site entrance at the Entrance Lodge.

Potential sources during both the construction and operational phases are considered. For the purposes of undertaking the potential of any hydrological/ hydrogeological S-P-R linkages, all potential sources of contamination are considered without taking account of any measures intended to avoid or reduce harmful effects of the proposed project (mitigation measures) i.e. a worst-case scenario. Construction sources (short-term) and operational sources (long-term) are considered below.

<u>Construction Phase</u>

The following sources are considered plausible for the proposed construction site:

a) Accidental leakage may occur from construction site equipment. As a worst case scenario an unmitigated leak of 300 litres is considered. This would be a single short-term event.

b) Use of wet cement is a requirement during construction. Run-off water from recent cemented areas will result in highly alkaline water with high pH. As this would only occur during phases of work this is again considered as a single short-term event rather than an ongoing event.

c) The demolition of the existing building units and construction requires soil excavation and removal and import. Unmitigated run-off could contain a high concentration of suspended solids during earthworks.

These impacts could be considered as intermittent short-term events.

<u>Operational Phase</u>

The following sources are considered plausible post construction:

a) No heating oil storage is required for the proposed development. Therefore, the only plausible leak is petrol/ diesel fuel from individual cars in parking areas, run-off may contain a worst-case scenario of 70 litres. The risk of a short-term release of oil is already considered under the construction scenario above i.e. without mitigation. Within the basement carpark area, any rainwater entering the sealed system as a result of snow melt or raindrops from cars will pass through a petrol interceptor providing treatment before discharging to the foul sewer. These mitigation measures have not been considered in this risk assessment.

b) The development will be fully serviced with [separate] foul and storm sewers which will have adequate capacity for the facility as required by Irish Water licencing. Discharge from the site to the public foul sewer will be sewage and grey water only due to the residential nature of the proposed development. The foul discharge from the site will join the public sewer and will be treated at the Irish Water Ringsend WWTP prior to subsequent discharge to Dublin Bay. This WWTP is required to operate under an EPA licence and must meet environmental legislative requirements as set out in such licence. It is noted that an application for a new upgrade to this facility (Irish Water, 2018) has recently received planning and is expected to be fully operational with greater treatment capacity within 5 years. All [attenuated] stormwater will discharge to the public stormwater network which will ultimately discharge to Dublin Bay.

3.2 Assessment of Receptors

The following pathways have been considered with the final impact assessment presented in Section 3.4:

a) The potential for vertical migration of any contaminants into to the bedrock aquifer is significantly reduced due to the recorded "Moderate Vulnerability "recorded at the site, which will result in attenuation of any pollutants. The site is underlain by a Poor aquifer (LI) GSI classifies as a bedrock which is generally unproductive only in local zones. As such, there is a low potential for offsite migration of any accidentally discharged contaminants within the bedrock.

b) There is an open water hydrological linkage with Dublin Bay through Stradbrook stream located to the north of the site.

c) There is no 'direct' pathway for foul sewage to any receiving water body. There is however an 'indirect pathway' through the public sewer which ultimately discharges to the Irish Water WWTP at Ringsend prior to final discharge to Dublin Bay, post treatment.

The receptors considered in this assessment include the following:

a) Underlying [poor aquifer] granite bedrock aquifer;

b) Stradbrook Stream;

c) Natura 2000 sites; and

d) Seapoint bathing water quality (for reference).

3.3 Assessment of Source – Pathway – Receptor Linkages

Table 3.1 below summarises the plausible pollutant linkages (S-P-R) considered as part of the assessment and a review of the assessed risk to waterbodies is also summarised below.

The overburden thickness and permeability together with underlying poor aquifer will help to minimise the rate of any off-site migration for any indirect discharges to ground at the site.

During, construction, surface run off from greenfield areas of the site will only be discharged to the Stradbrook Stream via a settlement pond so that only silt-free water will enter the environment. Elsewhere the stream will be protected by a robust silt fence. However, should any silt-laden stormwater from construction manage to enter the stream i.e. without on-site mitigation, the suspended solids will naturally settle within 0.5 kilometre i.e. before the outfall to Dublin Bay SAC/SPA/pHNA.

In the event of a [theoretical] 300 litre [worst case scenario used] hydrocarbon leak fully discharging to the stormwater sewer or adjacent stream without mitigation, there is potential for some short-term impact above surface water quality limits as outlined in S.I. No. 272 of 2009 in the Stradbrook stream. This would be a short term impact event. Based on the relatively flat gradient and distance to the outfall, there is no possible exceedance above statutory guidelines within Dublin Bay.

However, with the presence of an oil/ petrol interceptor within the sealed basement car park area of the proposed development, and the proposed discharge to the foul sewer, there is no likely impact above statutory thresholds in the Stradbrook stream either. Based on the possible loading of any hazardous material during construction and operation there is no potential for impact on Dublin Bay water quality status from an accidental discharge to stormwater.

The sewage discharge will be licensed by Irish Water, collected in the public sewer and treated at Irish Water's WWTP at Ringsend prior to treated discharge to Dublin Bay. This WWTP is required to operate under an EPA licence (D0034-01) and to meet environmental legislative requirements. The plant has received planning and will be upgraded with increased treatment capacity over the next five years, which will increase network capacity by c50%. The works are currently on site, and due for completion in 2025, at which stage, the Ringsend Wastewater Treatment Plant will be able to treat wastewater for up to 2.4 million population equivalent while meeting the required standards. Irish Water have also confirmed feasibility for connection of the proposed development to the existing public sewer system subject to controlled flow provisions on the new development. Therefore, any impact from the increased wastewater flows on the existing drainage network will be temporary and not significant.The peak foul discharge calculated for the proposed development is well within the capacity of the WWTP. Even without treatment at the Ringsend WWTP, the peak effluent discharge, calculated for the proposed development, would equate to 0.096% of the licensed discharge (peak hydraulic capacity) at Ringsend WWTP and would not impact on the overall water quality within Dublin Bay and therefore would not have an impact on the current Water Body Status (as defined within the Water Framework Directive). (Note: the average effluent discharge equates to approx. 0.023% of the licensed discharge (peak hydraulic capacity) at Ringsend WWTP). Recent water quality assessment of Dublin Bay also shows that Dublin Bay on the whole, currently has an 'unpolluted' water quality status (EPA, 2019).

The assessment has also considered the effect of cumulative events, such as release of sediment-laden water combined with a minor hydrocarbon leak on site. As the potential hazard loading is low and short term in nature, it is concluded that no perceptible impact on water quality would occur. It can also be concluded that the cumulative or in-combination effects of effluent arising from the proposed development with that of other developments discharging to Ringsend WWTP will not be significant having regard to the size of the calculated discharge from the proposal.

There have been a number of breaches of the EPA licence for the Ringsend WWTP, due to stormwater overflows etc. However, recent water quality assessment shows that these overflows have not been shown to have had a long term detrimental impact on the water body status. The current EPA (2021) bathing water quality report has classified nearby Seapoint as 'excellent quality' from 2019-2022. The EPA rates beaches as follows: Excellent, Good, Sufficient and Poor. The 2022 status is based on the assessment of bacteriological results for the period 2019 to 2022. Seapoint has achieved an Excellent Water Quality rating for the four consecutive years 2019 to 2022. Annual water quality ratings are generally calculated using monitoring results over a four-year period and are assessed against stringent bacterial limits to protect bather health. The 2023 monthly data has continued to indicate excellent status and that there is no likelihood of significant effects on Bathing Water quality at the Seapoint beach as a result of the Proposed Development

The 'excellent quality' bathing water status (issued by the EPA) at Seapoint will be unchanged by the proposed development at Dalguise House. The existing and proposed foul and storm sewers are 'separate' in compliance with the Building Regulations and Dublin City Councils 'Regional Code of Practice for Drainage works and Irish Waters Code of Practice for Wastewater Infrastructure'. As such, there is no potential for sewage-laden water from the proposed development to enter the local stormwater network and ultimately discharging to Seapoint at Dublin Bay. All plants and equipment will be operated by experienced and qualified personnel with the appropriate registrations.

Source	Pathways	Receptors Considered	Risk of Impact (without mitigation)
Construction Impacts			
Unmitigated leak from a construction vehicle. Discharge to ground of runoff water with High pH from cement process.	Vertical with protection by overlying made ground subsoils (moderate vulnerability).	Granite bedrock aquifer (Poor aquifer).	Minor to moderate risk of localised discharge to ground of contaminated water. No possible impact on the status of the aquifer due to volume of leak indicated, natural attenuation within overburden and low potential for migration due to low connectivity of fracturing within the granite aquifer (Poor Aquifer).
Discharge to ground of runoff water with High pH from cement process. Unmitigated run off containing a	Direct pathway through stormwater drainage and Stradbrook Stream to Dublin Bay	Stradbrook Stream and Dublin Bay (SAC/ SPA/ pNHA)	Minor to moderate risk of a temporary impact without mitigation on Stradbrook stream. No possible impact on water quality status in Dublin Bay due to low contaminant loading and attenuation and dilution near source area.

high concentration of suspended solids			
Operational Impacts			
Foul effluent discharge to sewer.	Indirect pathway to Dublin Bay through public sewer via Ringsend WWTP	Dublin Bay (SAC/ SPA/ pNHA)	No perceptible risk – Even without treatment at Ringsend WWTP, the peak effluent discharge from the site would equate to 0.096%Note 1 of the licensed discharge at Ringsend WWTP, would not impact on the overall water quality within Dublin Bay and therefore would not have an impact on the current Water Body Status (as defined within the Water Framework Directive).
Discharge to ground of hydrocarbons from carpark leak	Direct pathway through stormwater drainage by Stradbrook Stream water course.	Dublin Bay (SAC/ SPA/ pNHA).	No possible impact due to low contaminant loading and short-term nature of any potential discharge.
Note 1: This assessment is based on the current licenced discharge from the Ringsend WWTP. Irish Water have a number of projects which have receive planning or are within the planning process which will result in greater capacity for wastewater treatment for the greater Dublin area. In particular, the following key projects are applicable: *(i) Ringsend WWTP upgrade –Upgrade works are scheduled to increase the treatment capacity from 1.64 million p.e. to 2.4million p.e. This upgrade is currently programmed to be complete in 2025.* *(ii) Greater Dublin Drainage Project – A planning application was lodged with An Bord Pleanála in June 2018, an oral hearing held in March 2019.* *(iii) 9C sewer duplication - A planning application for this project was lodged with FCC on 11th May*			

2017 and FCC granted planning permission on 5th July 2017. Construction commenced in 2019 and will be completed by September 2022.

4 Conclusion

A conceptual site model (CSM) has been prepared following a desk top review of the site and surrounding environs. Based on this CSM, plausible Source-Pathway Receptor linkages have been assessed 'assuming an absence of any measures' intended to avoid or reduce harmful effects of the proposed project (i.e. mitigation measures) in place at the proposed development site.

There is an open water linkage between the proposed development site the Dublin Bay Natura 2000 site through Stradbrook stream and there is an indirect source pathway linkage from the proposed development site via the public sewer discharging to Ringsend WWTP.

A review of source pathway linkages concludes that the impact of storm water runoff and foul effluent from the proposed development will not result in any change to the current regime (water quality or quantity) in any of the Dublin Bay Natural 2000 Sites.

Finally, in line with good practice, mitigation measures have been included in the construction design, management of construction programme and during operation of the proposed development. These specific measures will provide further protection to the receiving soil and water environments. However, the protection of downstream European sites is in no way reliant on these measures.

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APPENDIX 10.2

GROUND WATER MONITORING

Project No.	23927	GROUNDWATER MONITORING DATA SHEET	IGSL Ltd

Project: Dalguise House

Engineer: David Rehill Consulting

Monitoring Date: 06/03/2022

Exploratory Hole No.	Ground Level (m OD)	Hole Depth (m bgl)	Response Zone Top (m bgl)	Response Zone Base (m bgl)	Depth to Groundwater (m bgl)	Groundwater Level (m OD)	Comments
RC03	27.94	17.00	1.50	14.50	7.09	20.85	
RC05	25.92	15.00	1.00	11.00	2.14	23.78	
RC07	22.38	12.30	2.00	12.30	7.01	15.37	
RC09	14.00	7.50	1.00	7.50	2.17	11.83	

Remarks: Water levels measured using electric dipmeter
BH - denotes cable percussion borehole
RC - denotes rotary core drillhole

Project No.	23927	GROUNDWATER MONITORING DATA SHEET	IGSL Ltd

Project: Dalguise House

Engineer: David Rehill Consulting

Monitoring Date: 08/08/2022

Exploratory Hole No.	Ground Level (m OD)	Hole Depth (m bgl)	Response Zone Top (m bgl)	Response Zone Base (m bgl)	Depth to Groundwater (m bgl)	Groundwater Level (m OD)	Comments
RC03	27.94	17.00	1.50	14.50	7.63	20.31	
RC05	25.92	15.00	1.00	11.00	3.49	22.43	
RC07	22.38	12.30	2.00	12.30	7.46	14.92	
RC09	14.00	7.50	1.00	7.50	2.32	11.68	

Remarks: Water levels measured using electric dipmeter
BH - denotes cable percussion borehole
RC - denotes rotary core drillhole

Project No.	23927	GROUNDWATER MONITORING DATA SHEET	IGSL Ltd

Project: Dalguise House

Engineer: David Rehill Consulting

Monitoring Date: 24/10/2022

Exploratory Hole No.	Ground Level (m OD)	Hole Depth (m bgl)	Response Zone Top (m bgl)	Response Zone Base (m bgl)	Depth to Groundwater (m bgl)	Groundwater Level (m OD)	Comments
RC03	27.94	17.00	1.50	14.50	7.05	20.89	
RC05	25.92	15.00	1.00	11.00	2.82	23.10	
RC07	22.38	12.30	2.00	12.30	7.27	15.11	
RC09	14.00	7.50	1.00	7.50	1.89	12.11	

Remarks:
Water levels measured using electric dipmeter
BH - denotes cable percussion borehole
RC - denotes rotary core drillhole

Project No.	23927	GROUNDWATER MONITORING DATA SHEET	IGSL Ltd

Project: Dalguise House

Engineer: David Rehill Consulting

Monitoring Date: 16/12/2022

Exploratory Hole No.	Ground Level (m OD)	Hole Depth (m bgl)	Response Zone Top (m bgl)	Response Zone Base (m bgl)	Depth to Groundwater (m bgl)	Groundwater Level (m OD)	Comments
RC03	27.94	17.00	1.50	14.50	6.82	21.12	
RC05	25.92	15.00	1.00	11.00	1.32	24.60	
RC07	22.38	12.30	2.00	12.30	6.90	15.48	
RC09	14.00	7.50	1.00	7.50	1.75	12.25	

Remarks: Water levels measured using electric dipmeter
BH - denotes cable percussion borehole
RC - denotes rotary core drillhole

Project No.	23927	GROUNDWATER MONITORING DATA SHEET	IGSL Ltd

Project: Dalguise House

Engineer: David Rehill Consulting

Monitoring Date: 20/01/2023

Exploratory Hole No.	Ground Level (m OD)	Hole Depth (m bgl)	Response Zone Top (m bgl)	Response Zone Base (m bgl)	Depth to Groundwater (m bgl)	Groundwater Level (m OD)	Comments
RC03	27.94	17.00	1.50	14.50	6.83	21.11	
RC05	25.92	15.00	1.00	11.00	1.20	24.72	
RC07	22.38	12.30	2.00	12.30	6.78	15.60	
RC09	14.00	7.50	1.00	7.50	1.71	12.29	

Remarks: Water levels measured using electric dipmeter
BH - denotes cable percussion borehole
RC - denotes rotary core drillhole

Project No.	23927	GROUNDWATER MONITORING DATA SHEET	IGSL Ltd

Project: Dalguise House

Engineer: David Rehill Consulting

Monitoring Date: 14/02/2023

Exploratory Hole No.	Ground Level (m OD)	Hole Depth (m bgl)	Response Zone Top (m bgl)	Response Zone Base (m bgl)	Depth to Groundwater (m bgl)	Groundwater Level (m OD)	Comments
RC03	27.94	17.00	1.50	14.50	7.13	20.81	
RC05	25.92	15.00	1.00	11.00	1.83	24.09	
RC07	22.38	12.30	2.00	12.30	6.97	15.41	
RC09	14.00	7.50	1.00	7.50	2.12	11.88	

Remarks: Water levels measured using electric dipmeter
BH - denotes cable percussion borehole
RC - denotes rotary core drillhole

Project No.	23927	**GROUNDWATER MONITORING DATA SHEET**	***IGSL Ltd***

Project: Dalguise House

Engineer: David Rehill Consulting

Monitoring Date: 01/06/2023

Exploratory Hole No.	Ground Level (m OD)	Hole Depth (m bgl)	Response Zone Top (m bgl)	Response Zone Base (m bgl)	Depth to Groundwater (m bgl)	Groundwater Level (m OD)	Comments
RC03	27.94	17.00	1.50	14.50	11.96	15.98	
RC05	25.92	15.00	1.00	11.00	2.14	23.78	
RC07	22.38	12.30	2.00	12.30	6.96	15.42	
RC09	14.00	7.50	1.00	7.50	2.21	11.79	

Remarks: Water levels measured using electric dipmeter
BH - denotes cable percussion borehole
RC - denotes rotary core drillhole

APPENDIX 11.1

AMBIENT AIR QUALITY STANDARDS

Appendix 11.1

AMBIENT AIR QUALITY STANDARDS

National standards for ambient air pollutants in Ireland have generally ensued from Council Directives enacted in the EU (& previously the EC & EEC). The initial interest in ambient air pollution legislation in the EU dates from the early 1980s and was in response to the most serious pollutant problems at that time which was the issue of acid rain. As a result of this sulphur dioxide, and later nitrogen dioxide, were both the focus of EU legislation. Linked to the acid rain problem was urban smog associated with fuel burning for space heating purposes. Also apparent at this time were the problems caused by leaded petrol and EU legislation was introduced to deal with this problem in the early 1980s.

In recent years the EU has focused on defining a basis strategy across the EU in relation to ambient air quality. In 1996, a Framework Directive, Council Directive 96/62/EC, on ambient air quality assessment and management was enacted. The aims of the Directive are fourfold. Firstly, the Directive's aim is to establish objectives for ambient air quality designed to avoid harmful effects to health. Secondly, the Directive aims to assess ambient air quality on the basis of common methods and criteria throughout the EU. Additionally, it is aimed to make information on air quality available to the public via alert thresholds and fourthly, it aims to maintain air quality where it is good and improve it in other cases.

As part of these measures to improve air quality, the European Commission has adopted proposals for daughter legislation under Directive 96/62/EC. The first of these directives to be enacted, Council Directive 1999/30/EC, has been passed into Irish Law as S.I. No 271 of 2002 (Air Quality Standards Regulations 2002), and has set limit values which came into operation on 17th June 2002. The Air Quality Standards Regulations 2002 detail margins of tolerance, which are trigger levels for certain types of action in the period leading to the attainment date. The margin of tolerance varies from 60% for lead, to 30% for 24-hour limit value for PM_{10}, 40% for the hourly and annual limit value for NO_2 and 26% for hourly SO_2 limit values. The margin of tolerance commenced from June 2002, and started to reduce from 1 January 2003 and every 12 months thereafter by equal annual percentages to reach 0% by the attainment date. A second daughter directive, EU Council Directive 2000/69/EC, has published limit values for both carbon monoxide and benzene in ambient air. This has also been passed into Irish Law under the Air Quality Standards Regulations 2002.

The most recent EU Council Directive on ambient air quality was published on the 11/06/08 which has been transposed into Irish Law as S.I. 180 of 2011. Council Directive 2008/50/EC combines the previous Air Quality Framework Directive and its subsequent daughter directives. Provisions were also made for the inclusion of new ambient limit values relating to $PM_{2.5}$. The margins of tolerance specific to each pollutant were also slightly adjusted from previous directives. In regards to existing ambient air quality standards, it is not proposed to modify the standards but to strengthen existing provisions to ensure that non-compliances are removed. In addition, new ambient standards for $PM_{2.5}$ are included in Directive 2008/50/EC. The approach for $PM_{2.5}$ was to establish a target value of 25 $\mu g/m^3$, as an annual average (to be attained everywhere by 2010) and a limit value of 25 $\mu g/m^3$, as an annual average (to be attained everywhere by 2015), coupled with a target to reduce human exposure generally to $PM_{2.5}$ between 2010 and 2020. This exposure reduction target will range from 0% (for $PM_{2.5}$ concentrations of less than 8.5 $\mu g/m^3$ to 20% of the average exposure indicator (AEI) for concentrations of between 18 - 22 $\mu g/m^3$). Where the AEI is currently greater than 22 $\mu g/m^3$ all appropriate measures should be employed to reduce this level to 18 $\mu g/m^3$ by 2020. The AEI is based on measurements taken in urban background locations averaged over a three year period from 2008 - 2010 and again from 2018-2020. Additionally, an exposure concentration obligation of 20 $\mu g/m^3$ was set to be complied with by 2015 again based on the AEI.

Although the EU Air Quality Limit Values are the basis of legislation, other thresholds outlined by the EU Directives are used which are triggers for particular actions. The Alert Threshold is defined in Council Directive 96/62/EC as "a level beyond which there is a risk to human health from brief exposure and at which immediate steps shall be taken as laid down in Directive 96/62/EC". These steps include undertaking to ensure that the necessary steps are taken to inform the public (e.g. by means of radio, television and the press).

The Margin of Tolerance is defined in Council Directive 96/62/EC as a concentration which is higher than the limit value when legislation comes into force. It decreases to meet the limit value by the attainment date. The Upper Assessment Threshold is defined in Council Directive 96/62/EC as a concentration above which high quality measurement is mandatory. Data from measurement may be supplemented by information from other sources, including air quality modelling.

An annual average limit for both NO_X (NO and NO_2) is applicable for the protection of vegetation in highly rural areas away from major sources of NO_X such as large conurbations, factories and high road vehicle activity such as a dual carriageway or motorway. Annex VI of EU Directive 1999/30/EC identifies that monitoring to demonstrate compliance with the NO_X limit for the protection of vegetation should be carried out distances greater than:

- 5 km from the nearest motorway or dual carriageway
- 5 km from the nearest major industrial installation
- 20 km from a major urban conurbation

As a guideline, a monitoring station should be indicative of approximately 1000 km^2 of surrounding area.

Under the terms of EU Framework Directive on Ambient Air Quality (96/62/EC), geographical areas within member states have been classified in terms of zones. The zones have been defined in order to meet the criteria for air quality monitoring, assessment and management as described in the Framework Directive and Daughter Directives. Zone A is defined as Dublin and its environs, Zone B is defined as Cork City, Zone C is defined as 23 urban areas with a population greater than 15,000 and Zone D is defined as the remainder of the country. The Zones were defined based on among other things, population and existing ambient air quality.

EU Council Directive 96/62/EC on ambient air quality and assessment has been adopted into Irish Legislation (S.I. No. 33 of 1999). The act has designated the Environmental Protection Agency (EPA) as the competent authority responsible for the implementation of the Directive and for assessing ambient air quality in the State. Other commonly referenced ambient air quality standards include the World Health Organisation. The WHO guidelines differ from air quality standards in that they are primarily set to protect public health from the effects of air pollution. Air quality standards, however, are air quality guidelines recommended by governments, for which additional factors, such as socio-economic factors, may be considered.

APPENDIX 11.2

DUST MANAGEMENT PLAN

Appendix 11.2

DUST MANAGEMENT PLAN

The objective of dust control at the site is to ensure that no significant nuisance occurs at nearby sensitive receptors. In order to develop a workable and transparent dust control strategy, the following management plan has been formulated by drawing on best practice guidance from Ireland (DCC, 2018), the UK (IAQM (2014), BRE (2003), The Scottish Office (1996), UK ODPM (2002)) and the USA (USEPA, 1997).

Site Management

The aim is to ensure good site management by avoiding dust becoming airborne at source. This will be done through good design and effective control strategies.

At the construction planning stage, the siting of activities and storage piles will take note of the location of sensitive receptors and prevailing wind directions in order to minimise the potential for significant dust nuisance (see Figure 11.2 for the windrose for Dublin Airport). As the prevailing wind is predominantly westerly to south-westerly, locating construction compounds and storage piles downwind of sensitive receptors will minimise the potential for dust nuisance to occur at sensitive receptors.

Good site management will include the ability to respond to adverse weather conditions by either restricting operations on-site or quickly implementing effective control measures before the potential for nuisance occurs. When rainfall is greater than 0.2mm/day, dust generation is generally suppressed (IAQM, 2014; UK ODPM, 2002). The potential for significant dust generation is also reliant on threshold wind speeds of greater than 10 m/s (19.4 knots) (at 7m above ground) to release loose material from storage piles and other exposed materials (USEPA, 1986). Particular care should be taken during periods of high winds (gales) as these are periods where the potential for significant dust emissions are highest. The prevailing meteorological conditions in the vicinity of the site are favourable in general for the suppression of dust for a significant period of the year. Nevertheless, there will be infrequent periods were care will be needed to ensure that dust nuisance does not occur. The following measures shall be taken in order to avoid dust nuisance occurring under unfavourable meteorological conditions:

- The Principal Contractor or equivalent must monitor the contractors' performance to ensure that the proposed mitigation measures are implemented and that dust impacts and nuisance are minimised;
- During working hours, dust control methods will be monitored as appropriate, depending on the prevailing meteorological conditions;
- The name and contact details of a person to contact regarding air quality and dust issues shall be displayed on the site boundary, this notice board should also include head/regional office contact details;
- It is recommended that community engagement be undertaken before works commence on site explaining the nature and duration of the works to local residents and businesses;
- A complaints register will be kept on site detailing all telephone calls and letters of complaint received in connection with dust nuisance or air quality concerns, together with details of any remedial actions carried out;
- It is the responsibility of the contractor at all times to demonstrate full compliance with the dust control conditions herein;
- At all times, the procedures put in place will be strictly monitored and assessed.

The dust minimisation measures shall be reviewed at regular intervals during the works to ensure the effectiveness of the procedures in place and to maintain the goal of minimisation of dust through the use of best practice and procedures. In the event of dust nuisance occurring outside the site boundary, site activities will be reviewed and satisfactory procedures implemented to rectify the problem. Specific dust control measures to be employed are described below.

Preparing and Maintaining the Site

- Plan site layout so that machinery and dust causing activities are located away from receptors, as far as is possible.
- Erect solid screens or barriers around dusty activities or the site boundary that are at least as high as any stockpiles on site.
- Fully enclose specific operations where there is a high potential for dust production and the site is active for an extensive period.
- Avoid site runoff of water or mud.
- Keep site fencing, barriers and scaffolding clean using wet methods.
- Remove materials that have a potential to produce dust from site as soon as possible, unless being re-used on site. If they are being re-used on-site cover as described below.
- Cover, seed or fence stockpiles to prevent wind whipping.

Operating Vehicles / Machinery and Sustainable Travel

- Ensure all vehicles switch off engines when stationary - no idling vehicles.
- Avoid the use of diesel or petrol powered generators and use mains electricity or battery powered equipment where practicable.
- Impose and signpost a maximum-speed-limit of 20 kph haul roads and work areas (if long haul routes are required these speeds may be increased with suitable additional control measures provided, subject to the approval of the nominated undertaker and with the agreement of the local authority, where appropriate).
- Produce a Construction Logistics Plan to manage the sustainable delivery of goods and materials.
- Implement a Travel Plan that supports and encourages sustainable travel (public transport, cycling, walking, and car-sharing).

Operations

- Only use cutting, grinding or sawing equipment fitted or in conjunction with suitable dust suppression techniques such as water sprays or local extraction, e.g. suitable local exhaust ventilation systems.
- Ensure an adequate water supply on the site for effective dust/particulate matter suppression/mitigation, using non-potable water where possible and appropriate.
- Use enclosed chutes and conveyors and covered skips.
- Minimise drop heights from conveyors, loading shovels, hoppers and other loading or handling equipment and use fine water sprays on such equipment wherever appropriate.
- Ensure equipment is readily available on site to clean any dry spillages and clean up spillages as soon as reasonably practicable after the event using wet cleaning methods.

Waste Management

- Avoid bonfires and burning of waste materials.

Measures Specific to Earthworks

- Re-vegetate earthworks and exposed areas/soil stockpiles to stabilise surfaces as soon as practicable.

- Use Hessian, mulches or trackifiers where it is not possible to re-vegetate or cover with topsoil, as soon as practicable.
- Only remove the cover in small areas during work and not all at once.
- During dry and windy periods, and when there is a likelihood of dust nuisance, a bowser will operate to ensure moisture content is high enough to increase the stability of the soil and thus suppress dust.

Measures Specific to Construction

- Avoid scabbling (roughening of concrete surfaces) if possible.
- Ensure sand and other aggregates are stored in bunded areas and are not allowed to dry out, unless this is required for a particular process, in which case ensure that appropriate additional control measures are in place.
- Ensure bulk cement and other fine powder materials are delivered in enclosed tankers and stored in silos with suitable emission control systems to prevent escape of material and overfilling during delivery.
- For smaller supplies of fine power materials ensure bags are sealed after use and stored appropriately to prevent dust.

Measures Specific to Trackout

Site roads (particularly unpaved) can be a significant source of fugitive dust from construction sites if control measures are not in place. The most effective means of suppressing dust emissions from unpaved roads is to apply speed restrictions. Studies show that these measures can have a control efficiency ranging from 25 to 80% (UK ODPM, 2002).

- A speed restriction of 20 km/hr will be applied as an effective control measure for dust for on-site vehicles.
- Use water-assisted dust sweeper(s) on the access and local roads, to remove, as necessary, any material tracked out of the site. This may require the sweeper being continuously in use. If sweeping using a road sweeper is not possible due to the nature of the surrounding area then a suitable smaller scale street cleaning vacuum will be used.
- Avoid dry sweeping of large areas.
- Ensure vehicles entering and leaving sites are covered to prevent escape of materials during transport.
- Inspect on-site haul routes for integrity and instigate necessary repairs to the surface as soon as reasonably practicable.
- Record all inspections of haul routes and any subsequent action in a site log book.
- Install hard surfaced haul routes, which are regularly damped down with fixed or mobile sprinkler systems, or mobile water bowsers and regularly cleaned.
- Implement a wheel washing system (with rumble grids to dislodge accumulated dust and mud prior to leaving the site where reasonably practicable).
- Ensure there is an adequate area of hard surfaced road between the wheel wash facility and the site exit, wherever site size and layout permits.
- Access gates to be located at least 10 m from receptors where possible.

Summary of Dust Mitigation Measures

The pro-active control of fugitive dust will ensure that the prevention of significant emissions, rather than an inefficient attempt to control them once they have been released, will contribute towards the satisfactory performance of the contractor. The key features with respect to control of dust will be:

- The specification of a site policy on dust and the identification of the site management responsibilities for dust issues.

- The development of a documented system for managing site practices with regard to dust control.

APPENDIX 14.1

ARCHAEOLOGICAL ASSESSMENT AT DALGUISE HOUSE, MONKSTOWN, COUNTY DUBLIN

(PREPARED BY IAC ARCHAEOLOGY, JULY 2023)

IAC Archaeology

ARCHAEOLOGICAL ASSESSMENT
AT
DALGUISE HOUSE, MONKSTOWN
COUNTY DUBLIN

LICENCE: 23E0209
PLANNING REG.: LRD22A/0930

FOR:

GREYSTAR DEVELOPMENT MANAGER ON BEHALF OF GEDV MONKSTOWN OWNER LIMITED

I.T.M.: 722808/728446

LICENCEE: FERGAL MURTAGH

REPORT STATUS: FINAL

JULY 2023

IAC PROJECT REF.: J3945

IRISH ARCHAEOLOGICAL CONSULTANCY LTD
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DOCUMENT CONTROL SHEET

DATE	DOCUMENT TITLE	REV.	PREPARED BY	REVIEWED BY	APPROVED BY
04.07.23	Archaeological Assessment at Dalguise House, Monkstown County Dublin	0	F. Murtagh	J. Smith	F. Bailey

ABSTRACT

IAC Archaeology has prepared this report for Greystar Development Manager on behalf of GEDV Monkstown Owner Limited, to study the impact, if any, on the archaeological and historical resource of a proposed residential development, which is located at Dalguise House, Monkstown, County Dublin (ITM 722808, 728446; Figure 1). The report was undertaken by Fergal Murtagh of IAC Archaeology under Licence No. 23E0209 and in response to a Request for Further Information as issued by Dun Laoghaire Rathdown County Council (Planning Reg.: LRD22A/0930).

Archaeological testing was carried out over the course of three days during April 2023.

No features of archaeological potential were identified during the course of archaeological testing. It remains possible that isolated or small-scale features may survive within the proposed development area but outside of the footprint of the test trenches. Ground disturbances, prior to the application of mitigation, have the potential to directly and negatively impact any such remains. Impacts may range from moderate to significant, dependant on the nature, extent and significance of any archaeology identified.

It is recommended that all topsoil stripping associated with the proposed development be monitored by a suitably qualified archaeologist. If any features of archaeological potential are discovered during the course of the works further archaeological mitigation may be required, such as preservation *in-situ* or by record. Any further mitigation will require approval from the National Monuments Service of the Department of Housing, Local Government and Heritage.

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1 INTRODUCTION

1.1 GENERAL

The following report details the results of a programme of archaeological testing undertaken at Dalguise House, Monkstown, County Dublin prior to a proposed residential development (Figure 1). This assessment has been carried out to ascertain the potential impact of the proposed development on the archaeological resource that may exist within the proposed development area. It was undertaken by Fergal Murtagh of IAC Archaeology (IAC), on behalf of Greystar Ireland and under licence 23E0209, as issued by the National Monuments Service of the Department of Housing, Local Government and Heritage (DoHLGH). Archaeological testing was requested as further information by Dun Laoghaire Rathdown County Council (Planning Reg.: LRD22A/0930).

Test trenching commenced at the site on 12th of April and continued for three days. This was carried out using both a 13 tonne and a one tonne 360 degree tracked excavators, both with a flat, toothless bucket, under strict archaeological supervision. A total of 18 trenches were mechanically investigated across the test area, which measured c. 572 linear metres in total.

1.2 THE DEVELOPMENT

The development consists of a proposed Large Scale Residential Development, LRD, on a site of c. 3.58ha at Dalguise House (Protected Structure RPS No.870), Monkstown Road, Monkstown, County Dublin.

The development will have a total gross floor area of approximately 47,382 sq m (including a basement of 5,396 sq m and under-croft parking of 1,403 sq m) (of which some 46,154 sq m is new build, and 1,228 sq m retained existing buildings). It will comprise the construction of 493 No. residential units, consisting of 486 No. new build and 7 No. residential units (the latter within existing structures (repurposed from Dalguise House, Gate Lodge (Brick Lodge) and Coach House)) (Figure 2).

2 ARCHAEOLOGICAL AND HISTORICAL BACKGROUND

2.1 BACKGROUND

The proposed development area is located at Monkstown within the townlands of Dunleary and Monkstown, parish of Monkstown, and barony of Rathdown, County Dublin. The site is located to the south of Monkstown Road and is surrounded by modern developments. The Stradbrook Stream (sometimes referred to as the Monkstown Stream), flows east-west partially through the development area at Drayton Close and abuts the northern extent of the Dalguise lands.

There are no archaeological sites located within the development area; however, it is noted that Dalguise House, located within the proposed development area, is a Protected Structure (RPS 870), and the entrance into the site is located within the Monkstown Architectural Conservation Area (ACA). There are seven recorded monuments within 500m of the proposed development area (Figure 1). The nearest of these sites consists of a Martello tower (DU023-010), located c. 420m to the northwest. The site of an early medieval church and its associated graveyard (DU023-013002) is located c. 475m southeast of the proposed development area.

An early medieval settlement at Monkstown may have begun with the construction of this church, which was dedicated to St Mochonna, a 6th century saint from Holmpatrick, Skerries. While the early medieval church is no longer extant, a later church stands on the site today (DU023-013001). This church later came under the control of St Mary's Abbey and eventually became a parish church.

Mesolithic Period (8000-4000BC)

While recent discoveries may provide evidence of an Upper Palaeolithic human presence in the southwest of Ireland (Dowd and Carden 2016), much of the island is believed to have been under extensive glaciation at this time. Stray finds, including caches of flint flakes from Rathfarnham, Dun Laoghaire, Dalkey Island, and Loughlinstown, indicate small-scale transient settlement along the riverbanks and seashores of County Dublin during the Mesolithic Period. There is no recorded evidence of any Mesolithic sites in the vicinity of the proposed development site, although the area would have been attractive to Mesolithic groups.

Neolithic Period (4000–2500 BC)

The Neolithic period saw the introduction and adoption of agriculture in Ireland. Significant change accompanied the transition from hunter-gather lifestyles to the more sedentary lifestyle of farming. Forestry was cleared to facilitate agriculture and field boundaries were constructed to contain livestock. A new concern for claiming territory on which to farm contributed to the tradition of megalithic tomb construction which emerged during the Neolithic period. These monuments were both burial places and ceremonial centres for the community that built them. They would have required significant resources, workforce and organisation to construct. South County Dublin has a number of surviving megalithic tombs, although none are recorded in the environs of the proposed development site.

There are no recorded sites of Neolithic date in the surrounding environs of the proposed development area. However, the area would have appealed to Neolithic settlers. This is evident in the fact a polished stone axe was recovered from Monkstown, suggesting Neolithic activity in the area (Corlett 2013).

Bronze Age (2500–800 BC)

The Bronze Age began with widespread advances in metallurgy. The most common indication of Bronze Age activity is the *fulacht fia* or burnt mound. These are sites which were used for heating water using hot stones in a trough, possibly for a variety of purposes. Very often, these sites survive only as spreads of charcoal rich soil with heat-affected stone inclusions having been heavily disturbed by later agricultural activity. There are no recorded *fulachta fia* in the vicinity of the proposed development site.

Fragments of two Bronze Age gold torcs (NMI 107/108) and a bronze pin (NMI 5286: W139) were discovered in Donnybrook, c. 5km to the northwest. A personal gold ornament, reputedly found in Monkstown is also documented (Corlett 2013). A relatively high number of stray finds from this period have been retrieved along the banks of the Dodder and other rivers, which hint at societies that included high-status individuals.

During the Bronze Age, megalithic tombs were no longer constructed with the emphasis moving from a communal approach to burial to a focus on the individual. While evidence of Bronze Age settlement and funerary activity does survive in some areas of south County Dublin, there are no Bronze Age sites in the vicinity of the proposed development area.

Iron Age (800 BC–AD 500)

The Iron Age is a time which was traditionally been perceived as lacking evidence when compared to the preceding Bronze Age and the succeeding early medieval period. A coastal promontory fort is recorded c. 1km northeast of the proposed development site (DU023-052001). Promontory forts consist of a promontory or spur of land naturally defended on all but one side where artificial defences in the form of earthen banks and fosses or stone walls were erected. While no trace of the promontory fort at Dún Laoghaire survives, it is depicted on Rocque's 1765 map of Dublin. It was destroyed during the construction of the railway in the mid-19 Century and is likely to have dated to the Iron Age period.

Early Medieval Period (AD 500–1100)

The Vikings arrived in Ireland in the 9th century and founded a settlement in Dublin in AD 917. The development of Dublin as a major centre of trade and industry had implications on the hinterlands to the south, known as *Dyflinarskiri*, extending as far as Greystones. Place name evidence, archaeological discoveries and the distribution of Rathdown slabs indicate that the area surrounding Dún Laoghaire was under Viking control or, at least, subject to a strong Scandinavian influence.

Rathdown slabs, named for the fact that they are only found at churches in the Barony of Rathdown, feature a distinctive type of decoration not found elsewhere in Christian Ireland. They are generally regarded as having been influenced by Viking art styles and as representing the burials of local Viking Christians (Corlett 2013). The distribution of Rathdown slabs indicates the extent of Viking settlement in this area. A sheltered berth such as that offered by Dún Laoghaire c. 1.5km to the northeast of the proposed development area, is likely to have been utilised by Viking communities between the Dublin Mountains and the shore of Dublin Bay.

The settlement of Monkstown may have begun with the construction of a church in the early medieval period which was dedicated to St Mochonna, a 6th century saint from Holmpatrick, Skerries. This small church later came under the control of St Mary's Abbey and eventually became a parish church. St. Mary's Abbey had been affiliated early in the 12th century to the Cistercian Order, and in its case, fresh tenants were supplied by the great Cistercian House of Buildwas in Shropshire, under whose disposition it was placed. The site of the church and its associated graveyard (DU023-013002) is located c. 475m southeast of the proposed development area. The remains of this original church are no longer visible; however, a later church was built on the site (DU023-013001).

Medieval Period (AD 1100-1600)

The beginning of the medieval period is characterised by political unrest and the Anglo-Norman occupation of Ireland. One of the principal developments during this period was the establishment of numerous religious houses in Dublin. These monastic foundations were granted large landholdings in the hinterland of Dublin with which to generate revenue. These outlying farms were called granges and a number of such establishments were located within c. 3km of Dún Laoghaire, including Monkstown, Kill of the Grange and Deansgrange.

After the Anglo-Norman Conquest, the monks in the area commenced the erection of the Castles of Monkstown (DU023-014001) and Bullock (Dalkey), the former to protect their farm, then later their fishery. Monkstown Castle lies c. 500m southeast of the proposed development area. It is a National Monument (No. 494) in State Ownership, in addition to a recorded monument and a protected structure (RPS 1042).

Post-Medieval Period (AD 1600-1800)

After the dissolution of the monasteries in the 16th century, the lands at Monkstown were granted to Sir John Travers, Master of the Ordnance of Ireland. The castle was described as 'a fayre castle in repaire' in the terrier of the Down Survey Map of the Parish of Kill and Monckstowne, c. 1655.

It was also during this period (17th century) that a charnel house (DU023-013003) was built, incorporating the structural remains of the medieval church (DU023-013001), c. 500m southeast of the proposed development area. By the Cromwellian period the area was becoming popular with the city elites who began building summer residences across the sloping fields, in some cases within planned demesne landscapes designed to capture the sea views.

The proposed development area was mostly within the demesne of Richmond Cottage and possibly neighbouring Carrickbrennan Lodge to the immediate west, both found within Monkstown townland. A number of small demesnes were present within the northern extent of the site in Dunleary townland including Purbeck Lodge, Drayton Lodge, Eastern Lodge and Richmond Villa. The development area passes through the demesne of Drayton Lodge specifically, as shown on the first edition Ordnance Survey mapping of 1843.

2.2 SUMMARY OF PREVIOUS ARCHAEOLOGICAL FIELDWORK

A review of the Excavations Bulletin (1970–2023) has revealed that no investigations have been carried out within the proposed development area; however, three investigations have taken place within the surrounding environs, which are summarised below.

Excavations at Martello Tower (DU023-010), c. 420m to the northwest revealed the original stone flooring and foundations of the early 19th century tower but did not discover anything of archaeological significance (Corlett 2001; Licence No. 03E0228). Archaeological monitoring was carried out on remedial works to the western wall of Carrickbrennan Graveyard (which dates to the 18th/19th century; DU023-013002), c. 445m northeast of the site, but nothing of archaeological significance was identified (Giacometti 2010; Licence No. 10E0173). Following the discovery of a well at Monkstown Primary School in 2013 monitoring took place, c. 500m to the east of the development area. Nothing of archaeological significance was identified (Carroll 2013; Licence No. 10E0223).

2.3 CARTOGRAPHIC ANALYSIS

William Petty, Down Survey Map, Barony of Rathdown, Parish of Kill and Monckstowne, c. 1655

The Down Survey depicts the proposed development area within the townland and parish of 'Monckstowne'. The townland is recorded as being owned by Walter Cheevers. The terrier records that there is 'a fayre castle in repaire and a faire grove of trees with the corn mill in repaire' within the townland itself. A river runs from the castle (DU023-014001) and a grove of trees, that are situated to the east of the proposed development, to the mill beside the coastline.

John Rocque, *An actual survey of the County of Dublin*, 1760

Rocque's map depicts the surrounding environs of the proposed development in greater detail than the Down Survey. The proposed development is located to the northwest of Monkstown Castle within open fields with the Monkstown Stream passing through the site from east to west. The tree grove and corn mill are no longer depicted, however, there are several structures depicted to the north of the castle (DU023-014001). Farmland with a church in ruins is situated to the southwest at a place annotated as 'Kill' (Kill of the Grange).

William Duncan, Map of the County of Dublin, 1821

Duncan's map depicts the proposed development adjacent to the demesne of the house situated to its northwest, although the scale of this map is not exact. The demesne and buildings of Monkstown Court (previously known as Monkstown Lower) are bordered to the north by the demesne of the castle (DU023-014001). The structures in ruins on Taylor's map are identified as a church (DU023-013001).

First Edition Ordnance Survey Map, 1843, scale 1:10560 (Figure 3)

This is the first accurate historic mapping coverage of the area containing the proposed development. The townland boundary between Dunleary and Monkstown divides the site along the trajectory of the Monkstown Stream. As previously stated, the site is mostly within the demesne of Richmond Cottage and possibly neighbouring Carrickbrennan Lodge to the immediate west, both found within Monkstown townland. Purbeck Lodge, Drayton Lodge, Eastern Lodge and Richmond Villa and associated demesne are found in Dunleary townland to the north.

Ordnance Survey Map, 1912, scale 1:2500 (Figure 4)

By the time of this map Richmond House has changed name to Dalguise and Carrickbrennan Lodge changed to Carrick Brennan. At least ten buildings are shown within the proposed development area, including a 'Lodge' and a 'Well'. A number of water channels and footbridges are also marked throughout the site.

2.4 AERIAL PHOTOGRAPHIC ANALYSIS

Inspection of the aerial photographic coverage of the proposed development area held by the Ordnance Survey (1995–2013), Google Earth (2008–2022) and Bing Maps revealed that the proposed development area remains largely unchanged since 1995. Imaginary from 1995 places the site within the landscape of Dalguise and Drayton Close with Stradbrook Stream running east to west through the development area at Drayton Close and has remained extant to the present day. No previously unrecorded sites of archaeological potential were noted within the proposed development area.

2.5 TOPOGRAPHICAL FILES

Information on artefact finds from the study area in Dublin has been recorded by the National Museum of Ireland. Location information relating to these finds is important in establishing prehistoric and historic activity in the study area.

While there are no stray finds were noted specifically within the development area there are a number that have been discovered in the area of Monkstown (Table 1).

Table 1: Stray Finds within the Surrounding Area

NMI No.	Object(s)	Townland.
2005:56	Cannon ball (iron)	Monkstown
1943:134	Iron Knife	Monkstown
N/A	Stone Axe	Monkstown (Queen's Park)
1947:36	Bronze Bell	Monkstown Castle Farm

3 ARCHAEOLOGICAL TESTING

3.1 GENERAL

Test trenching took place on the 12th of April, using a 13 tonne 360 degree tracked excavator and a one tonne 360 degree tracked excavator, both of which were equipped with a flat, toothless bucket with trenches excavated under strict archaeological supervision. The smaller excavator was utilised to assess the walled garden area, which possesses restricted access.

Any investigated deposits were preserved by record. This was by means of written, drawn and photographic records.

A total of 18 trenches were excavated across the site measuring 572 linear metres (Figure 5).

The test trenches were excavated to determine, as far as reasonably possible, the location, extent, date, character, condition, significance and quality of any surviving archaeological remains threatened by the proposed development. Test trenching was also carried out to clarify the nature and extent of existing disturbance and intrusions and to assess the degree of archaeological survival in order to formulate further mitigation strategies.

3.2 TESTING RESULTS

Topsoil mainly consisted of a mid-dark brown sandy clay (Plate 1). Trenches 17 and 18 were located to the south of the site at the rear of the property and as a result more variation in the topsoil was observed here. Trench 17, located at the entrance to the walled garden, had gravels with a depth of 0.1m at the surface, which overlay unsorted brick and stone with a depth of 0.3m and finally a plough soil layer of light-mid orangey yellow sandy clay with a depth of 0.2m. Trench 18 had a very rich black organic layer with a depth of 0.3m overlaying a similar plough soil layer to Trench 17. Subsoil was mottled dark grey gravels and sand with a dark orange clay and sub angular stone throughout.

Trenches are described in detail in Appendix 1.

No features of archaeological potential were noted during the course of testing.

Non-Archaeological Features

A field drain was noted in Trenches 1–3 (Plate 2). A possible garden feature was identified in Trench 15 with two small plinths, one appeared to be constructed from a concrete block whilst the second was constructed from four bricks. These plinths were both orientated north—south, with the northern plinth resting atop the loose rubble whilst the southern plinth stood to the immediate south of the rubble and rested on garden soil (Plates 3 and 4). This aligns with the small structure shown in the 1912 OS map (Figure 5).

Possible drainage works associated with the main house were noted in Trenches 13 and 14 (Plate 5).

3.3 CONCLUSIONS

A programme of archaeological test trenching was requested by Dun Laoghaire Rathdown County Council, in response to a proposed LRD development at Dalguise House, Monkstown, Co. Dublin (Planning Reg.: LRD22A/0930). During April 2023, a total of 18 trenches were excavated across the site, under licence 23E0209, as issued by the National Monuments Service of the DoHLGH. No features or artefacts of archaeological significance were identified during the course of the investigation.

There are no archaeological sites located within the development area; however, there are seven recorded monuments within the 500m study area, The nearest of these sites consists of Martello tower (DU023-010), located c. 420m to the northwest.

The proposed development area lies within an extensive curtilage to the south of Monkstown Road and is surrounded by modern developments. The Stradbrook Stream (sometimes referred to as the Monkstown Stream), flows east-west through the development area at Drayton Close and abuts the northern extent of the Dalguise lands.

A review of the Excavations Bulletin (1970–2022) has revealed that no investigations have been carried out within the proposed development area, although three investigations have taken place within the surrounding environs. All three investigations at Martello Tower, Carrickbrennan Graveyard and Monkstown Primary School failed to identify any features of archaeological significance.

4 IMPACT ASSESSMENT AND MITIGATION STRATEGY

Impacts can be identified from detailed information about a project, the nature of the area affected and the range of archaeological resources potentially affected. Archaeological sites can be affected adversely in a number of ways: disturbance by excavation, topsoil stripping; disturbance by vehicles working in unsuitable conditions; and burial of sites, limiting access for future archaeological investigation.

4.1 IMPACT ASSESSMENT

- No features of archaeological potential were identified during the course of archaeological testing. It remains possible that isolated or small-scale features may survive within the proposed development area but outside of the footprint of the test trenches. Ground disturbances, prior to the application of mitigation, have the potential to directly and negatively impact any such remains. Impacts may range from moderate to significant, dependant on the nature, extent and significance of any archaeology identified.

4.2 MITIGATION

- It is recommended that all topsoil stripping associated with the proposed development be monitored by a suitably qualified archaeologist. If any features of archaeological potential are discovered during the course of the works further archaeological mitigation may be required, such as preservation *in-situ* or by record. Any further mitigation will require approval from the National Monuments Service of the DoHLGH.

It is the developer's responsibility to ensure full provision is made available for the resolution of any archaeological remains, both on site and during the post excavation process, should that be deemed the appropriate manner in which to proceed.

Please note that all recommendations are subject to approval by the National Monuments Service of the Heritage and Planning Division, Department of Housing, Local Government and Heritage

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www.bing.com– Satellite imagery of the proposed development area

monkstownparish.ie – History of Monkstown Parish

APPENDICES

APPENDIX 1 TRENCH RESULTS

TRENCH	LENGTH (m)	WIDTH (m)	DEPTH (m)	ORIENTATION	DETAILS
1	50	2	1.05	Northeast–southwest	No Archaeology found. A lone field drain was recorded at the north-western end of the trench. Plate 6.
2	35	2	0.45	Northeast–southwest	No Archaeology found. A lone field drain was recorded at the north-western end of the trench Figure 5.
3	40	2	0.44	Northeast–southwest	No Archaeology found. A lone field drain was recorded at the north-western end of the trench. A thin layer of loose stone was uncovered c. 0.1m below the surface which likely represented a flower bed or other garden feature. Figure 5.
4	20	2	0.42	Northeast–southwest	No Archaeology found. Figure 5
5	35	2	0.47	North–south	No Archaeology found. Rare oyster shells were noted in the topsoil at the northern end of the trench along with moderate post medieval pottery throughout. Figure 5; Plate 7.
6	30	2	0.4	Northwest–southeast	No Archaeology found. Figure 5
7	25	2	0.47	East–west	No Archaeology found. Figure 5
8	20	2	0.4	Northwest–southeast	No Archaeology found. Figure 5
9	35	2	0.45	Northwest–southeast	No Archaeology found. Figure 5.
10	20	2	0.58	Northwest–southeast	No Archaeology found. Figure 5, Plate 8.
11	20	2	0.5	Northeast–southwest	No Archaeology found. Figure 5.
12	12	1	0.75	East–west	No Archaeology found. This trench was spilt to accommodate a security fence in the area. Figure 5; Plate 9.
13	30	2	0.8	North–south	No Archaeology found. Modern drains running north-northeast–south-southwest were noted here Figure 5.
14	30	2	0.7	North–south	No Archaeology found. Drainage works orientated east–west and another orientated northeast–southwest were present here. A water pipe was also present on the surface and orientated northwest–southeast. Figure 5; Plate 10.
15	35	1	0.8	North–south	No Archaeology found. A possible garden feature as seen on the 1912 Ordnance survey map was recorded here. Figure 5; Plate 11.
16	35	1	0.9	North–south	No Archaeology found. Figure 5; Plate 12.
17	20	2	0.6	East–west	No Archaeology found. A drain orientated north–

TRENCH	LENGTH (m)	WIDTH (m)	DEPTH (m)	ORIENTATION	DETAILS
					south was noted at the western end of the trench. Figure 5; Plates 13 and 14.
18	20	2	0.8–1.4	East–west	No Archaeology found. Figure 5; Plate 15.

APPENDIX 2 RMP SITES WITHIN THE SURROUNDING AREA

SMR NO.:	DU023-009-----
RMP STATUS:	Yes
TOWNLAND:	Newtown, Blackrock
PARISH:	Monkstown
BARONY:	Barony of Rathdown
I.T.M.:	722133, 729214
CLASSIFICATION:	Ritual site - holy well
DIST. TO SITE:	c.890m northwest
DESCRIPTION:	Situated in a N facing cliff edge overlooking a grassy field adjacent to the coastline and the railway line. A holy well consisting of a brick-built vault partially covering a chamber which leads into a lintelled recess. This originally led into a further passage, the opening to this inner passage is now blocked. The well is known as 'Tobernea'. Traditionally, the waters from the well are thought to cure sore eyes. The site is no longer venerated (O'Reillly 1902, 178-186; O'Danachair 1958, 234).
REFERENCE:	www.archaeology.ie/ SMR File

SMR NO.:	DU023-010----
RMP STATUS:	Yes
TOWNLAND:	Seapoint or Templehill
PARISH:	Monkstown Civil Parish
BARONY:	Barony of Rathdown
I.T.M.:	722662, 729085
CLASSIFICATION:	Martello Tower
DIST. TO SITE:	c. 420m northwest
DESCRIPTION:	Martello Tower No. 14 (Kerrigan 1995, 170). According to Kerrigan (1995, 168) construction of the Dublin area Martello Towers and their batteries commenced in 1804 under the supervision of Colonel Benjamin Fisher of the Royal Engineers and by December 1805 all towers were armed and complete. Kerrigan (ibid., 170) recorded that; 'The towers and batteries south of Dublin are numbered from 1 to 16, but there were only fourteen towers, as at two locations there were batteries only, while several of the towers were close to adjacent batteries'. Situated on a small promontory to the SE of the Railway Station at Seapoint the E facing slope offers views over the coastline. A circular Martello tower with an entrance from Brighton Vale Road down to the sea. Free-standing the tower is built of dressed granite blocks. Machicolation in place over doorway on the NW side. Stairs led to an entrance above ground floor level. A double offset or string course marks the parapet level (Turner 1983, 94). Described by Kerrigan (1995, 174) as; 'Seapoint tower, no. 14, a standard tower for one 18-pounder gun. A little over one-and-a-quarter miles farther west is the unusual tower no. 15 at Williamstown'.
REFERENCE:	www.archaeology.ie/ SMR File

SMR NO.:	DU023-013001-
RMP STATUS:	Yes
TOWNLAND:	Monkstown Housefarm
PARISH:	Monkstown
BARONY:	Barony of Rathdown
I.T.M.:	723314, 728213
CLASSIFICATION:	Church
DIST. TO SITE:	c. 475m southeast
DESCRIPTION:	Situated in a flat urban site to the NE of the junction of Carrickbrennan Road and Mounttown Road Upper. The W gable of the medieval church of Carrickbrennan is incorporated into a 17th century charnel-house (Turner 1983, 28-29). The entrance doorway in the W gable is blocked, it has a round-arch with a dropped keystone under a hood-moulding of sandstone. Above the doorway is a wide round arched window with a granite sill. This medieval building occupies the location of an earlier site associated with the 6th century St. Mochonna, who was attached to the early monastery of Hompatrick, Skerries (Ball 1902, 41). It was held as the chapel of Carrickbrennnan by St. Mary's Abbey in the 12th-13th centuries. After the dissolution of St. Mary's, the church and tithes were given to Sir John Travers. In 1668 Sir Edward Corker re-built the church for the parish, and further works took place in the 19th century (Turner 1983, 28-29). The church is located within the walled graveyard (DU023-013002-) which contains 18th and 19th century memorials.
REFERENCE:	www.archaeology.ie/ SMR File

SMR NO.:	DU023-013002-
RMP STATUS:	Yes
TOWNLAND:	Monkstown Housefarm
PARISH:	Monkstown
BARONY:	Barony of Rathdown
I.T.M.:	723302 728223
CLASSIFICATION:	Graveyard
DIST. TO SITE:	c. 475m southeast
DESCRIPTION:	Situated in a flat urban site to the NE of the junction of Carrickbrennan Road and Mounttown Road Upper. A trapezoidal walled graveyard (N-S 60.2m, E-W 68.8m) accessed through a pointed arched gateway off the Carrrickbrennan Road N of Monkstown Castlefarm. Within the site are 18th and 19th century memorials. In the interior of the graveyard the W gable of the medieval church (DU023-013001-) is incorporated into a 17th century charnel-house (DU023-013003-; Turner 1983, 28-29). The site occupies the location of an earlier site associated with the 6th century St. Mochonna, who was attached to the early monastery of Hompatrick, Skerries (Ball 1902, 41).
REFERENCE:	www.archaeology.ie/ SMR File

SMR NO.:	DU023-013003
RMP STATUS:	Yes
TOWNLAND:	Monkstown Housefarm
PARISH:	Monkstown
BARONY:	Barony of Rathdown
I.T.M.:	723304, 728214
CLASSIFICATION:	Charnel house
DIST. TO SITE:	c. 475m southeast
DESCRIPTION:	Situated in a flat urban site to the NE of the junction of Carrickbrennan Road and Mounttown Road Upper. The W gable of the medieval church (DU023-012001-) of Carrickbrennan is incorporated into the 17th century charnel-house (Turner 1983, 28-29). After the dissolution of St. Mary's, the church and tithes were given to Sir John Travers. In 1668 Sir Edward Corker re-built the church for the parish, and further works took place in the 19th century (Turner 1983, 28-29). The Charnel house is located within the walled graveyard (DU023-013002-) which contains 18th and 19th century memorials.
REFERENCE:	www.archaeology.ie/ SMR File

SMR NO.:	DU023-014001-
RMP STATUS:	Yes
TOWNLAND:	Monkstown Housefarm
PARISH:	Monkstown
BARONY:	Barony of Rathdown
I.T.M.:	723304, 728105
CLASSIFICATION:	Castle - tower house
DIST. TO SITE:	c. 500m southeast
DESCRIPTION:	Situated to the SE of the junction of Monkstown Avenue and Mounttown Road Upper the site is located in grassland on the road edge. The tower house is in the SW corner of the bawn wall and projects beyond it towards the road edge. It is three storeys in height with a parapet level containing two upper battlements. In the NE corner of the N wall in an inserted doorway. The doorway opens onto a spiral stairs, under the stairs is an arched recess with shows signs of wicker-centring. The original entrance in the E wall is blocked but has a semi-elliptical head. The ground floor (Dims. L8.7m; Wth 5.1m) is lit by a slit ope in the N wall. First floor is entered through a lintelled granite doorway with dressed limestone jambs. This door is rebated with bar holes present. Interiors of first and second floors are lit by slit opes. Corbels project from the E wall on the second floor. The parapet level contains two caphouses, stepped crenellations and a wall-walk. There is a dripstone and guttering present. W section of tower lies beyond the bawn wall and is not tied into it. In the NE corner of the tower house there are chamfered limestone jambs from another building re-used as quoins (Healy 1975, 1-19; Turner 1983, 82; Harbison 1970, 79). The tower house was associated with the Cistercian grange of St Mary's Abbey. After the dissolution in the sixteenth century the lands at

	Monkstown were given to Sir John Travers, Master of the Ordnance of Ireland. Walter Cheevers had it in 1641, then Ludlow Cromwell, Master of the House, who is said to have repaired the castle and laid out the gardens (Ball 1902, I, 1-12). A drawing by Beranger dated 1766 shows two towers placed either end of a courtyard flanked by a multi-chimneyed mansion on the one side and a show wall on the other (Harbison 1998, 60-1). The tower house (DU023-014001-) belongs to a complex which includes a gatehouse (DU023-014002-) connected by a bawn wall (DU023-014003-), all built of coursed granite blocks.
REFERENCE:	www.archaeology.ie/ SMR File

SMR NO.:	DU023-014002-
RMP STATUS:	Yes
TOWNLAND:	Monkstown Housefarm
PARISH:	Monkstown
BARONY:	Barony of Rathdown
I.T.M.:	723304, 728115
CLASSIFICATION:	Gatehouse
DIST. TO SITE:	c.500m southeast
DESCRIPTION:	Situated to the SE of the junction of Monkstown Avenue and Mounttown Road Upper the site is located in grassland on the road edge. The gate-house is in the NW corner of the bawn wall (DU023-014003-) enclosure. It has a base batter. The masonry of the bawn wall on the N side of the gate-house displays a series of building phases. It has aroundexternal arch and a pointedinternal arch with wicker centred vault . There is one chamber with a parapet level above it. This chamber is lit by a single light, cusped, ogee-headed, window in the S and a plain loop in the W wall. A lintelled doorway below a pointed arch survives in the NW corner and this provided access to the upper battlements with a projecting turret in the NW angle. There are stepped crenellations. An entrance off the passageway leads into what survives of an E wing. This was lit by rectangular opes. There are some brick-faced insertions. External stairs are present in the SE corner. The site was associated with the Cistercian grange of St Mary's Abbey. After the dissolution in the sixteenth century the lands at Monkstown were given to Sir John Travers, Master of the Ordnance of Ireland. Walter Cheevers had it in 1641, then Ludlow Cromwell, Master of the House, who is said to have repaired the castle and laid out the gardens (Ball 1906, I, 1-12). A drawing by Beranger dated 1766 shows two towers placed either end of a courtyard flanked by a multi-chimneyed mansion on the one side and a show wall on the other (Harbison 1998, 60-1). The gatehouse (DU023-014002-) belongs to a complex which includes a tower house (DU023-014001-) connected by a bawn wall (DU023-014003-), all built of coursed granite blocks.
REFERENCE:	www.archaeology.ie/ SMR File

SMR NO.:	DU023-014003-
RMP STATUS:	Yes

TOWNLAND:	Monkstown Housefarm
PARISH:	Monkstown
BARONY:	Barony of Rathdown
I.T.M.:	723304, 728113
CLASSIFICATION:	Bawn
DIST. TO SITE:	c. 500m southeast
DESCRIPTION:	Situated to the SE of the junction of Monkstown Avenue and Mounttown Road Upper the site is located in grassland on the road edge. A bawn wall is built of coursed granite blocks. Remaining section is L shaped (SE-NW c. 26m; SW- NE c. 17.5m). The site was associated with the Cistercian grange of St Mary's Abbey. After the dissolution in the sixteenth century the lands at Monkstown were given to Sir John Travers, Master of the Ordnance of Ireland. Walter Cheevers had it in 1641, then Ludlow Cromwell, Master of the House, who is said to have repaired the castle and laid out the gardens (Ball 1906, I, 1-12). A drawing by Beranger dated 1766 shows two towers placed either end of a courtyard flanked by a multi-chimneyed mansion on the one side and a show wall on the other (Harbison 1998, 60-1). The bawn wall (DU023-014003-) connects a tower house (DU023-014001-) and gatehouse (DU023-014002-).
REFERENCE:	www.archaeology.ie/ SMR File

APPENDIX 3 LEGISLATION PROTECTING THE ARCHAEOLOGICAL RESOURCE

PROTECTION OF CULTURAL HERITAGE

The cultural heritage in Ireland is safeguarded through national and international policy designed to secure the protection of the cultural heritage resource to the fullest possible extent (Department of Arts, Heritage, Gaeltacht and the Islands 1999, 35). This is undertaken in accordance with the provisions of the *European Convention on the Protection of the Archaeological Heritage* (Valletta Convention), ratified by Ireland in 1997.

THE ARCHAEOLOGICAL RESOURCE

The *National Monuments Act 1930 to 2014* and relevant provisions of the *National Cultural Institutions Act 1997* are the primary means of ensuring the satisfactory protection of archaeological remains, which includes all man-made structures of whatever form or date except buildings habitually used for ecclesiastical purposes. A National Monument is described as 'a monument or the remains of a monument the preservation of which is a matter of national importance by reason of the historical, architectural, traditional, artistic or archaeological interest attaching thereto' (National Monuments Act 1930 Section 2). A number of mechanisms under the National Monuments Act are applied to secure the protection of archaeological monuments. These include the Register of Historic Monuments, the Record of Monuments and Places, and the placing of Preservation Orders and Temporary Preservation Orders on endangered sites.

OWNERSHIP AND GUARDIANSHIP OF NATIONAL MONUMENTS

The Minister may acquire national monuments by agreement or by compulsory order. The state or local authority may assume guardianship of any national monument (other than dwellings). The owners of national monuments (other than dwellings) may also appoint the Minister or the local authority as guardian of that monument if the state or local authority agrees. Once the site is in ownership or guardianship of the state, it may not be interfered with without the written consent of the Minister.

REGISTER OF HISTORIC MONUMENTS

Section 5 of the 1987 Act requires the Minister to establish and maintain a Register of Historic Monuments. Historic monuments and archaeological areas present on the register are afforded statutory protection under the 1987 Act. Any interference with sites recorded on the register is illegal without the permission of the Minister. Two months notice in writing is required prior to any work being undertaken on or in the vicinity of a registered monument. The register also includes sites under Preservation Orders and Temporary Preservation Orders. All registered monuments are included in the Record of Monuments and Places.

PRESERVATION ORDERS AND TEMPORARY PRESERVATION ORDERS

Sites deemed to be in danger of injury or destruction can be allocated Preservation Orders under the 1930 Act. Preservation Orders make any interference with the site illegal. Temporary Preservation Orders can be attached under the 1954 Act. These perform the same function as a Preservation Order but have a time limit of six months, after which the situation must be reviewed. Work may only be undertaken on or in the vicinity of sites under Preservation Orders with the written consent, and at the discretion, of the Minister.

RECORD OF MONUMENTS AND PLACES

Section 12(1) of the 1994 Act requires the Minister for Arts, Heritage, Gaeltacht and the Islands (now the Minister for Housing, Local Government and Heritage) to establish and maintain a record of monuments and places where the Minister believes that such monuments exist. The record comprises a list of monuments and relevant places and a map/s showing each monument and relevant place in respect of each county in the state. All sites recorded on the Record of Monuments and Places receive statutory protection under the National Monuments Act 1994. All recorded monuments on the proposed development site are represented on the accompanying maps.

Section 12(3) of the 1994 Act provides that 'where the owner or occupier (other than the Minister for Housing, Local Government and Heritage) of a monument or place included in the Record, or any other person, proposes to carry out, or to cause or permit the carrying out of, any work at or in relation to such a monument or place, he or she shall give notice in writing to the Minister of Housing, Local Government and Heritage to carry out work and shall not, except in case of urgent necessity and with the consent of the Minister, commence the work until two months after giving of notice'.

Under the National Monuments (Amendment) Act 2004, anyone who demolishes or in any way interferes with a recorded site is liable to a fine not exceeding €3,000 or imprisonment for up to 6 months. On summary conviction and on conviction of indictment, a fine not exceeding €10,000 or imprisonment for up to 5 years is the penalty. In addition they are liable for costs for the repair of the damage caused.

In addition to this, under the *European Communities (Environmental Impact Assessment) Regulations 1989,* Environmental Impact Statements (EIS) are required for various classes and sizes of development project to assess the impact the proposed development will have on the existing environment, which includes the cultural, archaeological and built heritage resources. These document's recommendations are typically incorporated into the conditions under which the proposed development must proceed, and thus offer an additional layer of protection for monuments which have not been listed on the RMP.

THE PLANNING AND DEVELOPMENT ACT 2000

Under planning legislation, each local authority is obliged to draw up a Development Plan setting out their aims and policies with regard to the growth of the area over a five-year period. They cover a range of issues including archaeology and built heritage, setting out their policies and objectives with regard to the protection and enhancement of both. These policies can vary from county to county. The Planning and Development Act 2000 recognises that proper planning and sustainable development includes the protection of the archaeological heritage. Conditions relating to archaeology may be attached to individual planning permissions.

DÚN LAOGHAIRE-RATHDOWN COUNTY DEVELOPMENT PLAN 2022-2028

Policy Objective HER1: Protection of Archaeological Heritage It is a Policy Objective to protect archaeological sites, National Monuments (and their settings), which have been identified in the Record of Monuments and Places and, where feasible, appropriate and applicable to promote access to and signposting of such sites and monuments.

Policy Objective HER2: Protection of Archaeological Material in Situ It is a Policy Objective to seek the preservation in situ (or where this is not possible or appropriate, as a minimum, preservation by record) of all archaeological monuments included in the Record of Monuments and Places, and of previously unknown sites, features and objects of archaeological interest that become revealed through development activity. In respect of decision making on development proposals affecting sites listed in the Record of Monuments and Places, the Council will have regard to the advice and/ or recommendations of the Department of Culture, Heritage and the Gaeltacht (DCHG).

Policy Objective HER3: Protection of Historic Towns It is a Policy Objective to promote and protect the Historic Town of Dalkey as identified by the Department of Culture, Heritage and the Gaeltacht (DCHG) (consistent with RPO 9.27 of the RSES).

Policy Objective HER4: Carrickmines Castle Site It is a Policy Objective to support the implementation of the (Archaeological) Conservation Plan for the Carrickmines Castle Site.

Policy Objective HER5: Historic Burial Grounds It is a Policy Objective to protect historical and/or closed burial grounds within the County and encourage their maintenance in accordance with good conservation practice and to promote access to such sites where possible.

Policy Objective HER6: Underwater Archaeology It is a Policy Objective for all developments, which have potential to impact on riverine, intertidal and sub-tidal environments to require an archaeological assessment prior to works being carried out.

APPENDIX 4 IMPACT ASSESSMENT & THE CULTURAL HERITAGE RESOURCE

POTENTIAL IMPACTS ON ARCHAEOLOGICAL AND HISTORICAL REMAINS

Impacts can be identified from detailed information about a project, the nature of the area affected and the range of archaeological and historical resources potentially affected. Development can affect the archaeological and historical resource of a given landscape in a number of ways.

- Permanent and temporary land-take, associated structures, landscape mounding, and their construction may result in damage to or loss of archaeological remains and deposits, or physical loss to the setting of historic monuments and to the physical coherence of the landscape.

- Archaeological sites can be affected adversely in a number of ways: disturbance by excavation, topsoil stripping and the passage of heavy machinery; disturbance by vehicles working in unsuitable conditions; or burial of sites, limiting accessibility for future archaeological investigation.

- Hydrological changes in groundwater or surface water levels can result from construction activities such as de-watering and spoil disposal, or longer-term changes in drainage patterns. These may desiccate archaeological remains and associated deposits.

- Visual impacts on the historic landscape sometimes arise from construction traffic and facilities, built earthworks and structures, landscape mounding and planting, noise, fences and associated works. These features can impinge directly on historic monuments and historic landscape elements as well as their visual amenity value.

- Landscape measures such as tree planting can damage sub-surface archaeological features, due to topsoil stripping and through the root action of trees and shrubs as they grow.

- Ground consolidation by construction activities or the weight of permanent embankments can cause damage to buried archaeological remains, especially in colluviums or peat deposits.

- Disruption due to construction also offers in general the potential for adversely affecting archaeological remains. This can include machinery, site offices, and service trenches.

Although not widely appreciated, positive impacts can accrue from developments. These can include positive resource management policies, improved maintenance and access to archaeological monuments, and the increased level of knowledge of a site or historic landscape as a result of archaeological assessment and fieldwork.

PREDICTED IMPACTS

The severity of a given level of land-take or visual intrusion varies with the type of monument, site or landscape features and its existing environment. Severity of impact can be judged taking the following into account:

- The proportion of the feature affected and how far physical characteristics fundamental to the understanding of the feature would be lost;

- Consideration of the type, date, survival/condition, fragility/vulnerability, rarity, potential and amenity value of the feature affected;

- Assessment of the levels of noise, visual and hydrological impacts, either in general or site specific terms, as may be provided by other specialists.

APPENDIX 5 MITIGATION MEASURES & THE CULTURAL HERITAGE RESOURCE

POTENTIAL MITIGATION STRATEGIES FOR CULTURAL HERITAGE REMAINS

Mitigation is defined as features of the design or other measures of the proposed development that can be adopted to avoid, prevent, reduce or offset negative effects.

The best opportunities for avoiding damage to archaeological remains or intrusion on their setting and amenity arise when the site options for the development are being considered. Damage to the archaeological resource immediately adjacent to developments may be prevented by the selection of appropriate construction methods. Reducing adverse effects can be achieved by good design, for example by screening historic buildings or upstanding archaeological monuments or by burying archaeological sites undisturbed rather than destroying them. Offsetting adverse effects is probably best illustrated by the full investigation and recording of archaeological sites that cannot be preserved *in situ*.

DEFINITION OF MITIGATION STRATEGIES

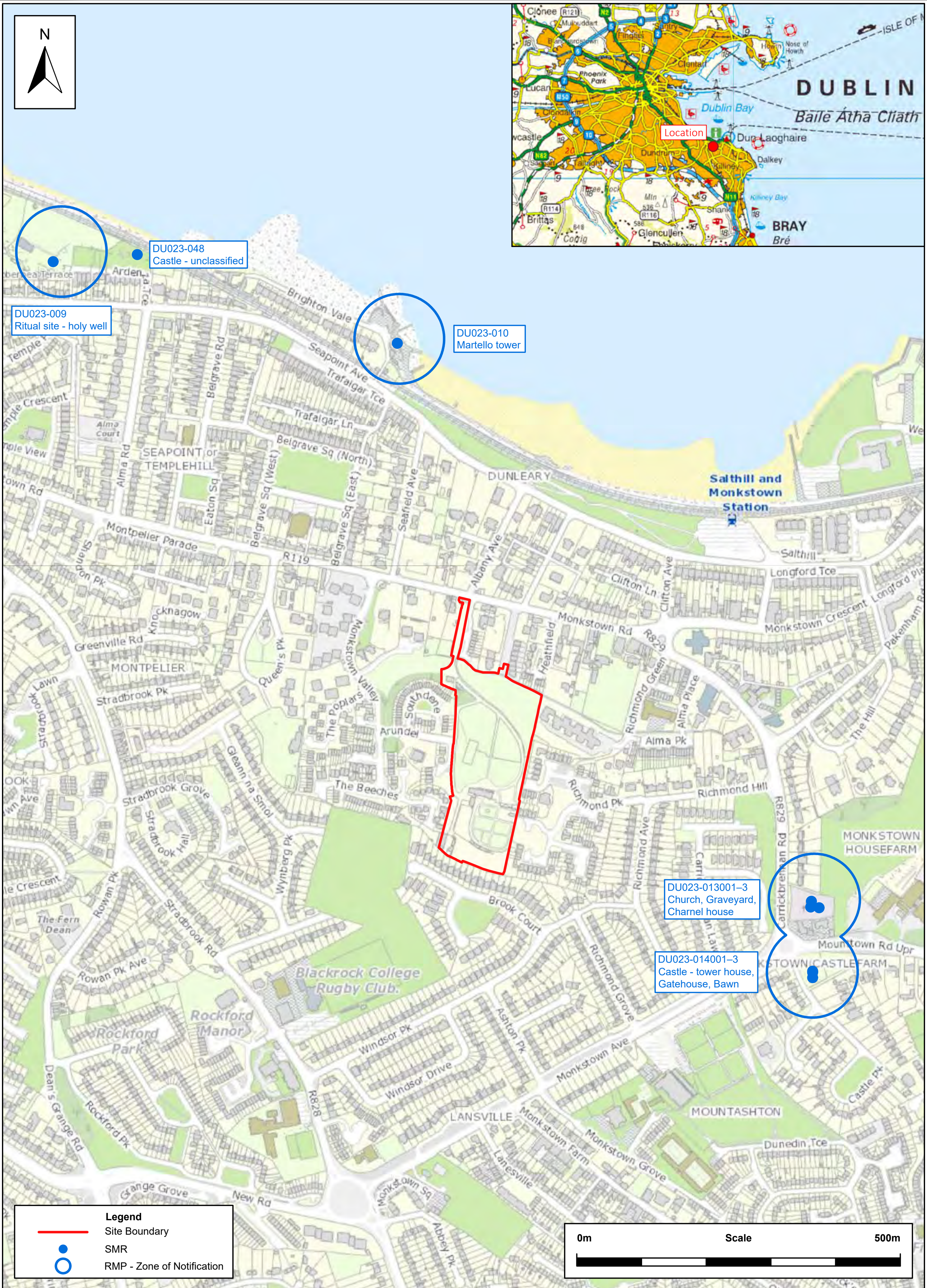
ARCHAEOLOGICAL RESOURCE

The ideal mitigation for all archaeological sites is preservation *in situ*. This is not always a practical solution, however. Therefore a series of recommendations are offered to provide ameliorative measures where avoidance and preservation *in situ* are not possible.

Full Archaeological Excavation involves the scientific removal and recording of all archaeological features, deposits and objects to the level of geological strata or the base level of any given development. Full archaeological excavation is recommended where initial investigation has uncovered evidence of archaeologically significant material or structures and where avoidance of the site is not possible. (CIfA 2014b)

Archaeological Test Trenching can be defined as 'a limited programme... of intrusive fieldwork which determines the presence or absence of archaeological features, structures, deposits, artefacts or ecofacts within a specified area or site on land or underwater. If such archaeological remains are present test trenching defines their character and extent and relative quality.' (CIfA 2014a)

Archaeological Monitoring can be defined as a 'formal programme of observation and investigation conducted during any operation carried out for non-archaeological reasons within a specified area or site on land or underwater, where there is possibility that archaeological deposits may be disturbed or destroyed. The programme will result in the preparation of a report and ordered archive.' (CIfA 2014c)



IAC Archaeology

Title	Site location and location of nearby archaeology	Scale 1:7500@A4	Drawn by RB
Project	Dalguise House, Monkstown, Co. Dublin	Date 31.05.23	Checked by FM
		Job no. J3945	Approved by FB
			Fig. 1 Rev. 1

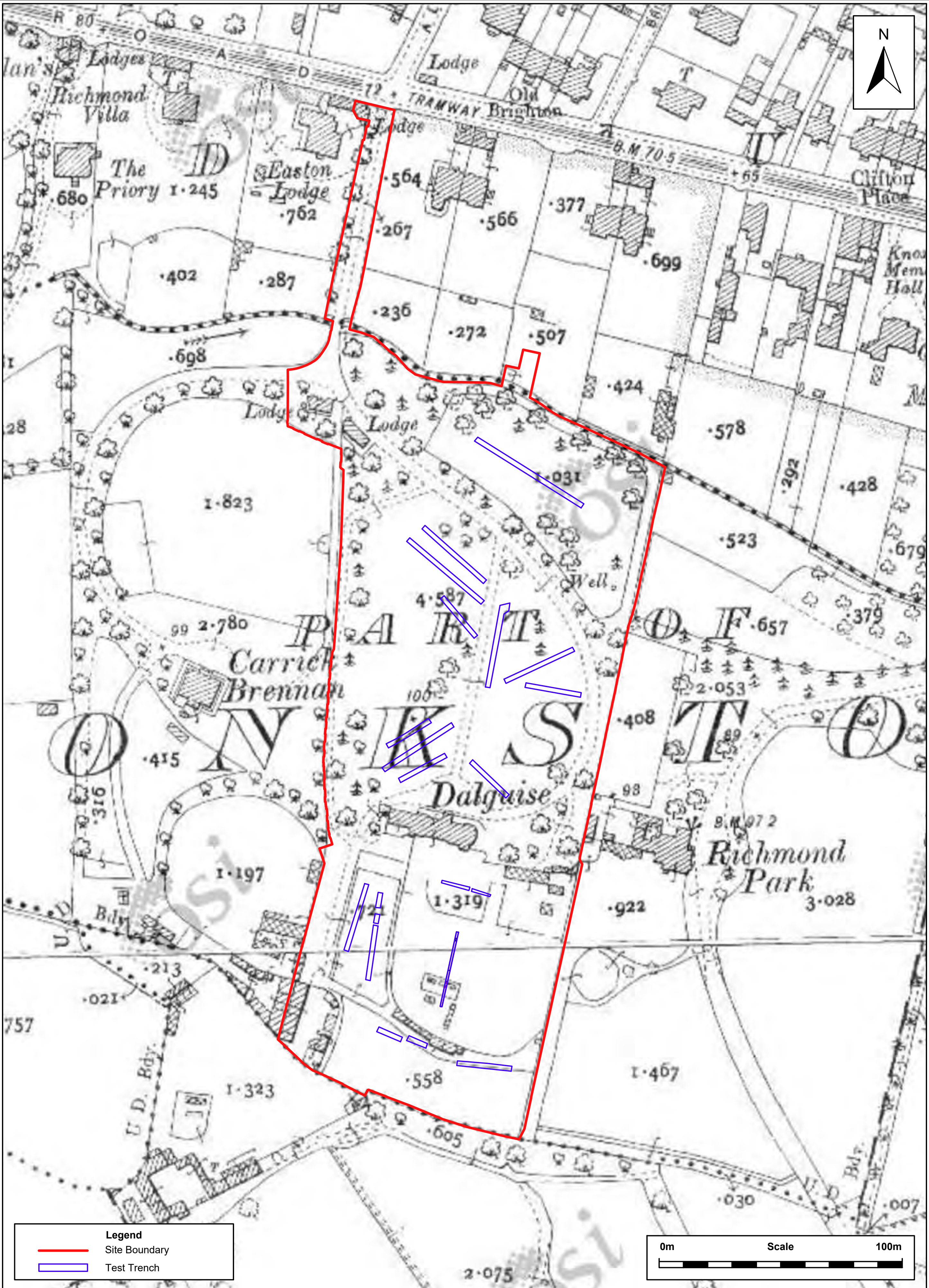
0m	Scale	100m

IAC Archaeology

Title	Plan of the proposed development	Scale	1:2000@A4	Drawn by	RB
Project	Dalguise House, Monkstown, Co. Dublin	Date	04.07.23	Checked by	FM
				Approved by	FB
		Job no.	J3945	Fig. 2	Rev. 2

Title	Extract from the first edition 1843 Ordnance Survey map showing the proposed development area	Scale 1:2000@A4	Drawn by RB
Project	Dalguise House, Monkstown, Co. Dublin	Date 31.05.23	Checked by FM
		Job no. J3945	Approved by FB
			Fig. 3 Rev. 1

IAC Archaeology



Title	Extract from the 1912 Ordnance Survey map showing the proposed development area	Scale 1:2000@A4	Drawn by RB
			Checked by FM
Project	Dalguise House, Monkstown, Co. Dublin	Date 31.05.23	Approved by FB
		Job no. J3945	Fig. 3 Rev. 1

IAC Archaeology

0m Scale 50m

IAC Archaeology

Title	Extract from Google Earth (July 2022) showing the plan of the excavated test trenches	Scale	1:750@A4	Drawn by RB/KOM	
Project	Dalguise House, Monkstown, Co. Dublin	Date	31.05.23	Checked by FM	
		Job no.	J3945	Approved by FB	
				Fig. 5	Rev. 1

Plate 1 – Topsoil, Trench 10, facing southeast

Plate 2 – Field drain, Trench 4, facing south

Plate 3 – Garden feature, Trench 15, facing south

Plate 4 - Garden feature, Trench 15, facing west

Plate 5 –Trench 13 showing drainage features, facing north

Plate 6 –Trench 1, facing northwest

Plate 7 –Trench 5, facing north

Plate 8 – Trench 10, facing northeast

Plate 9 –Trench 12, facing west

Plate 10 – Trench 14, facing north

Plate 11 – Trench 15, facing south

Plate 12 – Trench 16, facing north

Plate 13 – Trench 17, facing east

Plate 14 – Shallow drain in Trench 17, facing south

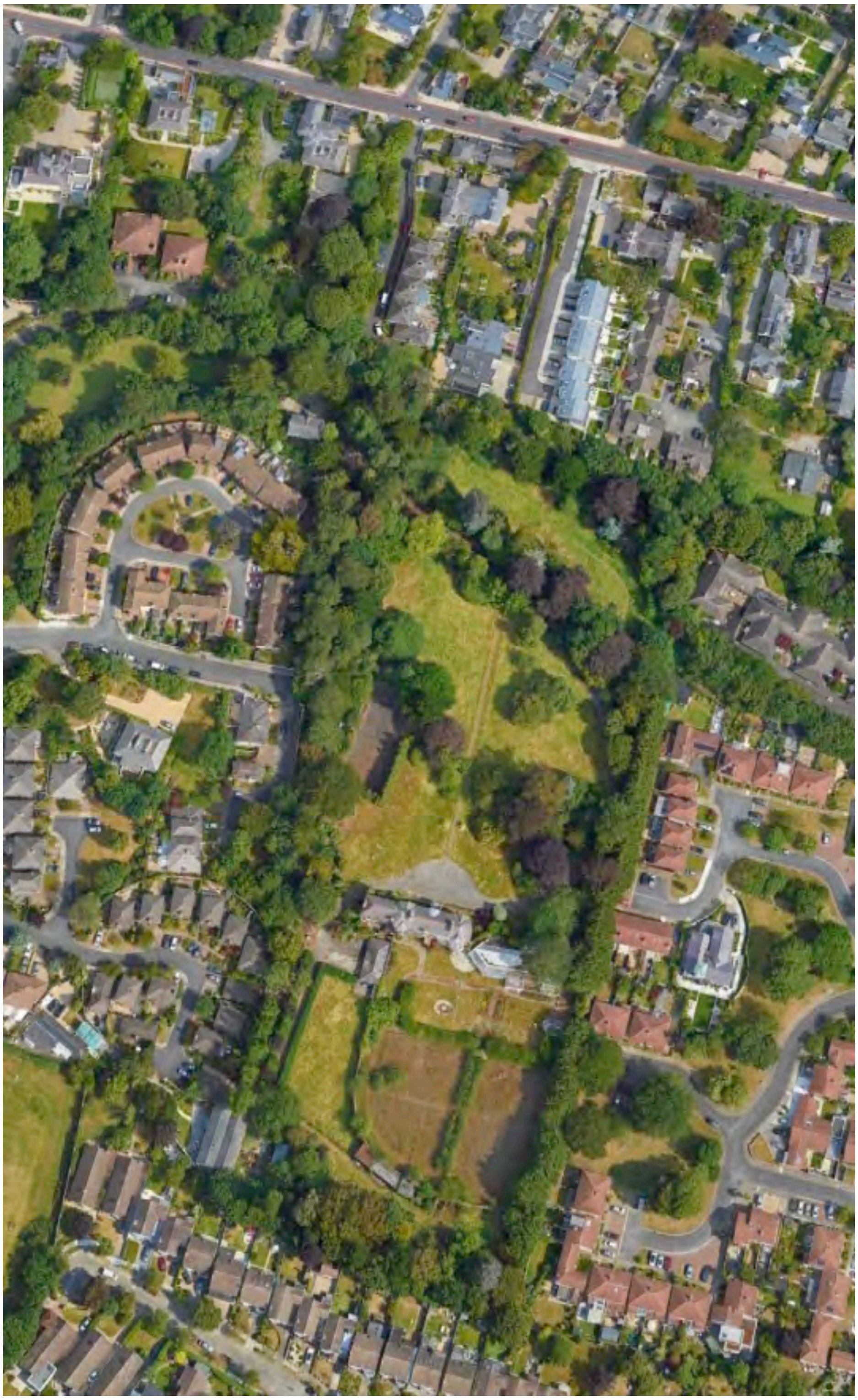
Plate 15 – Trench 18, facing west

APPENDIX 15.1

DALGUISE, MONKSTOWN: HISTORIC LANDSCAPE ASSESSMENT OF ITS LANDS AND ENVIRONS

(PREPARED BY DR JOHN OLLEY, JULY 2023)

Dalguise, Monkstown: Historic Landscape Assessment of its Lands and Environs



John Olley BEng (Sheffield) PhD (Cambridge)

July 2023

Contents

1. Prologue

Figure 1.1 Monkstown 2020. To the north, the top of the image is Monkstown Road. On the east side of the image is Dalguise and its lands. In the centre left of the image is the house, Carrickbrennan

Dalguise House sits on a site of c.8 acres accessed down a lane leading south from Monkstown Avenue. (Figure 1.1) The lane crosses the Stradbrook stream before entering the site. Since its initial development in the late 1820s or early 1830s, Dalguise (or Richmond Cottage as it was then), the house and its lands have undergone significant evolution, modification and decline. In the past, the lane gave access to a plot of land larger than just the site of Dalguise. It included another house, Carrickbrennan which may have been the first house on the overall site and for which the landscape was initially designed and laid out. (Figure 1.2) It seems probable that development along Monkstown Avenue of two detached neoclassical villas and two pairs of back-to-back semidetached houses was carried out at approximately the same time or a little before to become a complementary element of the overall design. To date, the site of Dalguise has remained secluded in spite of the later developments on neighbouring lands at every point of the compass.

This report aims to unravel some of the story of Dalguise and to put it within the changing context of Monkstown and its dramatic development since the early nineteenth century. From this, the architectural and landscape significance of the house and grounds of Dalguise both originally and in its current surviving form today can be established.

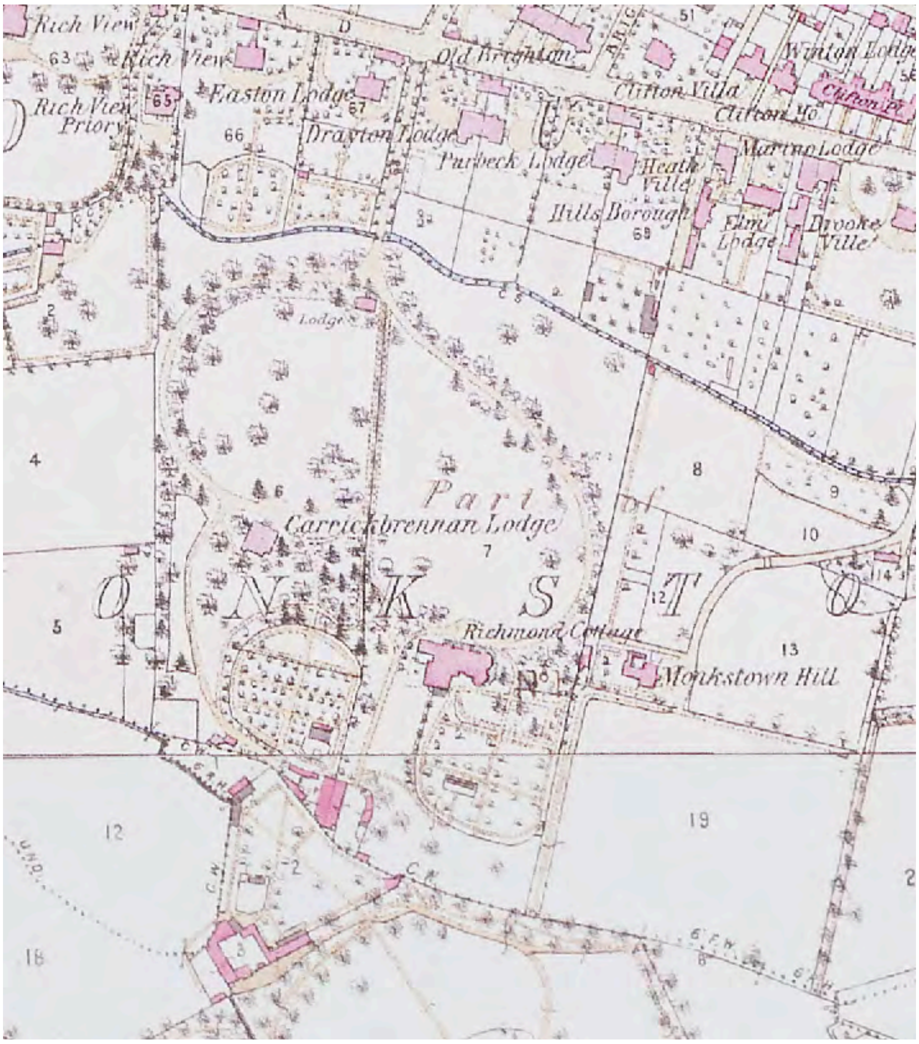


Figure 1.2 Detail of Monkstown Parish Map surveyed 1865 and published 1868 (ARC)

2. Origins and Early Development of Monkstown

The parish of Monkstown stretches along the coast as far as Dalkey. (Figure 2.1 & 2.2) The extent and boundaries of the parish may well have already existed before the Anglo-Norman invasion of Ireland. The remains of a pre-Norman church at Kill-of-the-Grange and on Dalkey Island with the characteristic antae on their west facades along with the early church site adjacent to Monkstown Castle each signal this likelihood.[1] In 1169, a substantial part of this parish then called Carrickbrennan was in the possession of St Mary's Abbey before the Norman invasion. The thirteenth century saw the gift of more lands to the abbey between 1206 and 1235 of "that part of Stillorgan which lay next to the sea".[2] This is the area that today can be identified with Blackrock. The manors of Carrickbrennan and Bullock had been sublet to lay concerns and were probably further sub-divided. The harbour at Bullock was of great importance as a route into Dublin for people arriving to Ireland and for commerce. Bullock was also important for fishing. To secure this, a tower house was built at Bullock. It seems plausible that the "castles" that existed along the coast towards Dublin were for security of that route and the coastline. These along with Monkstown

[1] Margaret Murphy and Michael Potterton, *Dublin Region in the Middle Ages.* (2010) ch .7

[2] C. Ó Conbhuí, "The Lands of St Mary's Abbey, Dublin" *Proceedings of the Royal Irish Academy: Archaeology, Culture, History, Literature,* 1961-1963, vol. 62, p.24.

Castle were also an important show of defence seen on approach to Bullock Harbour from the sea.

Following the dissolution of the monasteries and by the time of the Down Survey and Civil Survey of 1654, the lands of Monkstown parish had passed to Walter Cheevers. As a catholic, Cheevers was dispossessed yet was able to regain his lands later. These lands were bordered respectively to the west and south, by the large Fitzwilliam Estate centred on Merrion and absorbing Booterstown, and by Stillorgan centred on Stillorgan Castle.

Figure 2.1 In the 17th Century the parish of Monkstown stretched along the coast from Booterstown to Dalkey. Down Survey Parish Map of Monkstown and Kill 1654. (TCD)

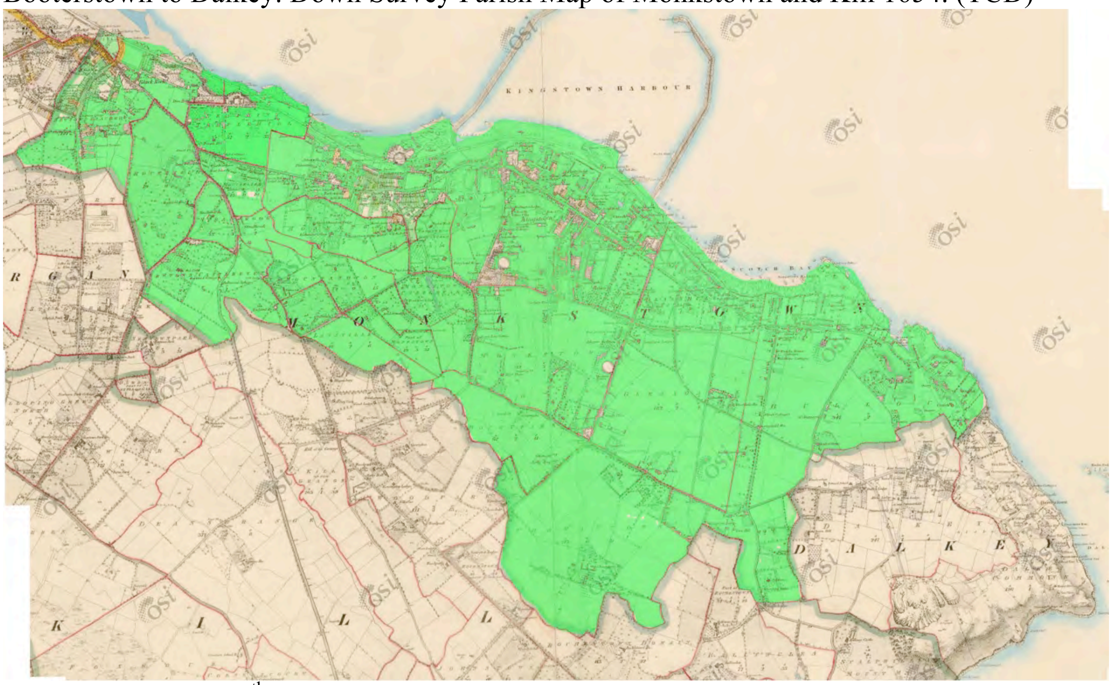


Figure 2.2 In the 19th Century Monkstown Parish (shaded green) stretched along the coast from Blackrock to the boundary of Dalkey Parish shown here on the 1837 OS Map

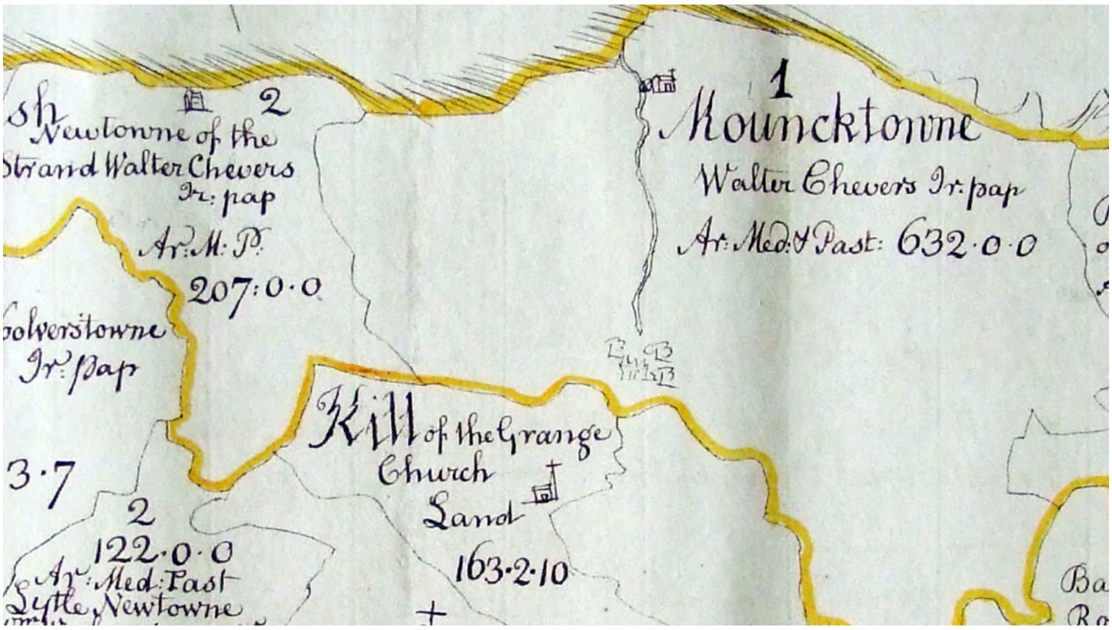


Figure 2.3 Detail of the Down Survey, showing at the coast the castle at Newtown, Blackrock, then called Newtown of the Strand, the Manor was centred on Monkstown Castle shown surrounded with trees through which a stream flows that was broadened to form a lake and fish ponds a central feature in the designed landscape of Monkstown Castle Demesne (TCD)

By the eighteenth century, the lands of the western end of Monkstown Parish had become divided in to smaller parcels while Stillorgan and Merrion became the site of large demesnes with grand landscape designs. Both Mount Merrion and Stillorgan Houses and Demesnes commanded expansive views down to the coast and across Dublin Bay.[3] By the mid-eighteenth century a number of villas appear closer to the coast as the fashion for sea bathing and the idea of its and the sea air's health benefits.[4] The County Dublin Map by John Rocque of 1760 show separate bathing places for men and women along the coast. (Figure 2.4) However, further east the coastline and the immediate hinterland remained as agricultural land save a small settlement around a harbour which Rocque refers to as *Dunlary*.

[3] See for instance the views in Finola O'Kane's *William Ashford's Mount Merrion*, (2012) pp.15-17
[4] See for instance Richard Russell, *A Dissertation Concerning the Use of Sea Water* (1753)

Figure 2.4 Detail of Rocque's map of County Dublin, 1760

Development had begun at Black Rock and its eastern and western ends with eighteenth century houses situated to enjoy sea views across Dublin bay to Howth. Frescati was built c.1729 for the Provost of Trinity College on land of the Fitzwilliam Estate. From 1766, Emily, Duchess of Leinster, developed the house and gardens further. Lissaniskea was built c.1746 and later in the 18th century it was extended with a wing looking out to sea and bows at either end facilitating views northwest and southeast along the coast. Others, Maretimo and Blackrock House followed at Newtown Blackrock in the later eighteenth century spreading their gardens down to the water's edge. Temple Hill sometimes known as Neptune House was built c.1767 and rebuilt c.1782 on a prominent location with extensive views out to sea and back to the Dublin Mountains with a designed landscape on some thirty acres.

Figure 2.5 Detail of the 1683 Map of Dublin Bay

The long straight road that links Blackrock to Monkstown and Dun Laoghaire appears in early maps of Dublin Bay. The Map of 1683 indicates this road although not drawn as straight leading ultimately to the castle of Monkstown at the medieval and original centre of the manor and the parish. (Figure 2.5) This road along with a secondary informal track hugging the coast is again shown in Price's Map of 1730. (Figure 2.6)

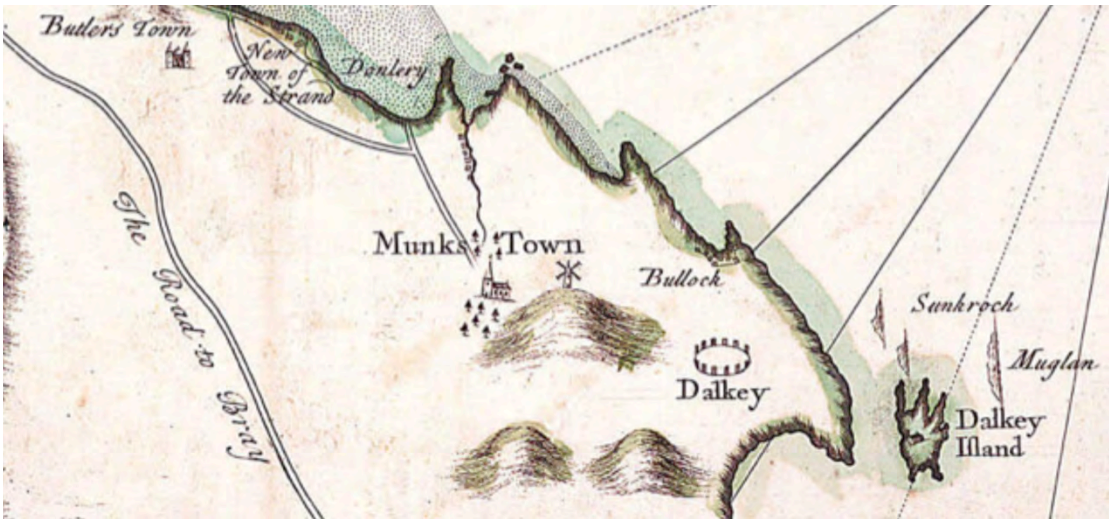


Figure 2.6 Detail of Price's Map of Dublin Bay 1730

More detail is shown in Rocque's Map of *A Survey of the City, Harbour, Bay and Environs of Dublin* of 1757 with only the coastal strip making it at the edge of the map. (Figure 2.7) For the length of the road called Dunlary Lane there is agricultural fields either side, to the north is pasture with the field boundaries indicated. The memory of these field boundaries can be seen today in the eventual layout of the development of the area. To the south, the map suggests an arable field and shows a lane leading off the map. This road is in the location of the lane that leads down to Dalguise today. The coast road appears as an informal track as it continues to be depicted in maps all through the early nineteenth century.

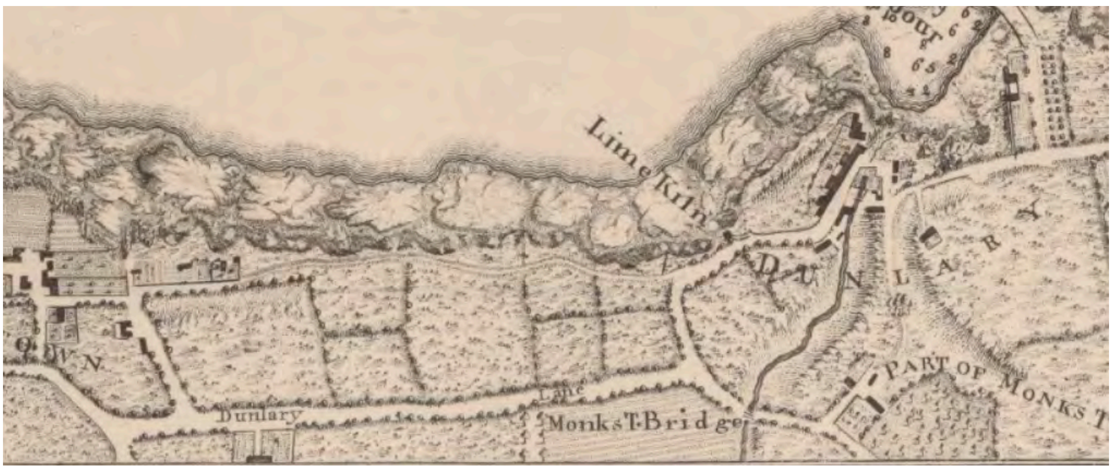


Figure 2.7 Detail of *A survey of the City, Harbour, Bay and Environs of Dublin* by John Rocque 1757

By the eighteenth century a large section of the lands of Monkstown was a joint estate of the Pakenham and de Vesci families. By the end of the century they were pursuing the idea of development as the demand for seaside residences was spreading further east along the coast.[5] This was to include not only individual villas but also examples of those elements of the Georgian city fabric, terraces and squares.

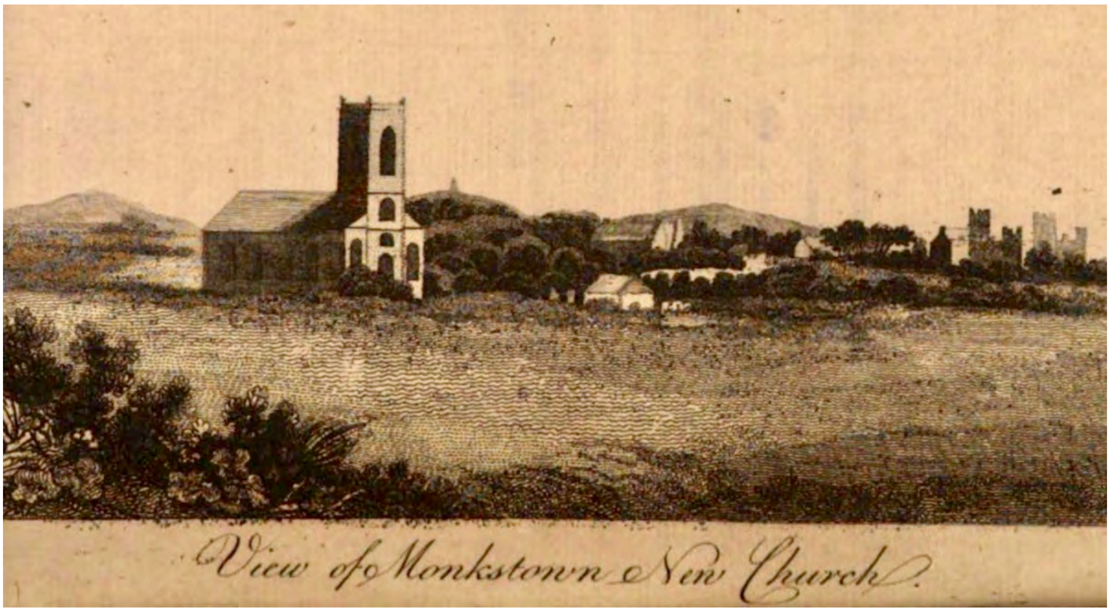


Figure 2.8 A view of Monkstown Church from the north west seen here across nothing but fields with the remains of Monkstown Castle at the far right on the image. (published 1793)

No buildings appear either along Monkstown Road (save Mont Pelier House) or between the road and the sea until the nineteenth century. The first move, however, was the building of a new church for Monkstown with its tower a landmark terminating the view east down Monkstown Road. The church proposed in 1785 was opened in 1789. (Figure 2.8) In a view of the church of 1793, there were only fields in the foreground. By the turn of the century there was some development at the Blackrock end of Monkstown Road with the Montpelier Row and Parade terraces, build back from the road behind a wall with their own shared gate lodge all within the original miniature demesne of Montpelier House. (Figure 2.9) Alexander Taylor's *Sketch of the Environs of Dublin* c.1801 still shows no other development. (Figure 2.10)

[5] Laura Johnstone has explored the development the Longford/Vesci estate with a focus on the area slightly further east and closer to the sea and later in the nineteenth century, 2019, *Two Estates and their costal suburbs* Unpublished PhD dissertation, UCD

Figure 2.9 1802 engraving of Montpelier Parade with Monkstown Church in the distance and to the right, Montpelier House. There is no development shown between the terrace and Monkstown Church


Figure 2.10 Alexander Taylor's *Sketch of the Environs of Dublin* of c.1801 shows the new church at the east end of Monkstown Road, the Stradbrook stream to the south and the development of Montpelier at the Blackrock end of the road to the west

Figure 2.11 A detail of the Bligh Map of Dublin Bay (1803)

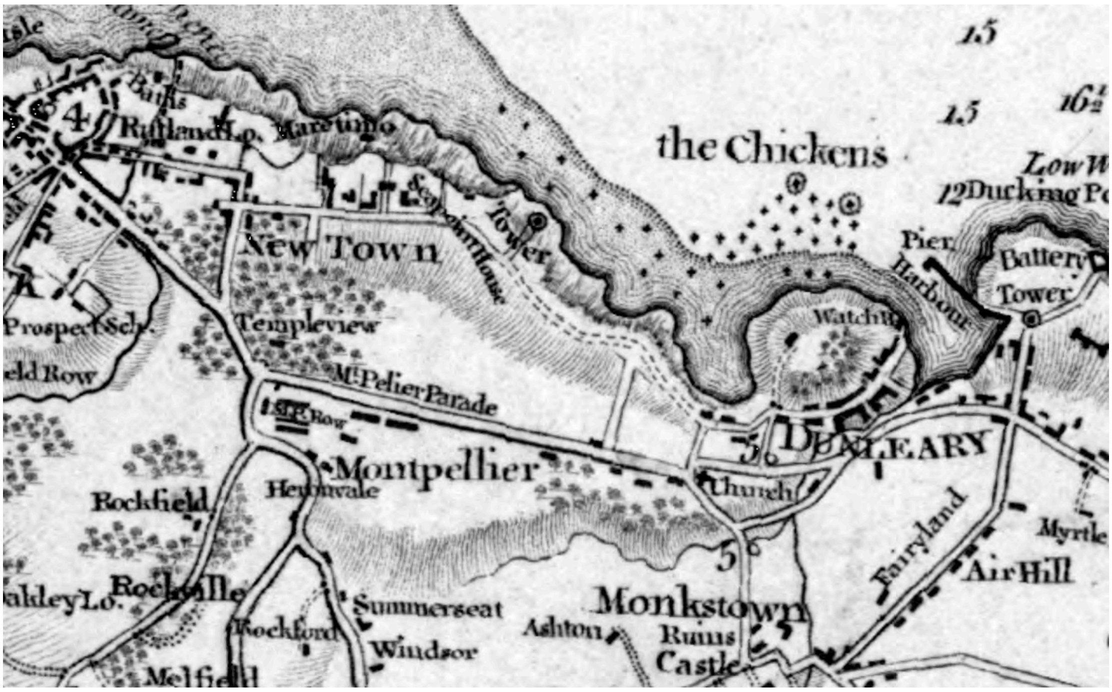


Figure 2.12 A detail of John Taylor's *Map of the environs of Dublin*, 1816

The Bligh map of Dublin Bay of 1803 still shows nothing along Monkstown Road other than the Montpelier complex. (Figure 2.11) However, by the time of John Taylor's *Map of the environs of Dublin*, 1816, there appears some development towards the Monkstown end. (Figure 2.12) A road is shown going north to the shore. There is a degree of uncertainty as to whether this is Brighton Avenue or Albany Avenue although the former seems more likely. This would make the building to the west of Brighton Avenue a terrace of four houses referred to on the 1907 OS map as Old Brighton. If this is the case then on the other side of the road the pair of houses is Heathville and Purbeck Lodge. This would mean that they were built before 1816.

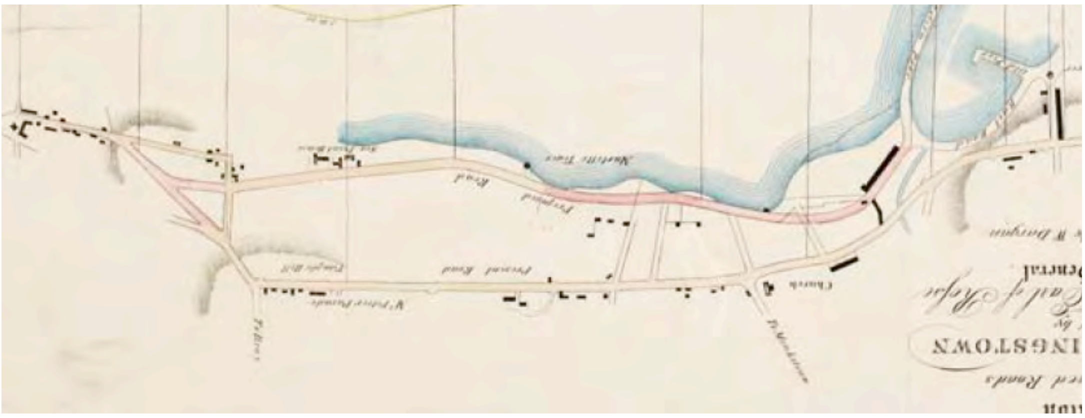


Figure 2.13 “A survey of a proposed road along the coast” by W. Daryan, 1830

Figure 2.14 An overlay of the 1830 survey on the 1837 OS Map.

The next cartographic evidence we have is a survey by W. Daryan of 1830 which is essentially concerned with a proposed new road along the coast. (Figure 2.13) It now shows two roads leading from Monkstown Road to the coast. These can now be confirmed as Albany Avenue and Brighton Avenue and can be corroborated by the line of three villas to the west of Albany Avenue and two to the east of Brighton Avenue that match those seen in the 1st edition OS Map. (Figure 2.14) However the identification of buildings along the Monkstown Road is less clear and apparently at odds with those on the Taylor and Duncan Maps of 1816 and 1821 respectively. More interestingly, the lane that corresponds to the access drive to Dalguise makes an appearance again. Although now it is possible to identify buildings to the west of Albany Avenue on the south side of Monkstown Road as Easton Lodge and Richmond Villa there seems to be nothing to the east. (Figure 1.2) However, we know from the wording of a lease that Heathville was already in existence in 1828. From this it can be presumed that Richmond Villa, Easton Lodge, Drayton Lodge, Glenville, Purbeck Lodge and Heathville were all built some time in the 1820s.

A survey of the Longford/Vesci Monkstown estate of 1792 has a series of plots of land marked with blue or red boundaries. (Figure 2.15) The boundaries coincide with boundaries recorded on the OS maps of 1837, 1868, and 1907. An overlay of this survey onto the 1837 Map demonstrates this. (Figure 2.16) These divisions perhaps herald the development of this section of Monkstown Avenue in the early years of the next century.

Figure 2.15 Detail of the survey of the Longford/de Vesci Monkstown Estate 1792 by John Brownrigg. Across the centre of the image, at the point where the steep rise south from the Stradbrook stream levels out is written: *Beautiful Situations for Building*. The definition of plots with red and blue lines appears to have been added to the survey later

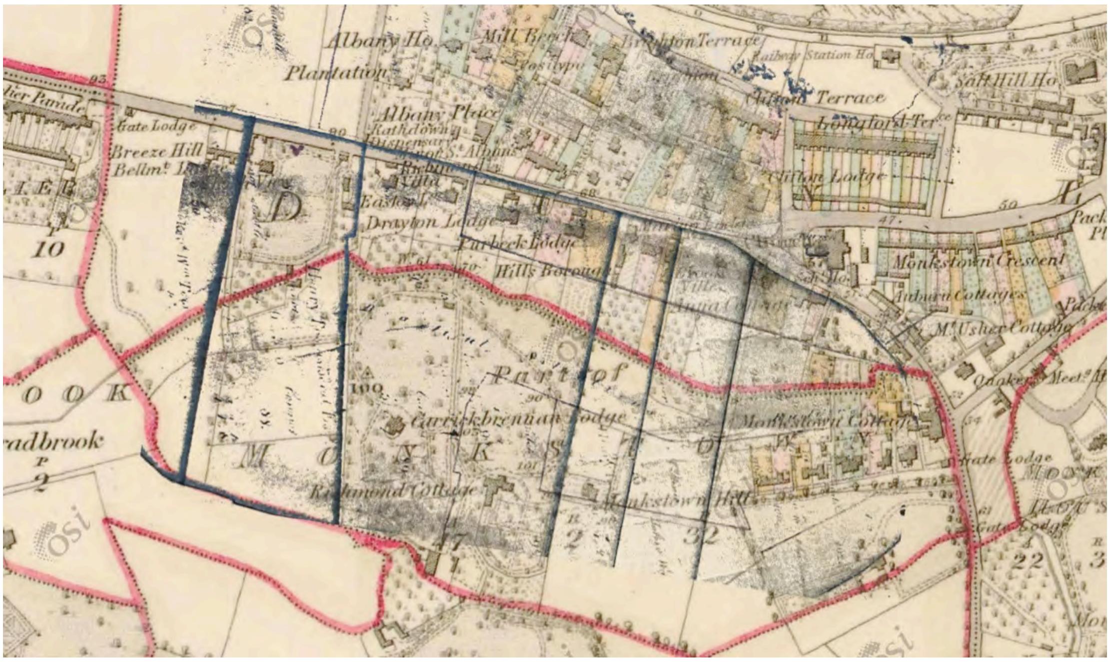


Figure 2.16 The 1792 survey overlaid onto the 1837 OS Map. The definition of plots drawn in blue and red corresponds with boundaries on the 1837 map. The large plot in the centre of the image corresponds to the development of the lands along Monkstown Road and the site of Carrickbrennan and Dalguise.

3. Development and Developers of the Lands along Monkstown Road and including the site of Carrickbrennan and Richmond Cottage

The development in the early nineteenth century of the plot of land from Monkstown Road south to the townland boundary shown in Figure 3.1 will be discussed in this section.

Figure 3.1 The 1868 OS Map with the overlay of the division into plots of the 1792 Brownrigg Survey

The division of plots shown on the 1792 Brownrigg Survey is suggestive. A section of Monkstown Road has a plot that stretches as far as and including the lane leading south from the road. This has a depth corresponding to the plots of two pairs of back-to-back semidetached villas. (Figure 3.2) Joshua Chaytor, a Quaker and corn merchant appears to have been the developer of this group of houses taking Heathville with its wider plot as his own residence.

Figure 3.2 Two pairs of back-to-back houses probably built by Joshua Chaytor in the 1820s (1868 OS Map, UCD)

There was tract of land behind these plots before reaching the Stradbrook stream. It seems that Chaytor also took this with his garden extending to the east and possibly to the west. These houses turned their back on to Monkstown Road with the stables and service yards forming the boundary with the road and the houses entered either from the west or east. The group of four houses were conceived as an overall composition with the site layout mirrored either side of a central axis.

Another plot of land is also suggested by the 1792 survey. With a plot along Monkstown Road leading to a large area stretching to the townland boundary and including the land behind Chaytor's development. On Monkstown Road a pair of classical villas with the stables to the roadside with the drives sweeping round to the entrances on the south side of the houses before continuing round to the stables. (Figure 3.3) These villas are Richmond Villa and Easton Lodge. Again the plot layouts were mirrored.

Figure 3.3 Two cubic classical villas built to the west of the lane leading to Dalguise

Behind this development and that of Joshua Chaytor and on the south side of the stream, was some fifteen acres on which two houses were to be sited. These properties were accessed by the lane that leads south off Monkstown Road. They were named initially as Carrickbrennan (the ancient name of the manor and parish of Monkstown) and Richmond Cottage (in the late nineteenth century its name was changed to Dalguise). From the Almanac of Pettigrew and Oulton of 1835, they were occupied by James Pim Junior and Robert Gray respectively.

The Pims were one of the most important Quaker families in Dublin, many branches of which were represented in the highest echelons of Dublin's brewers, bankers, millers, and merchants. James Junior set himself up as a Stock Broker in 1824. In 1825 he was secretary to the Shannon Navigation Co. and also personally financed a survey and plans for a railway line from Dublin to Kingstown (Dún Laoghaire) prepared by Alexander Nimmo. His family was a major investor in the railway and James became the secretary of the Dublin to Kingstown Railway Company. The line was opened in 1834.

In 1831, Colonel John Fox Burgoyne, a military engineer, became Chairman of the Board of Works in Ireland (today's Office of Public Works) a position he held until 1845. He became chair of the Shannon navigation commission and member of the

Railways commission. In 1835 he became a founder and first president of the Civil Engineers Society later to become the Institute of Engineers of Ireland. During his time in Ireland he lived in Easton Lodge. After Burgoyne left Ireland, J Greenwood Pim, James's younger brother moved into Easton Lodge with his father and mother both of whom died in 1847 and had been living just down the road nearer the Church at Hillsborough. The other villa of the pair, Richmond Villa, was occupied by Edward Alexander another prominent Quaker in Monkstown.

James Pim was also a prominent philanthropist. He was behind the establishment of the Friends Meeting House in Monkstown designed by George Papworth in 1832. At the top of the list of those who attended the inaugural meeting were the immediate families of James Pim and Joshua Chaytor. In 1838 James Pim bought Monkstown Demesne on which a new house had been built c.1829. (Figure 3.4) The house's design has been attributed to the George Papworth.[6] This house, the new Monkstown Castle, was adapted in 1838 with the addition of a porch by the architect, John Skipton Mulvany.[7] It had an entrance hall that led into a sky-lit stair hall. To either side of the hall were rooms with the bowed ends. The house looked to the northeast across the demesne with its substantial lake/fishpond to the sea beyond Dun Laoghaire. In 1738 James Pim had commissioned Ninian Niven to produce a design to create a public amenity of the demesne parkland. The proposal contained a botanic garden, a hilltop observatory as a centrepiece for the gardens, a galleried palm house, an American garden, a pinetum, willow-hung islands in the lake and dripping cliffs. This ambitious landscape with its potential educational role was never executed but the proposals were published.[8]

Figure 3.4 Monkstown Castle built c.1829 possibly designed by George Papworth with additions by John Skipton Mulvany 1838

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[6] Frederick O'Dwyer, 'The architecture of John Skipton Mulvany', *Irish Architectural and Decorative Studies* 3 (2000), p.27.
[7] ibid.
[8] N. Niven, *Prospectus of the proposed public gardens at Monkstown Castle* (Dublin, 1839).

Ninian Niven had come to Ireland in 1827 to be head gardener at the Chief Secretary's Lodge in Phoenix Park and in 1834 he was appointed curator of the Botanic Garden, Glasnevin. He left the Botanic Garden in August 1838 to set up as a landscape designer. In November of that year he moved into a house on Richmond Hill in Monkstown. There he was to have members of the Pim family as neighbours on both sides. Ninian Niven is best known for his number of works in Phoenix Park, the design of Iveagh Gardens, Kilkee, the design of public parks in Kingstown and Blackrock. He was also responsible for the central garden of Belgrave Square in Monkstown. Belgrave Square was laid out and building begun by the partnership of Robert Gray and the architect John Semple from 1834 till 1846.

Carrickbrennan and Richmond Cottage, for reasons discussed in the next section, would seem to be a joint development including Richmond Villa and Easton Lodge. Might the above suggest that James Pim was the developer of these four houses? Alternatively, could it be in some way a joint venture of Pim and Gray? Members of each of these families sat together on the board of an insurance company and Robert, himself a banker, had his Dublin office at the same address as the insurance company. And many years later James Pim's son, Richard married Robert Gray's ninth child.

James Pim and Robert Gray were near contemporaries being born 1796 and 1792 respectively. James married in 1823 and Robert in 1828. Does this give a timeline for the building of these houses? Until the railway was built and daily commuting to Dublin became more convenient, did these houses initially serve as weekend and summer residences? Robert Gray's children were born in his city house in Blessington Street until April of 1934, the year the railway opened. Another possibility is that Carrickbrennan was built and its landscape created in the 1820s, and then later, in the early 1830's, Richmond Cottage was built within this landscape requiring minor but significant adjustments to the site.

Pim had moved to Monkstown Castle before 1840 and Robert Gray bought and moved to Temple Hill in Blackrock in 1845. At Temple hill he had a small demesne of some 30 acres that had been laid out by Thomas Leggett the landscaper of Marlay Park and Attingham Park in Shropshire. In his time at Temple Hill the grounds were further developed with his gardener, Thomas Moore to include a substantial increase in the number of glasshouses of the latest design. Robert was a member of the Royal Horticultural Society and won many prizes for vegetables, flowers and exotic plants.

4. The Design and Evolution of the Landscape of Carrickbrennan and Richmond Cottage

The land of the developments on the south side of Monkstown Road slopes gently down to Stradbrook Stream, a little more steeply at its eastern end. However, on the south side of the stream, the land rises steeply at first, levels out but continues gradually rising before dropping again towards the southern edge of the site at the townland boundary. The highest point of the site is more than nine metres above Monkstown Road. To the south of the stream the whole site appears to have been initially a single shared design. Both Carrickbrennan and Richmond Cottage were built set towards the southern end of the site at the highest point. On the 1792 survey along a line above the stream at the point where the steep rise the stream begins to level out was written, “Beautiful Situations for Building”. (Figure 2.15)

Figure 4.1 The organising figure of an ellipse was described by the sweep of the approach drives.

The layout of the site appears to be a single conception. The figure of an ellipse governs the organisation of the overall site. (Figure 4.1) A gate lodge was placed at the end of the lane from Monkstown Road. From there the approach drives to the left and right describe an ellipse as they sweep around to negotiate the steep slope out of the stream’s valley with a much more gradual gradient. They curve around to arrive in front of their respective houses each on the southern side of the ellipse looking north across what appears as shared parkland to command sea views. Also in the view would have been something of the gardens and the south elevations of the houses on Monkstown Road. These houses presented their principal facades overlooking their south-facing, sloping garden to Carrickbrennan and Richmond Cottage. Their service yard and stables were behind to the north.

John Loudon, in his *The Suburban Gardener and Villa Companion* of 1836, wrote of "A double detached House, with Entrance Porches at opposite Sides: … a common, and at some time an effectual, mode of arranging and placing the entrances of a double detached house, so as to make it have the appearance of a single house." Referring to an illustrated example he continues: "In this case, a square building, containing two houses, is entered by porches at opposite sides … The space in front of the houses is divided by a wire fence in the centre; so that a stranger entering from the street, and proceeding towards either house, sees across the whole width of the front; and both houses and gardens appear to him to be one, and occupied by the same family. We have shown how shrubs and low trees may be distributed so as to aid this illusion."[9]

Figure 4.2 The back-to-back semidetached villas of Purbeck Lodge and Heathville, showing the entrance façade of Purbeck and the south-facing combined façade with a metal balcony

The two pairs of back-to-back semi-detached houses on Monkstown Road, rather than addressing the street, faced the site of Carrickbrennan and Richmond Cottage. Each pair appeared as a single house, reinforced by the metal balcony stretching across the middle section of the composition of the combined façade. (Figures 3.2 & 4.2) The 1868 OS Map shows an extension to both the first and fourth house making each pair asymmetric but giving a symmetrical composition when the two pairs were seen together.

Could an element of Loudon's discussion be applied to Carrickbrennan and Richmond Cottage? The boundary between them might have been a mere wire fence giving the impression that each commanded the whole sweep of the parkland laid out before them? Also initially they shared the single gate lodge.

[9] John Loudon, 1836, *The Suburban Gardener and Villa Companion,* p.114

Figure 4.3 Carrickbrennan The entrance façade faced north and had originally overlooked parkland with views beyond to Dublin Bay and Howth.

Figure 4.4 Carrickbrennan The south façade, the large window to the stairs would have originally given a composed view of the Dublin Mountains

The design of the planting shown in the 1837 OS Map was such that neither house was visible from the other. They were radically different from one another. Carrickbrennan was a classical cubic object apparently freestanding in its parkland. (Figure 4.3) Its walled garden, drawn as a separate figure in the landscape, was at some distance from the house and hidden behind planting. The house was similar to, but larger than, the two Villas on Monkstown Road. (Figure 3.1) The principal rooms of Carrickbrennan looked out over the parkland to the north and beyond to Dublin Bay. The house's south façade is dominated by a single massive central window to the stairs that would have taken in views of the Dublin Mountains. (Figure 4.4)

Richmond Cottage in contrast was a single stack long building. (Figures 4.5 & 4.6) Its principal rooms were at either end with the dining room to the west and the drawing room to the east, each with windows both to the north and to the south where they overlook the walled garden. Richmond Cottage was sited at the highest point of the site where the land begins to drop to the south allowing the basement to be at ground level to the rear and opening into the walled garden. (Figure 4.7 & 4.8)

Figure 4.5 Dalguise, north façade

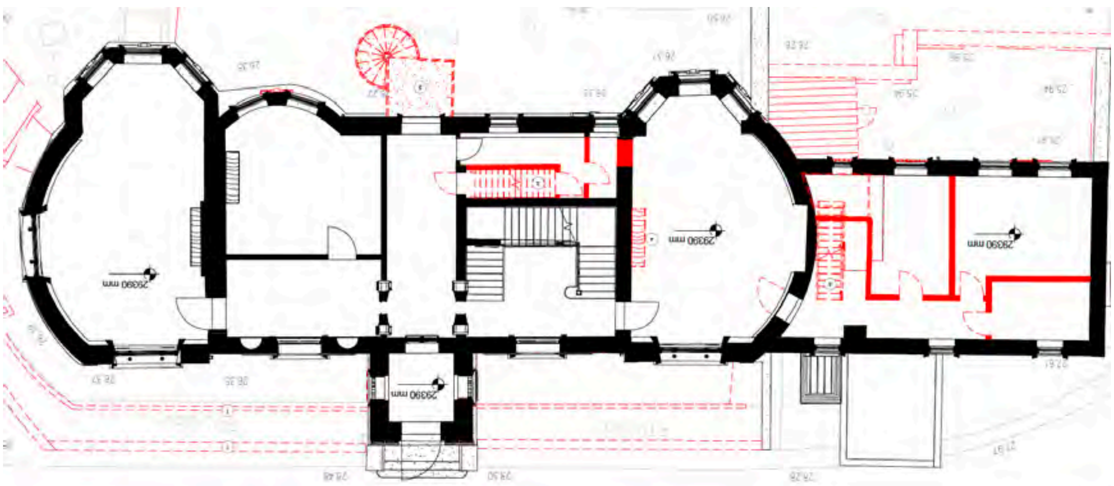


Figure 4.6 Dalguise, ground floor plan

Figure 4.7 Dalguise House, south façade overlooking the walled garden

Figure 4.8 Dalguise House The approach drive arrives to the north side of the house before continuing around the service end of the house before descending to the stables. The principal section of the house with its bowed ends addressed the walled garden.

An additional set of gates and an accompanying lodge had been added by 1865 at the Monkstown Road entrance to the lane. (Figures 4.9 & 4.10) The lodge was placed in the corner of the plot of Easton Lodge adjacent to its stables. This could be understood as further evidence that the development of Carrickbrennan and Richmond Cottage was associated with the development of the two houses on Monkstown Road.

Figure 4.9 The entrance gates to Dalguise, to the right the new lodge built between 1837 and 1865

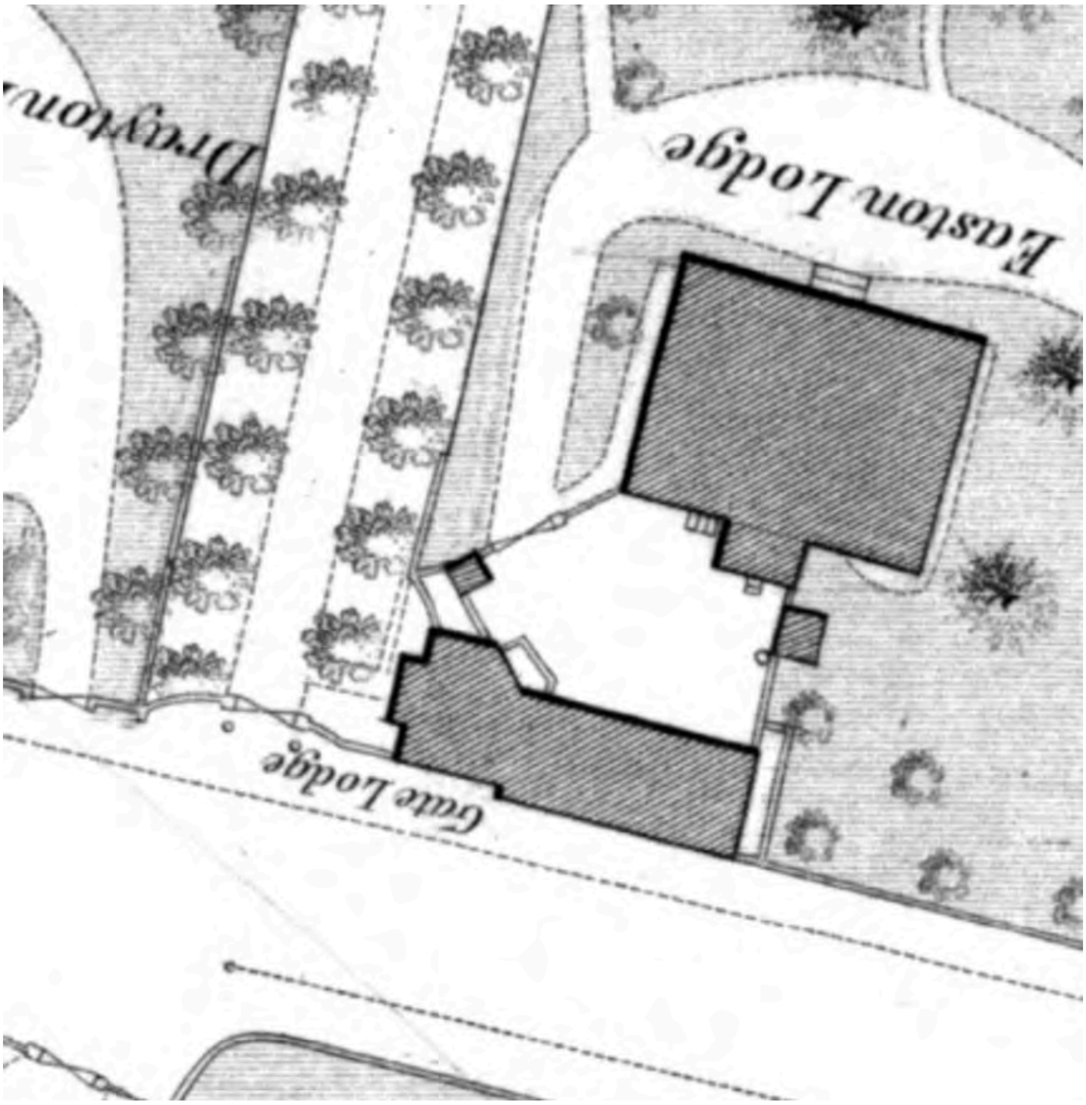


Figure 4.10 detail of 1868 OS Map showing lodge for Carrickbrennan and Richmond Cottage built in the plot of Easton Lodge

A more detailed look at the nature of the layout of the landscape of Carrickbrennan and Richmond Cottage seems to point to the possibility that it was originally designed for a single house, Carrickbrennan. Arriving across the bridge, a carriage would take the easy curve to the left and climb a gentle slope. It would then follow the elliptical drive clockwise to its southern end to arrive in front of Carrickbrennan. Having delivered guests, the carriage could continue on around the ellipse disappearing into the tree-line avenue as it descended down a steeper gradient and the sharp bend into the lane and on to Monkstown Road. If the carriage were the family's, it would continue on from the house and then turn left to descend to the stable hidden behind planting and the walled garden. There is the possibility that tradesmen could have used the route to the stables and service area that became part of Richmond Cottage grounds thereby not passing in front of the house. With the division of the site, approach to Carrickbrennan would go anticlockwise round the elliptical figure of the drives, climbing a steeper gradient. The carriage would have to turn around in front of the house to leave or go to the stables.

In the late eighteenth century and early nineteenth century, it was not uncommon for there to be an approach-drive that essentially formed a one-way route separating arrival and departure. The broad sweep of the drive taking the whole width of the site would have maximised the impression of the extent of this miniature demesne. Carrickbrennan was orientated to command the best composed view of Dublin Bay and the Howth peninsular view to the north and the Dublin Mountains to the south. It also assured that there was an unobstructed view of the parkland with all but the most peripheral view of the entrance drive. By the time one had emerged from the easy climb from the valley of the stream, there would have been only a glancing view of the house. And on leaving the drive was obscured by the planted avenue before the steeper descent to the lodge and bridge.

The 1837 OS Map shows a degree of detail within the two walled gardens that suggests they fulfilled different functions. The garden associated with Carrickbrennan is depicted as an orchard, whereas the other one associated with Richmond Cottage appears more of what would be expected of a kitchen garden. This perhaps would suggest again that the development was, at least initially, conceived as a single landscape for Carrickbrennan with both walled enclosures serving the house.

In conclusion, from its apparent form, the landscape design of Carrickbrennan and Richmond suggests that it was initially a single conception composed for just Carrickbrennan House. This may have been because Carrickbrennan had been built first for, and by, James Pim. James would also be the most likely candidate for the development of the two houses on the Monkstown Road site. These two houses are very similar to Carrickbrennan albeit a little smaller, possibly signalling the same architect and/or builder. (Figure 3.1) Pim set up as a stockbroker in 1824 and had married in 1823. Was then Carrickbrennan built as a residence for his wife and family away from the declining situation in the city centre, and for him at weekends and summer until the railway opened in 1834 when daily commuting became easier?

Whereas Carrickbrennan was an architectural object freestanding in parkland, Richmond Cottage became a different conception, attached as it was to the walled garden. The garden then formed the foreground of the views south from the principal rooms. Its orientation, the result of engaging with the existing geometry of the walled garden, meant that any views across the Dublin Bay would not have been as impressive as those from Carrickbrennan whose focus would have been the peninsular of Howth and beyond to Lambay. Similarly the view of the mountains would not have been so carefully composed. (Figure 4.11)

Figure 4.11 Looking from the upper floor of Dalguise over the walled garden. In the foreground the mature yew hedge dating possibly from the mid-nineteenth century. Just a glimpse of the beginning of the Dublin Mountains is only visible to the right of the photograph.

The original name of Richmond Cottage may offer some clues to its origin. Richmond ultimately has its origin in early French *Riche Mont*, a splendid hill. The nomenclature *Cottage*, as well as describing a vernacular country residence, it became a fashionable title in the eighteenth and early nineteenth century for a building that was sometimes an informal alternative residence within the demesne of a country house. This could be referred to as a *cottage orné,* often an exaggerated picturesque concoction. Invariably the cottage had an intimate garden attached. An early example in Ireland was what is now known as the Shell Cottage on Carton Demesne. As early as before 1744 it had an elaborate garden attached to its east side.

In any demesne it had also been the norm to have a gardener's cottage attached to the wall of a kitchen garden, sometimes on the outside with window(s) looking in for surveillance purposes, at others the cottage might be on the inside and designed to be a picturesque adornment to the garden. In addition, small buildings were usually added to the outside of the wall for the storage of materials and as a potting shed etc..

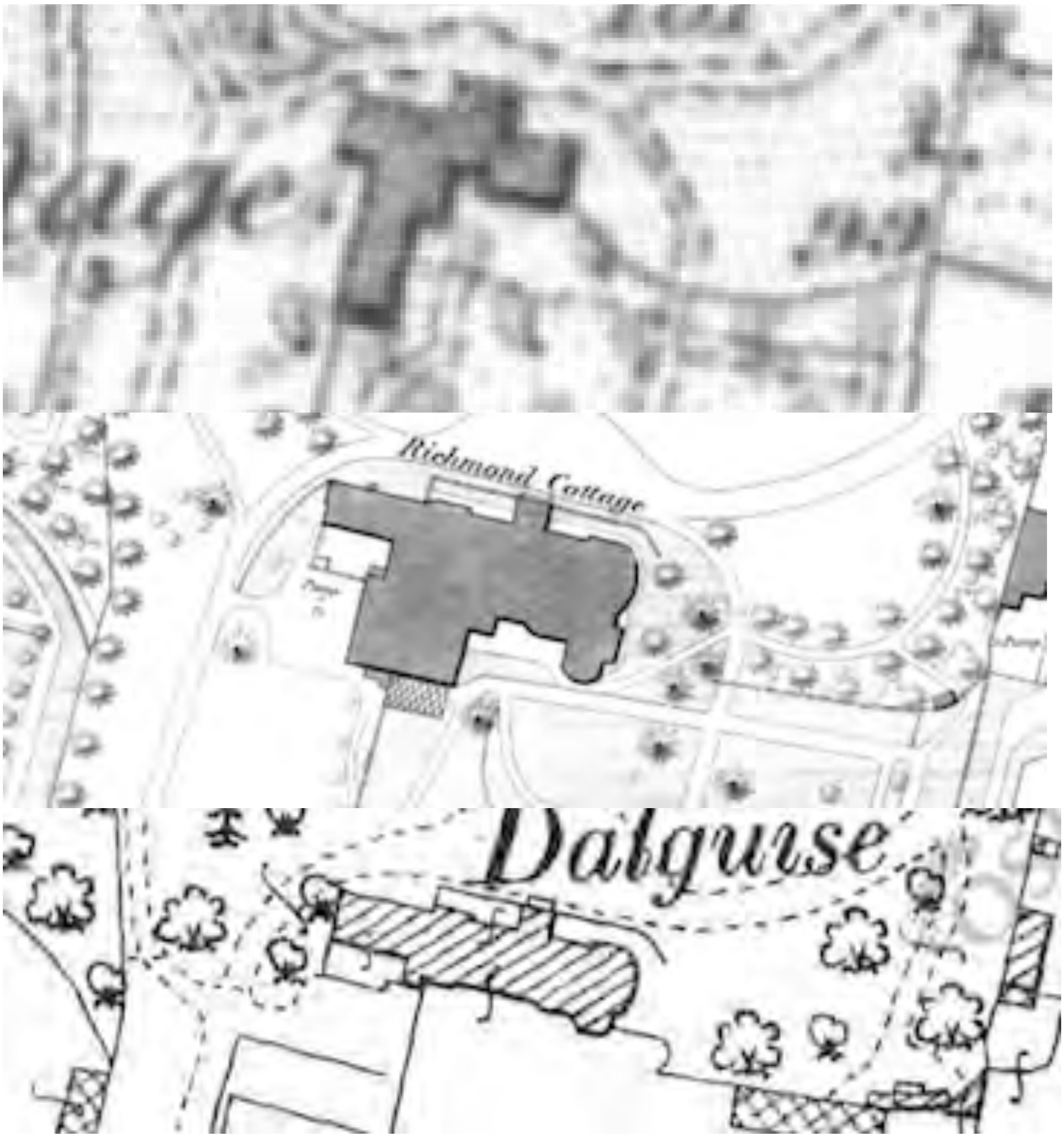


Figure 4.12 The footprint of Richmond Cottage (later Dalguise) in, from top to bottom, 1837, 1868, 1909

The footprint of Richmond Cottage as seen on both the 1837 and 1865 Maps differ in extent to that on the 1909 Map. (Figure 4.12) The footprint is likely to be the combination of single storey buildings, the main body of the house and any other details like verandas, covered balconies and, in the case of the 1837 Map, conservatories or glasshouses. The current building is two storeys over basement with bowed ends to east and west. At the west end, the bow has been abutted by a two storey building that previously is likely to have been at basement level only in 1837.

By 1865 there were changes to the walled garden. The east west path had been moved further south and a boundary had been introduced to define a space that embraced the principal part of the house. (Figure 4.13) This became an ornamental garden and beyond the boundary was the productive kitchen garden. Today a mature yew hedge defines this boundary and may date back to before 1865. (Figure 4.11)

Figure 4.13 Richmond Cottage and attached walled garden 1837 (left) and 1865 (right)

5. Dalguise

A succession of people occupied Richmond Cottage after Robert Gray left. In c.1880, the name was changed to Dalguise. Dalguise is an estate in Perthshire, Scotland whose name derives from the Scottish Gaelic *Dàil Ghiuthais* meaning the meeting of the pines. In Irish the name would be different. The change of name suggests that the then current occupant, a Mrs Hart had some association with the Scottish namesake.

1880 appears to be the date at which significant changes and additions were made to the house and gardens. (Figure 5.4) For at least some of the changes, Mrs Hart had employed the architect William Mitchell of the partnership McCurdy and Mitchell (1872-1882). Mitchell exhibited a design for a lodge at Dalguise at the RHA in 1881 and published in the *Irish Builder*. (Figure 5.1) Whereas the lodge as actually built did not follow the design, a number of the details are identical. (Figure 5.2 & 5.3)

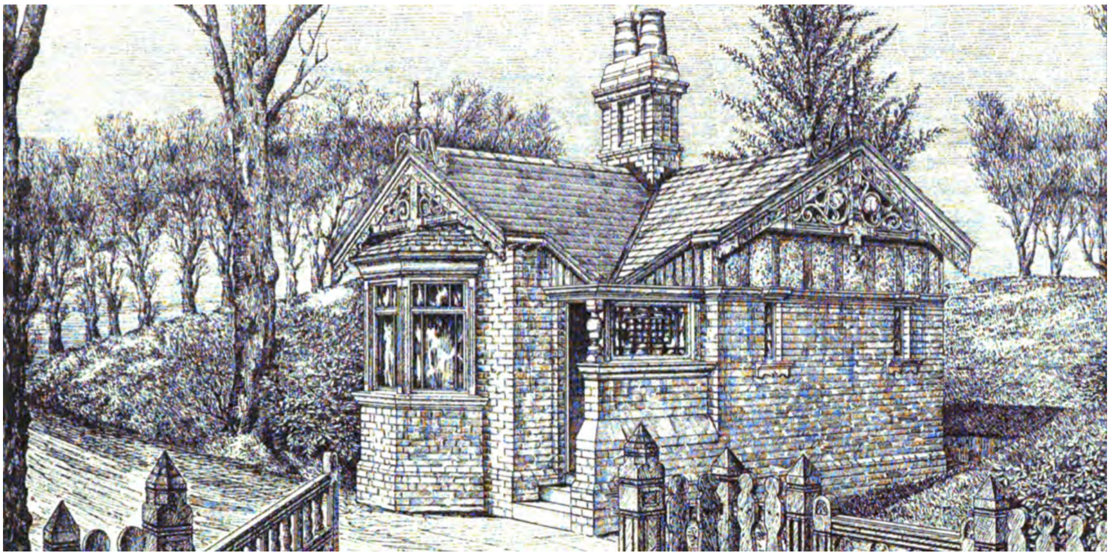


Figure 5.1 Design for a lodge at Dalguise, engraving published in the *Irish Builder* vol.23, p.319, 1st November 1881

Figure 5.2 The new lodge for Dalguise built c.1882

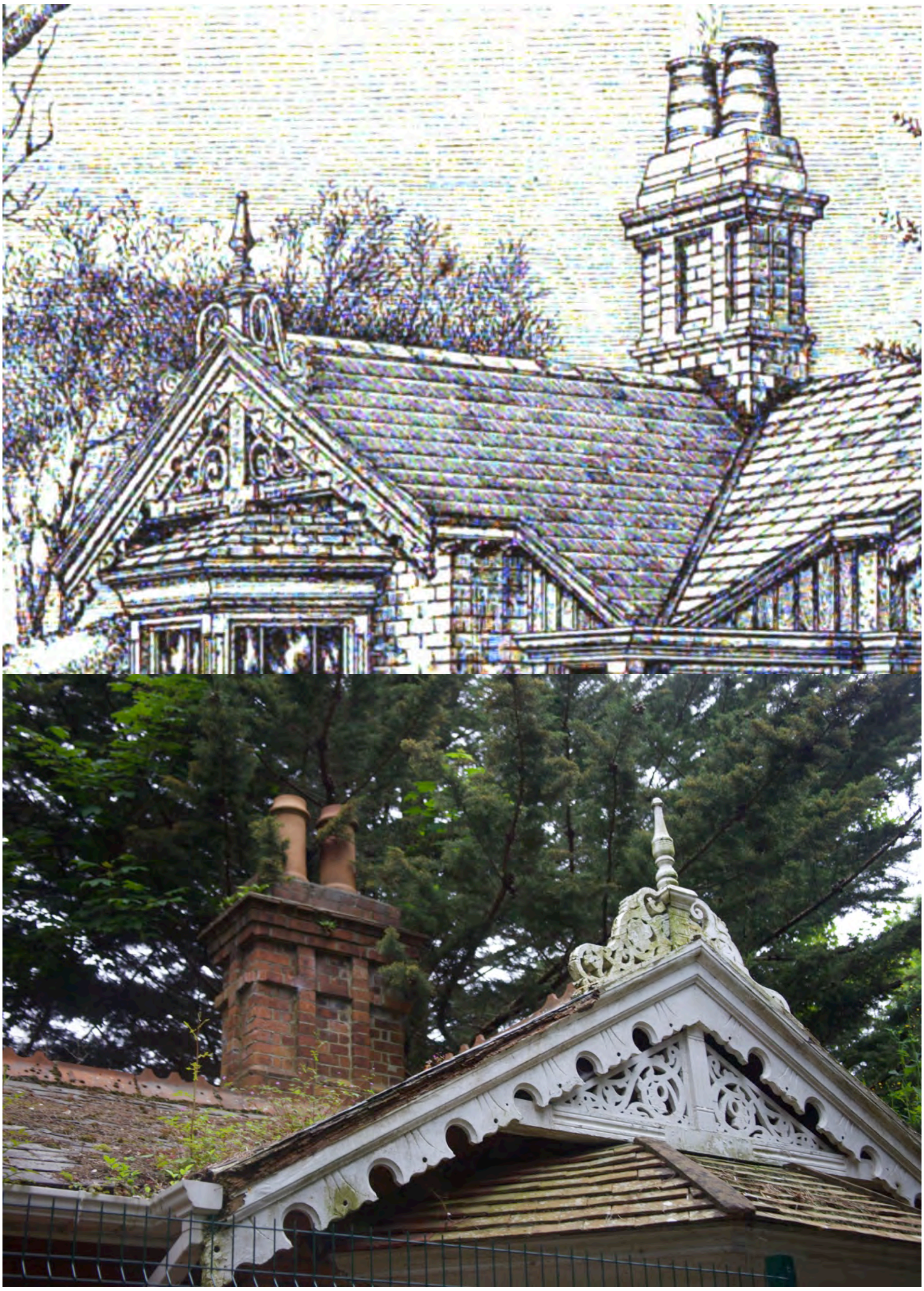


Figure 5.3 Details of the new lodge for Dalguise as published in the *Irish Builder* (above) and as built (below)

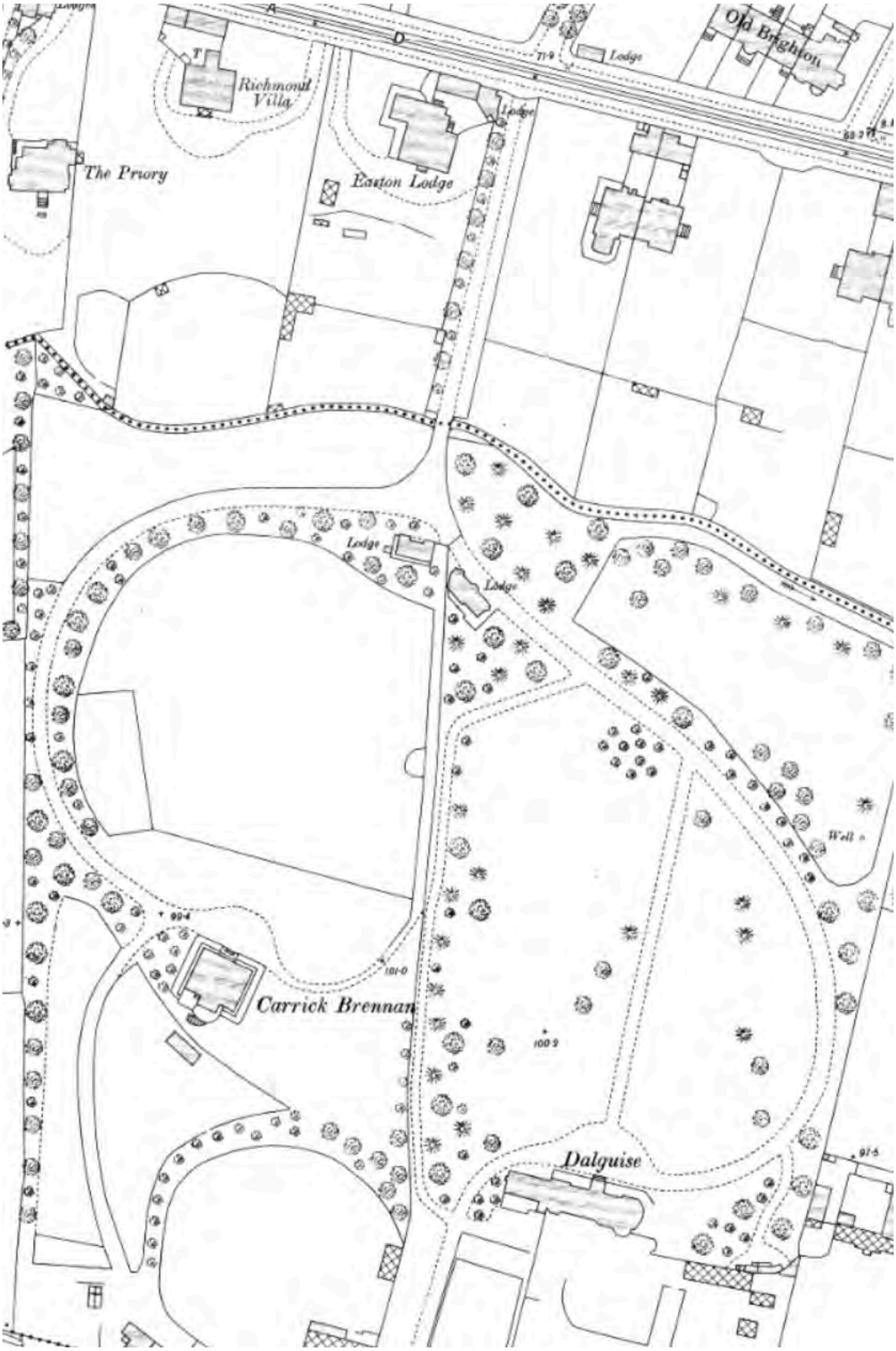


Figure 5.4 Detail of 1908 OS map now shows the new lodge and gate to Dalguise, the new service drive that runs along the boundary and the stone sett path on axis with the house across the parkland

In addition there are surviving drawings in the Irish Architectural Archive for a small house in the stable yard that has been built, and for a glasshouse containing a vinery that corresponds with two bays of the surviving three-bay glasshouse. (Figures 5.5, 5.6 & 5.7)

Figure 5.5 Comparison of the 1865 and 1909 Maps. House, walled garden, stable yard (bottom left), and glasshouse (to the right of the house) built after 1881

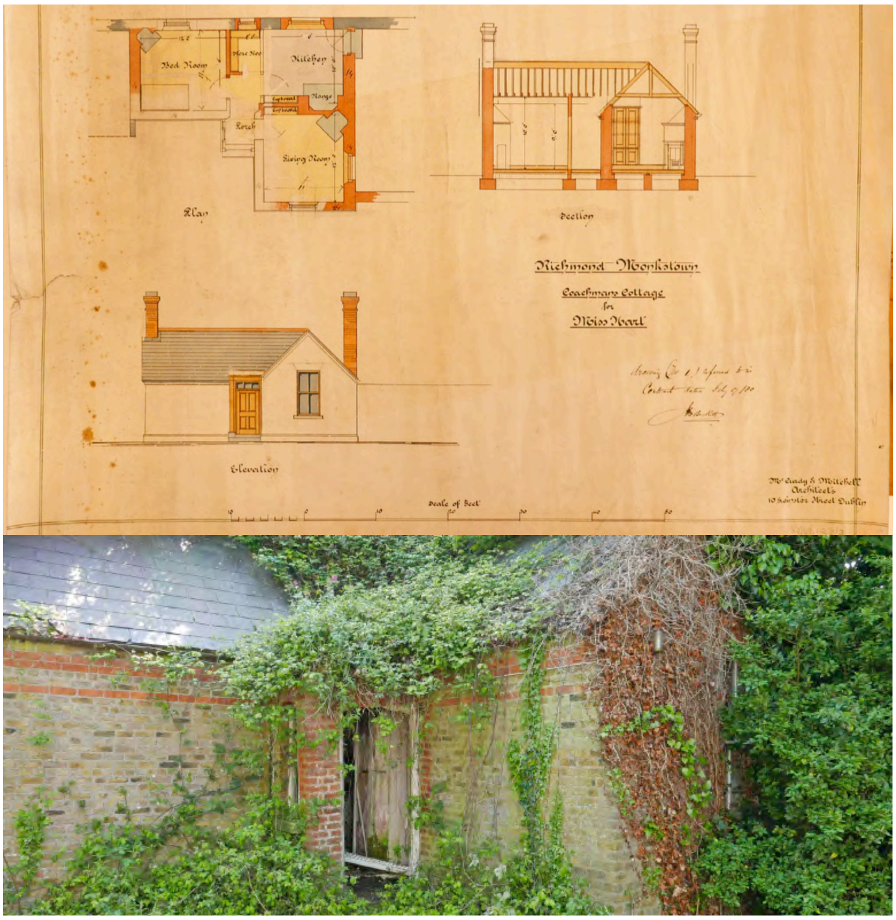


Figure 5.6 House in the stable yard, design drawing from McCurdy and Mitchell (IAA) and photograph 2022 (ARC)

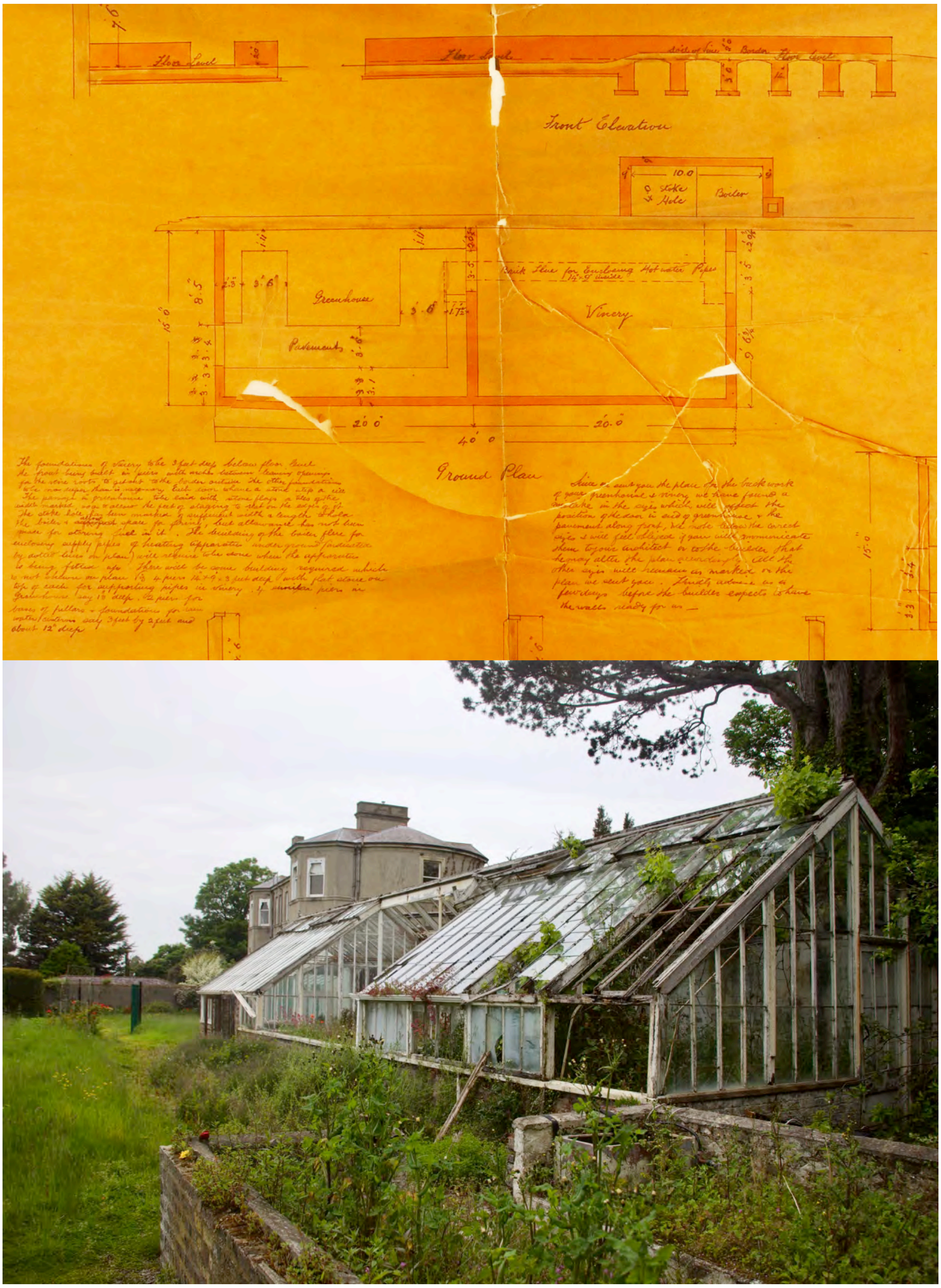


Figure 5.7 The glasshouse, above the design drawing from McCurdy and Mitchell (IAA) and below as built with an extra bay. The first bay was a vinery and the second probably a peach house (there is still a peach tree struggling in this near complete ruined bay

The building of the second lodge suggests a confirmation of the definitive split between the two properties with a number of other developments and changes to Dalguise. The building of extra accommodation for staff in the stable yard may correspond with the removal of the south wing of the house that may have had its origins in an earlier gardener's cottage for Carrickbrennan. (Figure 5.5) In addition a series of bothies were built on the south side of the walled garden, again possibly relocating more of the service accommodation away from close proximity of the house. (Figure 5.8) This suggests a desire for greater privacy from those employed outside the house and from visiting tradesmen. An additional drive was added along the western boundary to give direct access to the stables and service yards. (Figure 5.4) This was also accompanied with increased planting along this boundary, not only hiding the service drive but confirming the separation of Dalguise from the original landscape shared with Carrickbrennan.

Figure 5.8 The range of bothies outside the southern end of the walled garden

At the same time, the west wing may have received at least another storey expanding the main accommodation and the bays introduced on the southern elevation. (Figure 4.7) The symmetry of the north façade was to be answered in the parkland with the introduction of an axial walk paved in stone setts. (Figures 5.4 & 5.9)

Figure 5.9 The axial path of stone setts through the parkland created c.1882 and later the parkland fencing enclosed paddocks in the early twentieth century

Through the twentieth century the front parkland was also to receive additional planting of single specimen and clumps of ornamental and exotic trees and shrubs. Within the parkland, either side of the axial path two paddocks were created and enclosed with metal park railings. (Figure 5.9) Along with new planting, the maturing original planting began to limit and extinguish or obscure both sea and mountain views. The house and grounds became more and more private and secluded, deprived of its special relationship to the wider landscape that had prompted the line written on the 1792 survey: “Beautiful Situations for Building”.

Figure 5.10 View from the house looking north, any view of Dublin Bay has been extinguished with the accumulation of maturing planting

6. The Evolution and Transformation of the Environs of Dalguise

Lewis's *Topographical Dictionary of Ireland* describes the nature of Monkstown in 1837: "The scenery is beautifully diversified, and the neighbourhood thickly studded with handsome seats and pleasing villas, most of which command fine views of the bay and the adjacent country".

However, writing in the *Irish farmers' and gardeners' magazine* of 1833, Ninian Niven complains of the planting of the villa grounds "as regularly belted and clumped as ever a fortification or prison was surrounded by a wall" that shut out "the glowing scenery, which almost on every side surrounds them – unless perhaps some of the more elevated outlines of the Wicklow or Dublin mountains are to be seen overtopping this tantalising screen".[10] A retort came from a correspondent to the same journal calling himself *Vindex* (the avenger) and seemingly making reference to Monkstown:

> "I myself could point out a tract of land of some 70 or 100 acre, which thirty years ago had not either a tree or a house standing on it, now thickly planted and studded with small villas, many of which are so circumstanced that even Mr Nevin (sic) himself would find it difficult to make judicious openings in their surrounding screens; and anxious as he might be to let in some more distant scenery, he would be much puzzled how to accomplish so desirable an object. If he make a vista to obtain a distant view of the venerable hill of Howth and lovely bay, he at the same time acquires a *much nearer one* of his neighbour's stable; should he make another to let in the beautiful prospect of mountain scenery, he also obtains a bold out line of his neighbours gable end. Turn which way he may, he will find himself so surrounded by houses, stables, offices, garden walls, etc., that in some cases he would be compelled in absolute despair to admit, that even the 'tantalizing screen' is the most pleasing object after all."[11]

For Carrickbrennan and Richmond Cottage, because of the organisation of the plots along Monkstown Road, Niven's assertion would be rewarded but Vindex's words have become prophetic of today's situation of Dalguise.

With the coming of the railway a dramatic transformation of Monkstown was initiated. Not only was the shoreline dramatically transformed, but the speed and scale of development increased. Firstly, on the seaward side of the railway was Brighton Vale a one storey over basement terrace. (Figure 6.1) Then came Trafalgar Terrace mostly two storeys over basement rising to three storeys as a centrepiece and at the ends. Some distance behind is the north side of Belgrave Square. Here a modest two-storey terrace enjoys its orientation looking south over the central garden. The south side of the square was of a grander design, three storey over basement placed on higher ground and set back from the square with front gardens so as to gain views of the sea looking across the bay to Howth. Each element of this overall layout contributed to sea views and also enjoyment of their south facing side with each house on Trafalgar Terrace having a conservatory to their rear.

[10] *Irish Farmer and Gardener's Magazine*, vol.1, November 1833 p.7
[11] *Irish Farmer and Gardener's Magazine*, vol.1, 1833 p.145

Figure 6.1 Late-Georgian development in Monkstown, Brighton Vale at the shore, and on rising ground to the south Trafalgar Terrace and Belgrave Square. Map published 1868 (ARC)

The railway and the scale of the terraces that stretched along the coast fronting the sea dramatically transformed the view of Monkstown seen from the bay. Further inland, the large demesnes of Stillorgan and Monkstown were continuously sub-divided to accommodate smaller and smaller demesnes with a plethora of villas and short terraces.

The process of subdivision continued through the nineteenth century as the population increased and more of those who could afford it forsook the city centre for a healthier life in the coastline suburbs. Following the foundation of the State there has been the gradual redevelopment of the villa and its grounds in the south Dublin suburbs to make way for modest houses and the growing population in the suburbs. If the large houses did not serve an institution function, they were generally redeveloped as a housing estate. The volume of residential accommodation construction followed the economic fortunes of the State. Many villas and their gardens had survived to the middle of the twentieth century (Figures 6.2 & 6.3). Redevelopment of these sites occurred more often during times of economic boom and acute need for additional housing. The attraction of the coastal suburbs with their proximity to the sea and public transport, the *Dart*, remains today.

Figure 6.2 Aerial view of coastal area of Monkstown 1953 (Britain from Above)

Figure 6.3 Detail of figure 6.2, Carrickbrennan (bottom centre) and Dalguise (to the right)

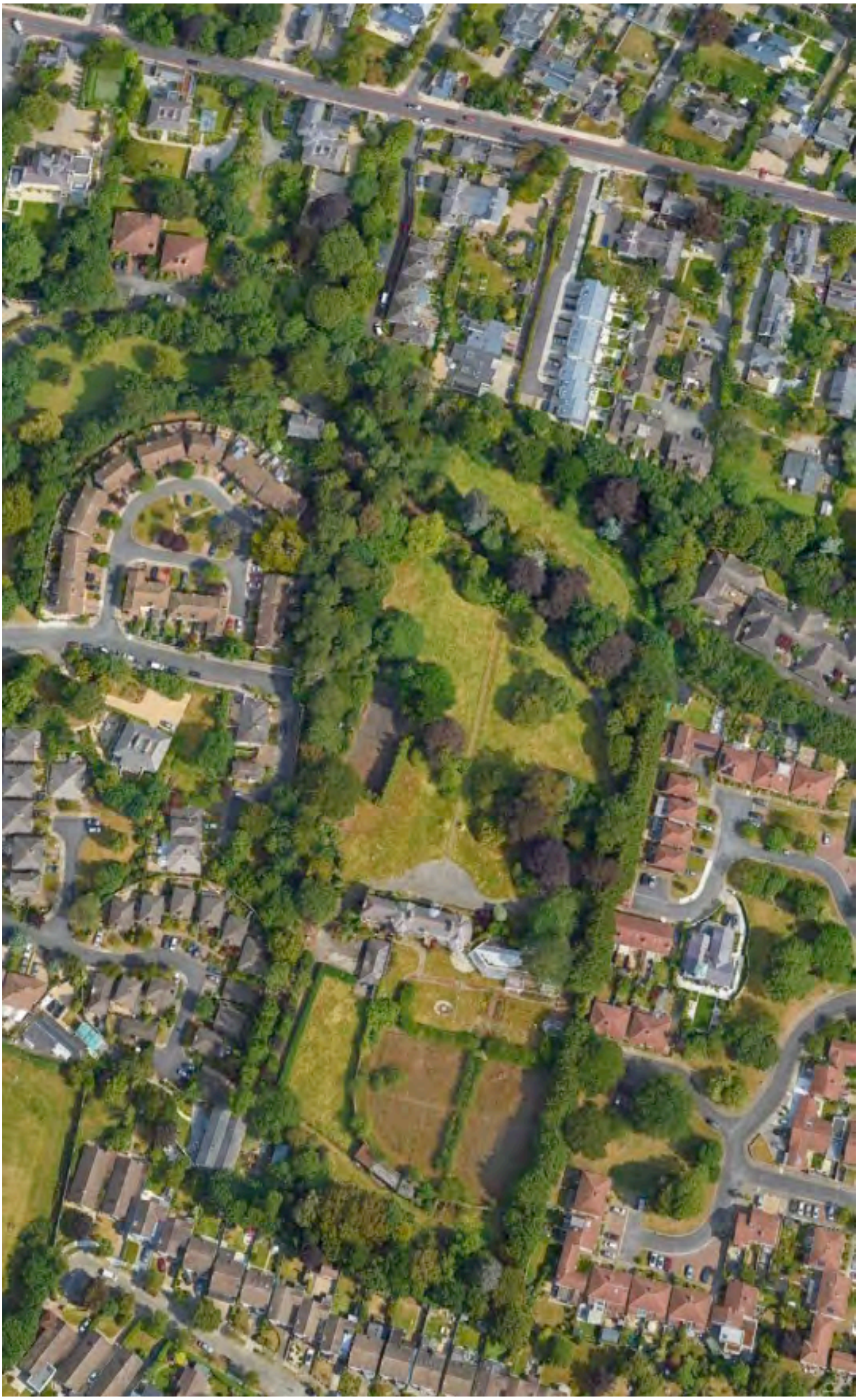


Figure 6.4 Dalguise and its immediate surroundings 2022

The latter part of the twentieth century and into the twenty-first has seen another dramatic change to the neighbourhood. (Figure 6.4) To the west of Dalguise, Carrickbrennan House has been ignored and its lands filled with houses encircling the house completely, extinguishing its setting. A similar insensitive fate befell the house and its gardens of Monkstown Hill to the east. In addition each of the houses on the Monkstown Road just to the north of Dalguise have had their gardens greatly reduced to accommodate cul-de-sacs of houses and apartments. (Figure 6.5)

Figure 6.5 Purbeck Lodge Its garden now mostly a cul-de-sac of houses

7. Planting

The planting of trees and shrubs formed a significant element of the changing landscape of Dalguise and its character. From cartographic evidence, initial planting contributed to choreographing the process of arrival and departure and controlling and framing views, to and from both the site and Carrickbrennan House. Although by the time Richmond Cottage was built, the site was divided changing the experience of the approach to Carrickbrennan. (Figure 7.1)

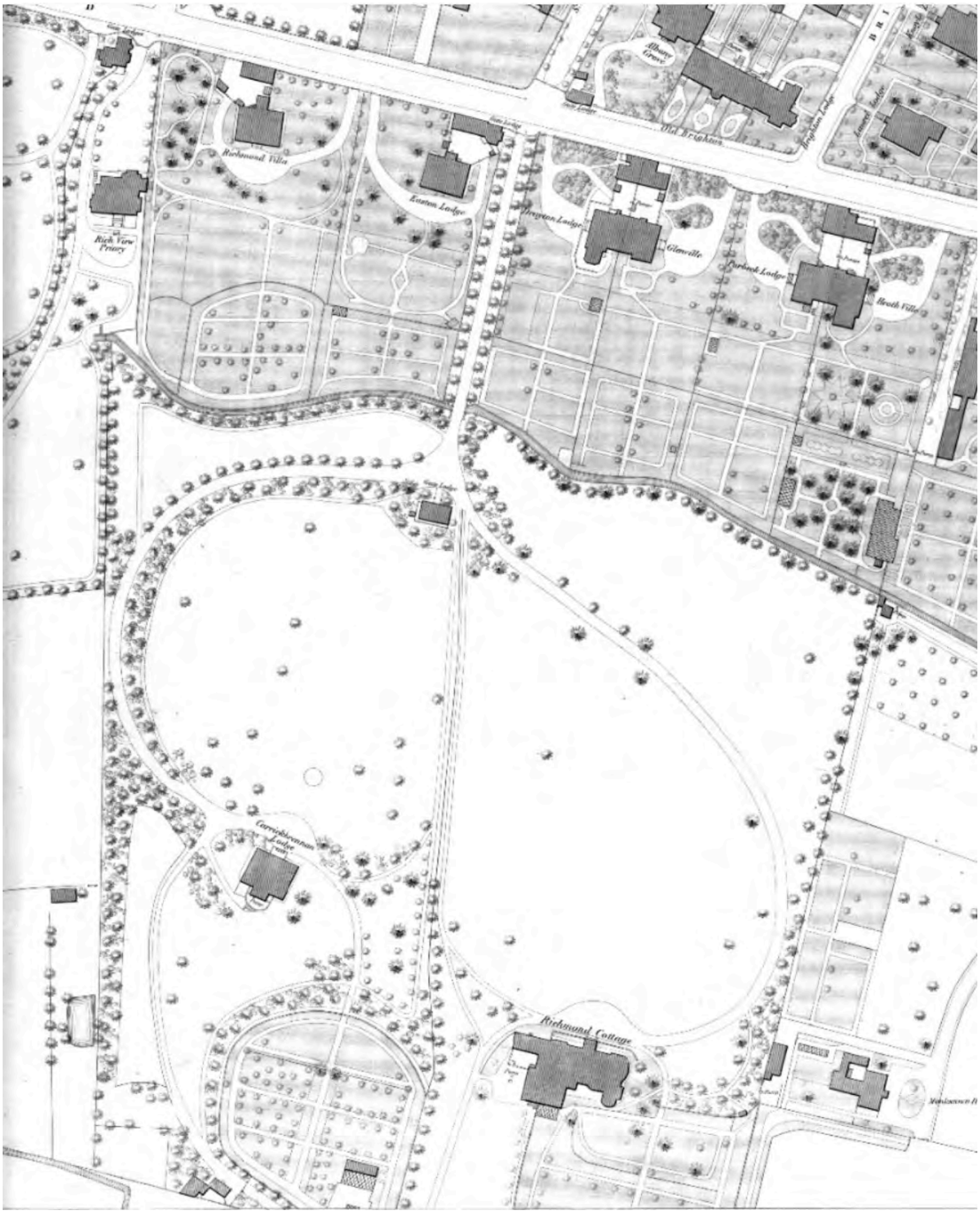


Figure 7.1 1868 OS Map

The approach lane from Monkstown Road was planted with a line of trees, regular spaced and forming an avenue. (Figure 7.2) The trees were probably lime but today as well as lime there are other species with many self-seeded. To this an understory of shrubs had been added, probably at a later date.

Figure 7.2 The entrance avenue to Dalguise from Monkstown Road. The view down the drive is terminated by the lodge, the current building a much altered if not rebuilt version of the original.

The 1868 OS Map shows the northern boundary of the site along the stream planted with an alternating row of one conifer to two broadleaves. Because of their position in the bottom of the valley they would not have interfered with the views from the house for some time. This boundary planting has been increased in depth mostly with exotics and no doubt augmented by self-seeded trees. (Figure 7.3)

Figure 7.3 Today a section of the northern boundary planting added to with exotic and ornamental trees, conifer and broadleaf. Conspicuous in the image a cedar with a backdrop of a copper beech.

What may initially have been the exit drive from Carrickbrennan was enclosed by a band of trees that obscured it from views from the house. Along the drive it would have been experienced as an avenue as it descended towards the lodge. In the vicinity of Carrickbrennan and Richmond Cottage significant planting is depicted on the 1868 Map. This provided for the screening of neighbouring properties to the east and west and between the two houses. The result of the maturing of this planting and its later augmentation can be seen in the 1953 aerial photograph. (Figure 7.4)

Figure 7.4 Detail of 1953 aerial photograph showing Carrickbrennan on the bottom left, Dalguise just right of centre and Monkstown Hill beyond. The planting separating each house had combined with the usual planting that sheltered the north side of the walled gardens.

Figure 7.5 By 1953 the boundary planting along the boundary between Carrickbrennan and Dalguise had become substantial

On the definitive separation of the two properties, Carrickbrennan and Dalguise became visually separated with planting along the border. (Figure 7.5) This planting also hid the new service road to Dalguise House. Later at Dalguise, specimen trees were planted, possibly in groups and arranged in the parkland that itself was then divided by the axial path. These were planted diagonally across the park parallel to the lower part of the drive. (Figure 6.4) Each clump was given a pyramidal form with shrubs and possibly flowers to the fore creating islands in a lawn. (Figure 7.4 & 7.6) These clumps also contributed to the gradual unfolding of the site along the drive as one approached the house. At first they hid the house from view. Then, between two clumps, a glimpse of the house is given briefly before being obscured again and finally the house is revealed as one arrived in front at the door. (Figure 7.7 and 7.8)

Figure 7.6 Clumps of planting in front of the house each a mixture of shrubs and trees, deciduous and evergreen with differing colours and textures. The central clump forms the backdrop of a garden seat, a place to catch the evening sun.

Figure 7.7 The planting after 1880 through to the twentieth century controlled the sequence of views along the arrival route to the house

Figure 7.8 Continuing the sequence along the approach drive to the arrival at the house.

Figure 7.9 looking across the parkland of Dalguise with trees of contrasting colours and textures. In the centre a copper beech (*fagus purpurea*) to the right a fern-leaved beech (*fagus sylvatica* 'Aspleniifolia')

Additions to the planting through the twentieth century delighted in the collection and choice of trees with a variety of contrasting colours and textures. (Figure 7.9) An individual exotic was planted in the corner between the walled garden and the boundary wall. (Figures 7.10) This is a horse chestnut from either the USA or the Himalayans and is seen against its neighbour, a common horse chestnut. (Figures 7.11 & 7.12) Rising above the wall, this tree became part of the planting of exotics to form the backdrop of the walled garden and contribute to the overall composition of the view from the house. (Figures 7.12 & 7.13)

Figure 7.10 In centre of the image is the exotic horse chestnut, planted just outside the south east corner of the walled garden and close to the boundary. Behind this tree can be seen is the dark wall of closely planted c*upressus* which was an addition in reaction to the development of the site neighbouring Dalguise to the east.

Figure 7.11 detail of the bright green foliage of the exotic horse chestnut

Figure 7.12 Detail of Figure 7.13. The southeast corner of the walled garden seen from the house. In the centre the bright green foliage of the exotic horse chestnut contrasted against the common horse chestnut in flower

Figure 7.13 View south from the house overlooking the walled garden. In the foreground the mature yew hedge possibly dating as far back as the mid-nineteenth century, planted to separate the ornamental from the productive garden. At the centre and to the left of the image, an arbour of apple trees divides the productive garden from north to south. (see Figure 7.14)

Figure 7.14 Path running north-south through the productive section of the walled garden. The path was originally lined with espalier fruit trees which now have grown to form an arbour

In the latter part of the twentieth century, in reaction to development taking place to the east and west of Dalguise, the boundary planting was intensified. Particularly to the east, this was done with closely planted *cupressi*. (Figures 7.10 & 7.15) The *cupressi* have outgrown their function with the loss of foliage at the lower level arising from the deep shade they create. (Figure 7.16) Today they form a very prominent dark wall seen from both sides of the boundary.

Figure 7.15 The ornamental garden looking east with the prominent dark wall of the *cuppressi* planted in the latter part of the twentieth century

Figure 7.16 The east boundary wall of Dalguise seen from the outside. The closely planted *cupressus* outgrown their function with the loss of foliage at the lower level arising from the deep shade they create

8. Conclusions

From the analysis of cartographic evidence, the historical development of Monkstown, and the context of the detail of early nineteenth landscape design, the current setting of Dalguise house represents but a fragment of a larger design; a fragment that has undergone stages of adjustments at times struggling to reconcile its position with the changing nature of its immediate surroundings. Dalguise or Richmond Cottage as it was originally called is likely to have been an addition probably in the early 1830s to the already created setting for Carrickbrennan of a decade or so earlier.

James Pim, a Quaker, stockbroker, railway entrepreneur and philanthropist was most likely the developer of Carrickbrennan and its landscape along with the pair of houses on Monkstown Road. Carrickbrennan House itself was a larger version of the two cubic neo-classical villas built on Monkstown Road. The pair of houses turned their back on the road and the potential sea views to look south over their gardens which sloped down to the Stradbrook stream and presenting their best face to Carrickbrennan. This suggests a carefully considered overall strategy for the site. Furthermore the two pairs of semi-detached houses probably developed by Joshua Chaytor, another Quaker, turn their back on the road and also present a coordinated design to the site of Carrickbrennan.

Carrickbrennan House was carefully situated at the highest point of the site and orientated to capture the best views across Dublin Bay and to significant features among the Dublin Mountains. The two walled gardens, possibly initially each with a different purpose, were favourably located on the south facing slope at the southern end of the site and along with the stables screened where necessary from the house by planting.

Richmond Cottage became the north wall of one of the gardens that determined its orientation along with its position along the drive. The result meant that the view of Dublin Bay was un distinguished leaving Howth to the periphery of the prospect. Similarly, the views to the south, although commanding an intimate foreground of the walled garden, missed out on the potential picturesque backdrop of the Dublin Mountains. Richmond Cottage may have incorporated as the service wing an existing gardener's cottage.

Richmond Cottage was to be occupied by 1835 by Robert Gray a banker, and although apparently not a Quaker, shared business interests with James Pim. The overall site had become split by the time of the publication of the 1837 OS Map. The two houses were screened from one another probably by existing planting that was in place to hide the walled gardens from Carrickbrennan. The parkland remained visually undivided. However they established separate approach drives by dividing the elliptical path of the original one-way road. This destroyed the designed fluency of the approach to Carrickbrennan.

The association of George Papworth with the Pim family for his design of the Friends Meeting House might make him a candidate for the architect of Richmond Cottage. Papworth is also thought to have designed the new Monkstown Castle in the late 1820s, a building that Pim bought in 1838. Both Monkstown Castle and Richmond

Cottage incorporated in their plans bowed ends containing their principal rooms. Ninian Niven, who came to Ireland in 1827, was commissioned in 1838 by James Pim to produce an extensive design for Monkstown Castle Demesne. He became for a while the director of the Botanic Garden at Glasnevin before residing in Monkstown in 1838 with members of the Pim family as neighbours. It would be significant if he were a candidate for the designer of the layout of the Carrickbrennan landscape. However, he may have arrived on the scene a little too for that honour. The author of the sophisticated and subtle plan remains unknown.

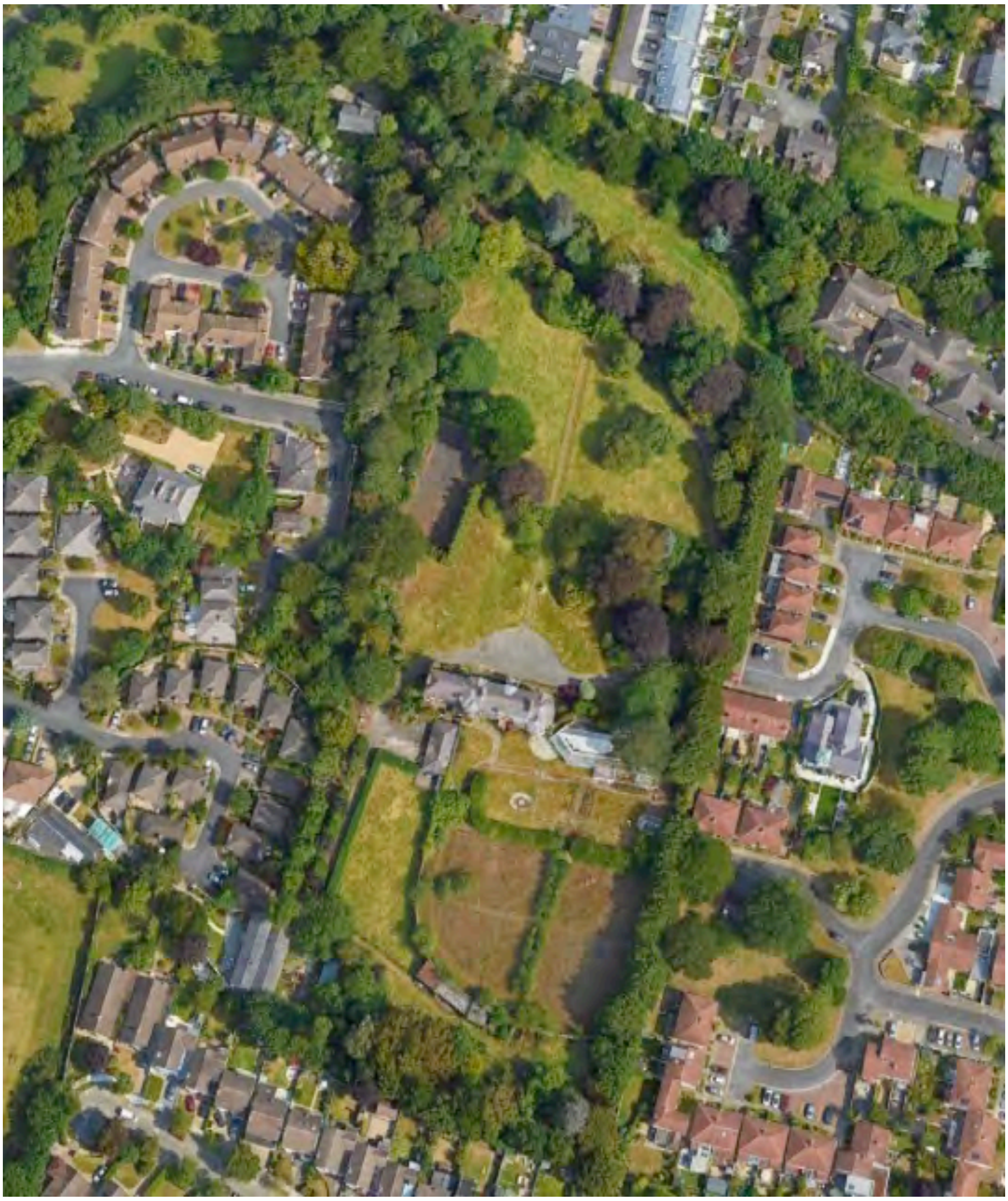
Richmond Cottage was renamed Dalguise c.1880 when its severance from the larger landscape design was confirmed and interventions were carried out that aimed to give it its own identity. A separate lodge was built adjacent to the existing one but rather awkwardly sited in the topography. Planting was increased along the boundary confirming a visual separation from Carrickbrennan and an axial path was cut across the original parkland.

Since the nineteenth century, the original planting has matured to which additions have been made to increase privacy. Exotic specimen trees and ornamental shrubs have accumulated which have also contributed to the radical changes to the character of the site. Any views of the distant landscapes have all but disappeared and the development of neighbouring properties have been met with increased boundary planting, although not particularly sensitively carried out. The gardens of the houses along Monkstown Road have been mostly sequestered for development so that any move to open up views towards the sea would reveal another radically changed prospect.

Dalguise had become a secluded enclosure, an oasis within burgeoning residential development. Social and economic pressures have made it difficult to sustain Dalguise and its gardens and landscape. The house,, although of some charm, has seen extensions and changes that have compromised some of its architectural merit particularly the side that overlooks the walled garden.

Appendix 1

Proposed Development of Dalguise, Monkstown



HISTORIC LANDSCAPE IMPACT STATEMENT
of the Proposed New Development on the lands of Dalguise, Monkstown
Response to Request for Further Information

July 2023

John Olley BEng PhD
Historic Landscape and Architecture Consultant
john.olley@ucd.ie

The purpose of this statement is to identify and comment on the impact of the proposed new development of Dalguise on the character, setting, and significant fabric and features of the designed landscape and its architecture. The report should be read in conjunction with the separate report *Dalguise, Monkstown: Historic Landscape Assessment of its Lands and Environs* that discusses the history and evolution of the designed landscape.

From the analysis of cartographic evidence, the historical development of Monkstown, and the context of the character of early nineteenth landscape design in Ireland, the current setting of Dalguise house represents but a fragment of a larger design; a fragment that has undergone stages of adjustments, at times struggling to reconcile its position with the changing nature of its immediate surroundings.

The significance of the lands of Dalguise as an elegant and accomplished landscape design lay only in its contribution to the original larger site of Carrickbrennan and its relationship to the development of a series of related houses along the south side of Monkstown Road. Without the relationship to the whole its significance is compromised. The original design worked with and responded to the topography of the site. Carrickbrennan House was very precisely positioned and orientated to capture the best views of the bay and mountains. The southern end of the site begins to descend from the high point of the site giving an ideal site to maximise the micro-climatic advantages for the location of a pair of walled gardens.

Dalguise House was attached to the north eastern corner of one of the walled gardens thereby determining its orientation and the views it could command. The views available to the principal rooms lacked the picturesque quality of those from Carrickbrennan. However the intimate connection with the more intense gardened space was compensation as it formed a composed foreground to views south from the house.

With the effective complete separation of Dalguise from the complementary half of the original design in 1881, its lands were redefined with thick boundary planting along the boundary with Carrickbrennan. Also a central axis to the site was established with the stone-sett path leading to the entrance of the house achieving a degree of symmetry.

The succeeding sequence of owners contributed their own preferences and enthusiasms to the planting of the site by the addition of non-native specimen trees and cultivars, such a characteristic of a nineteenth century villa garden and designed landscape. This became a feature of the evolving site of Dalguise contributing to its present character. With more than 130 years of evolution, much of what had been a collection of individual specimen trees displaying their characteristic sculptural shape has become a collision of trees forced in to competition. This has come with the inevitable loss of form of individual trees and a fight for survival. Self-seeded newcomers appear to have joined in the conflict. In some areas this is more pronounced particularly on the northern boundary along the stream. The other consequence has been a loss of visual connection with the surrounding landscape as the height and bulk of the planting has increased.

The later part of the twentieth century has seen the development of neighbouring sites those of Carrickbrennan House and Monkstown Hill. The result has been that the nineteenth century houses only survive on sites of minimal dimensions and imprisoned in a tight cordon of new houses. The reaction at Dalguise to the development on neighbouring sites was to reinforce its own boundaries by planting the unattractive species of *cupressus*. In addition the gardens of the houses along Monkstown Road as they back onto the site now accommodate rows of houses.

This part of Monkstown with its proximity to the sea and shoreline and the convenience of the railway has not lost its attraction since the 1834. Today the availability of public transport meets the imperative to limit the congestion, pollution and the potential carbon footprint of development. In the current socio-economic conditions, Dalguise has lost the viability to maintain the site for a single-family dwelling. In its present form, it has lost most of its connection with the setting so clearly defined by the statement "beautiful situations for building" written on the 1792 survey of the lands.

The current development proposals for the site and house of Dalguise represent a dramatic transformation. The impact upon the current character of the landscape is substantial. However this represents the next phase of its history and one that seeks to treasure some of the site's surviving assets whilst responding to economic and social pressures. The proposals are radical for the site's history but there are pressures dictating change, not least its current state of neglect and lack of use.

The proposed scheme inherits the underlying anatomy of the site as endowed by its history. Elements of the site's existing assets and their qualities are to be conserved, restored, and harnessed to structure the scheme's layout while becoming a sequence of significant features. They are the approach drive with the lodge on Monkstown Road, the 1882 lodge, the existing house, and the walled garden in addition to the stables, their yard and the coachman's house.

The major part of vehicle traffic would have little impact on the enjoyment of the site. It would enter the site via Purbeck over a new bridge and into an underground car park. The gain is that traffic on the original drive is potentially greatly reduced, allowing the drive to be enjoyed by pedestrians. The straight stretch of the drive from Monkstown Road is to remain leafy.

The drive will remain as the gentle curving rise that takes one to the highest point of the site and to the house. The house is treated with dignity, notwithstanding its modest architectural credentials. It would become the focus of the development as a centre for the community, providing amenity for both the residents of the site as well as visitors.

Taking a lead from the formal gesture of the axial path established c.1880 a regular symmetrical space addresses the house from the north. The space is contained on three sides by apartment blocks that look out on to the house as their central focus. The proposed resulting square, replanted, would become a central public area.

To the south, the house will continue to overlook the walled garden. The house, with its position to the northwest corner of the garden, had always a slightly awkward relationship to the layout and the division between the ornamental and productive areas of the walled garden. An apartment block is to be placed in the walled garden in the eastern half with the result that the house would now have a more direct and formal relationship to the resultant garden and its proposed layout. The proposal for units outside the southern end of the walled garden with their limited height would ensure that views to the south from the house would still enjoy a glimpse of the mountains and wider landscape.

The character of a designed landscape is under constant change. Planting matures and continues to grow changing its form and massing affecting views and access to sunlight. The character is also moulded by regimes of maintenance and intensity of use. The site is be transformed from a privileged private and secluded site that had been a single family residence that with staff had probably numbers of 10 to 20 but with the proposals would jump to over one thousand residents as well as visitors to the amenities that would be provided.

This intensification of use of the site inevitably involves an intensification of the designed landscaping. With some planting dating back two hundred years, maturing and being progressively added to over the centuries has itself dramatically changed the character of the site. The current situation with the condition of individual trees or their longevity compromised by competing neighbours, intervention is required for health and safety and aesthetic reasons.

The tally of trees to be removed because of their perceived condition or because of the conflict with the proposed layout of the scheme is outlined in the arborist's impact statement.[12] However, not contained in this was a further qualification of those of special significance, historically or their contribution to the accumulative collection of exotic species or cultivars. However there appears to be no evidence that the collection of trees and shrubs was in anyway a systematic list or that their position within the grounds represented a structured characterisation of species or country of origin etc. Whereas some are unusual or particularly attractive, the trees and shrubs chosen probably reflect the cumulative personal preferences or whims of those who have lived at Richmond Cottage/Dalguise or who have been in charge of the gardens over nearly two hundred years. However, the overall landscape proposal for the site promises within its extensive program of planting to include exotics that, for whatever reason, would have been removed.

The site of Dalguise is today but a fragment of the notable early nineteenth century designed layout. This fragment itself has undergone significant readjustment in its lifetime. Its setting in the wider landscape has also radically change in those centuries, robbing it yet more of its significance. As such its heritage value is limited. Like any landscape after nearly two hundred years it has radically changed its character as it matures and evolves, as trees and shrubs grow and decline, as the regimes of management or neglect change and as social and economic conditions dictate. Whilst the proposals for the future are radical, they have responded to the site's surviving assets and giving the house a central role in the development.

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[12] It is important to note that the agreed guidance criteria set out in best practice document *BS5837:2012* for carrying out tree surveys does not normally include shrubs and trees with a diameter of less than 75mm, irrespective of age or rate of growth.

Appendix 2

John Olley B.Eng (Sheffield) PhD (Cambridge)

Historic Landscape, Architecture and Urban Consultant
Emeritus Associate Professor of Architecture and Landscape, UCD

Dr. John Olley has a career spanning many decades in the research and critical appraisal of landscape, architecture and urbanism. This experience, his broad inter-disciplinary knowledge base, and his experience in the teaching of design (architecture, urban, landscape, sustainability) inform his multi-layered, informed approach to the identification, research and assessment of the opportunities and challenges of development in places and contexts of high heritage value.

He has delivered Historic Landscape Assessments of many demesnes of national and international significance and renown, along with analysis of their architecture. These include: Castletown (Celbridge) and Carton, Co. Kildare, Woodstock, Co. Kilkenny, Howth Castle, Fingal, Co. Dublin and Bellamont Forest, Co. Cavan, and innumerable smaller demesnes. Dr. Olley has also undertaken analyses of large-scale multi-layered cultural landscapes, such as the dramatic landscape of the Blackwater Valley in County Waterford and the archaeologically and culturally rich landscape of North County Meath.

In addition, Dr. Olley has analysed a multitude of smaller-scale designed suburban and rural villa landscapes, and described their contribution to the evolution of the suburban growth of Dublin. These studies were also accompanied by assessments of opportunities and challenges for development.

Dr. Olley has traced and analysed the early origins of urban elements of Dublin and its infrastructure and followed their transformation through the Georgian period in the eighteenth and nineteenth centuries and into the twentieth, from the small scale of Wilton Square to the large city block of O’Connell Street Upper and Moore Street.

From 2008 to 2913, he acted as historic landscape consultant to the OPW on all aspects of the landscape restoration and management at Castletown, Celbridge. At Castletown the work involved close and creative collaboration with the OPW architects, with horticulturists, archaeologists, ecologists and hydrologists.

He has held fulltime academic posts at the Universities of Bristol and Cambridge and latterly, at University College Dublin’s School of Architecture and Landscape.

Before turning to architecture and landscape Dr Olley was an engineer, a physicist and a biologist.

APPENDIX 16.1

WIND MICROCLIMATE ASSESSMENT

WIND MICROCLIMATE ASSESSMENT

for the

PROPOSED LARGE RESIDENTIAL DEVELOPMENT

at

DALGUISE HOUSE, MONKSTOWN

for

GEDV MONKSTOWN OWNER LTD

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issue no.	issue date	pages	issued for	approvals by	approvals checked	approvals approved
02	12/06/2023	29	PLANNING FURTHER INFORMATION	LH	SC	MR
01	17/09/2022	29	PLANNING	LH	SC	MR

CONTENTS

EXECUTIVE SUMMARY

METEC Consulting Engineers have been instructed by our client, GEDV Monkstown Owner Limited, to carry out a pedestrian level wind microclimate assessment for the proposed development at Dalguise House, Monkstown.

The pedestrian level wind microclimate assessment conclusions are sumarised as:

The proposed development at Dalguise House, Monkstown constitutes a significant increase in the overall massing at the site. It is taller than surrounding buildings and is therefore at risk of downdraft/downwash causing wind acceleration at pedestrian level.

Regarding pedestrian comfort:

- Pedestrian comfort was achieved at ground level in all locations within and adjacent to the proposed site.

Regarding to pedestrian distress/safety:

- Pedestrian safety was achieved at ground level in all locations within and adjacent to the proposed site.

1.0 INTRODUCTION

METEC Consulting Engineers have been instructed by our client, GEDV Monkstown Owner Limited, to carry out a pedestrian level wind microclimate assessment for the proposed development at Dalguise House, Monkstown.

The methodology used in the study is presented in Section 2 Study Methodology with further details in Appendix C CFD Modelling Methodology. Section 3 Results of the Assessment gives results of Pedestrian Comfort and Pedestrian Distress. A summary of the assessment and findings are presented in Section 4 Summary.

2.0 STUDY METHODOLOGY

2.1 LAWSON PEDESTRIAN COMFORT AND DISTRESS CRITERIA

This study uses the Lawson Pedestrian Comfort and Pedestrian Distress [1] criteria to assess the wind microclimate at pedestrian level for the proposed development at Dalguise House, Monkstown.

The pedestrian comfort criteria given in Table 1 quantify a person's comfort or discomfort due to the wind based on their activity. The criteria give an hourly average wind speed threshold that must not be exceeded for more than 5% of the assessment period. In this study, assessments covering the summer, winter, autumn, and spring periods, plus a whole year were undertaken. The report provides results of the summer assessment and the winter (worst-case seasonal) assessment.

Comfort Rating	Threshold Speed	Exceedance Time
Uncomfortable	10 m/s	> 5 %
Business walking	10 m/s	<= 5%
Strolling	8 m/s	<= 5%
Standing	6 m/s	<= 5%
Long-term sitting	4 m/s	<= 5%

Table 1: Lawson Pedestrian Comfort Criteria

Table 2 gives the recommended target pedestrian comfort designation for a variety of public area usage patterns.

Usage	Description	Target
Outdoor seating	For long periods of sitting such as for an outdoor café / bar	'Long-term sitting' in summer
Entrances, waiting areas, shop fronts	For pedestrian ingress / egress at a building entrance / window shopping, or short periods of sitting or standing such as at a bus stop, taxi rank, meeting point, etc.	'Standing' in all seasons
Recreational spaces	For outdoor leisure uses such as a park, children's play area, etc.	'Strolling' from spring through autumn
Leisure Thoroughfare	For access to and passage through the development and surrounding area	'Strolling' in all seasons
Pedestrian Transit (A-B)	For access to and passage through the development and surrounding area	'Business walking' in all seasons

Table 2: Recommended Target Comfort Rating for Different Public Space Usage

The pedestrian distress criterion given in Table 3 quantifies a person's distress and/or safety due to the wind. Application of the pedestrian distress/safety analysis seeks to identify areas where a pedestrian may find walking difficult or could even stumble or fall. The criterion gives a wind speed threshold that must not be exceeded and is based on an exceedance probability of 0.022% [1].

Distress/Safety Rating	Threshold Speed
Unsuitable	15 m/s

Table 3: Lawson Pedestrian Distress Criteria

2.2 ACCOUNTING FOR THE EFFECT OF GUSTS

Pedestrian comfort and pedestrian distress are not only affected by the mean wind velocity but also by shorter timescale wind gusts due to the turbulent nature of wind. Therefore, in this study wind gust speed is accounted for by calculating the equivalent mean wind speed, considering the standard deviation of the mean wind speed, in particular the turbulent kinetic energy, k:

$$\sigma_U = \sqrt{k * {}^2/_3}$$

Based on the work of Melbourne [4], the peak gust wind speed is derived as:

$$\ddot{U} = U_{MEAN} + 3.5\sigma_U$$

And the Gust Equivalent Mean (GEM) is derived as:

$$U_{GEM} = \ddot{U}/1.85$$

The pedestrian wind speed is defined as:

$$\max(U_{MEAN}, U_{GEM})$$

2.3 MODEL GEOMETRY

Figures 1 to 6 show the CFD model geometry used in the study for the existing and proposed site conditions. The geometry of the surroundings and terrain were built from Google Earth and OS data using photogrammetry techniques to digitise points that define the geometry over which a surface mesh was generated. Further details of the CFD geometry, mesh and solution method are given in Appendix C: CFD Modelling Methodology.

Figure 1: CFD Model Geometry for the Existing Site

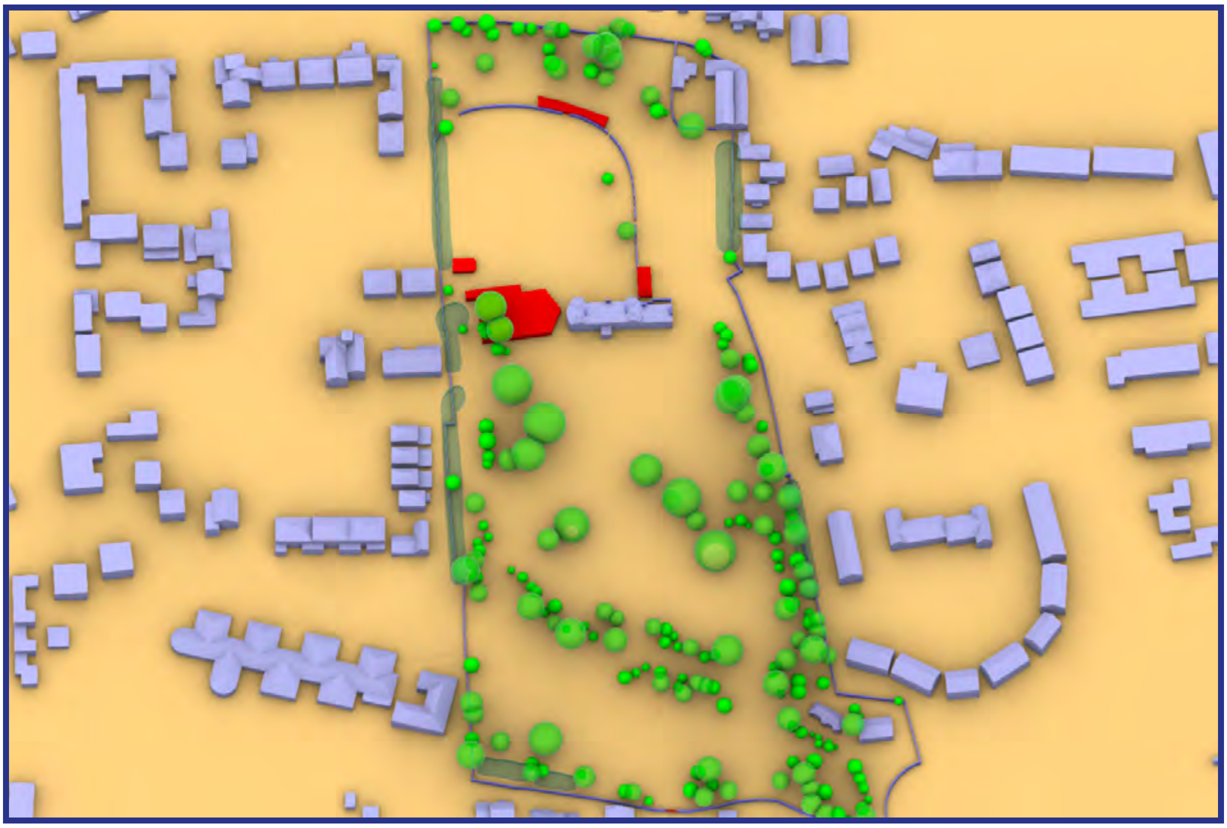

Figure 2: CFD Model Geometry for the Existing Site, Close-up from North

Figure 3: CFD Model Geometry for the Existing Site, Close-up from South

Figure 4: CFD Model Geometry for the Proposed Site, View from North

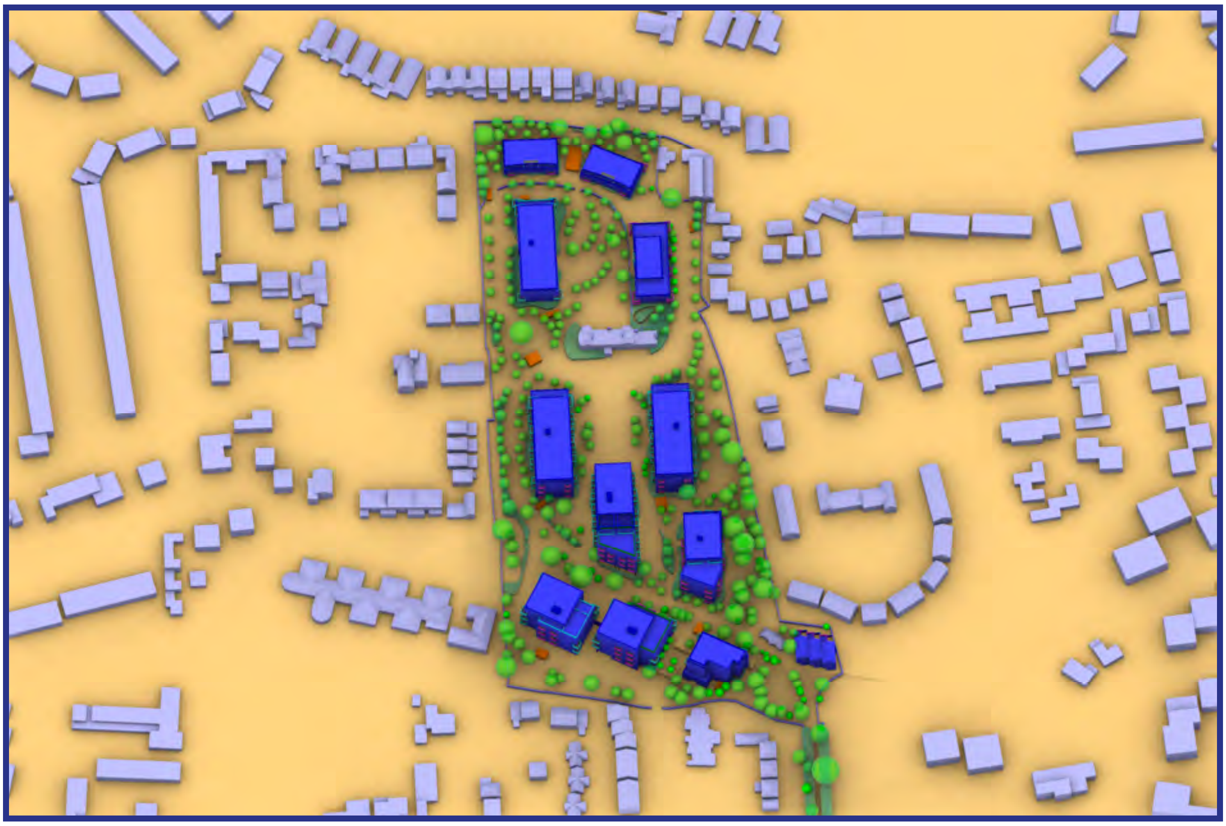

Figure 5: CFD Model Geometry for the Proposed Site, Close-up from North

Figure 6: CFD Model Geometry for the Proposed Site, View from South

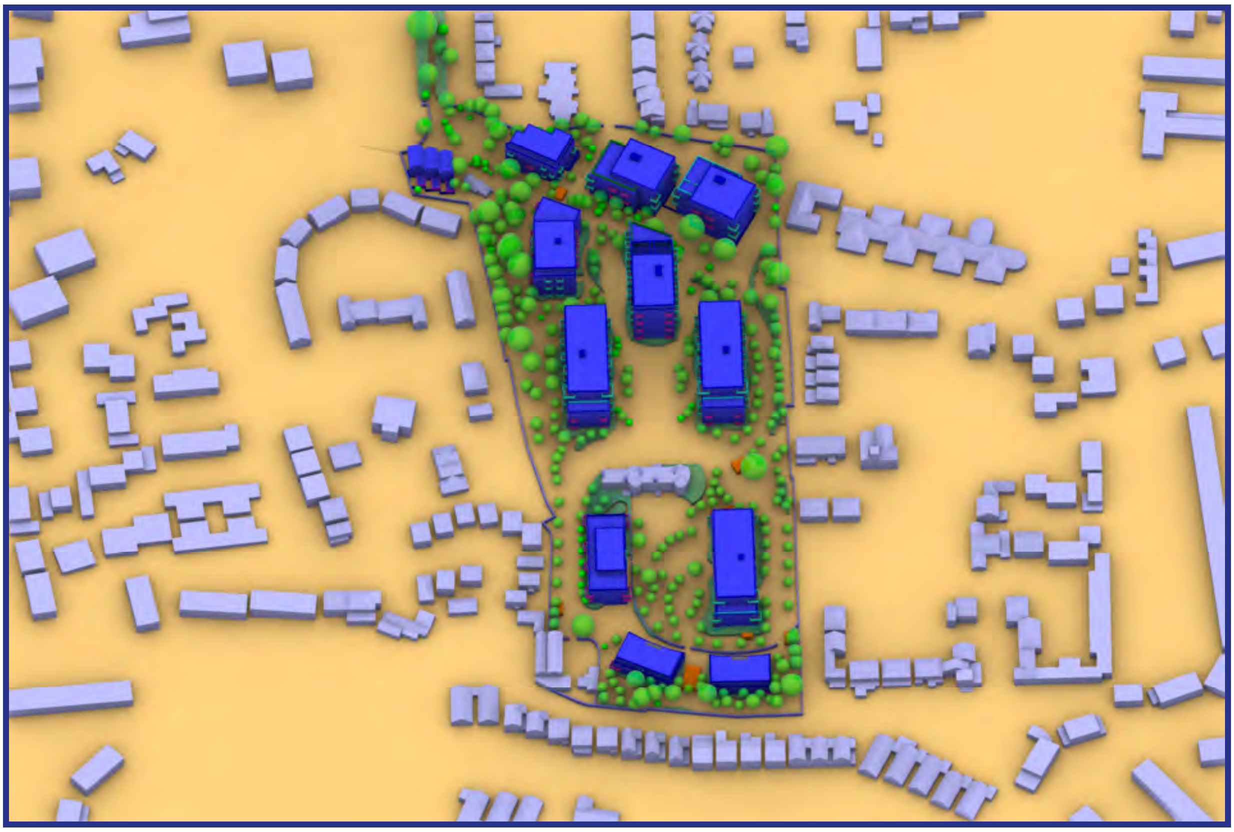

Figure 7: CFD Model Geometry for the Proposed Site, Close-up from South

2.4 SITE AND SURROUNDINGS

An aerial view of the site of the proposed development at Dalguise House, Monkstown can be seen in Figure 8.

Figure 9 shows the landscaping plan for the proposed development at Dalguise House, Monkstown.

Figure 8: Site Location

Figure 9: Landscaping Plan

2.5 SITE WIND MICROCLIMATE ASSESSMENT

Figures 10, 11 and 12 show wind roses for the proposed development at Dalguise House, Monkstown site at the reference height of 100m for the annual, summer and winter periods respectively. Additionally, spring and autumn period wind roses are shown in Appendix B Additional Wind Data.

The wind roses were calculated using wind data from Dublin airport adjusted for the site location based on terrain analysis using the EDSU methodology [6].

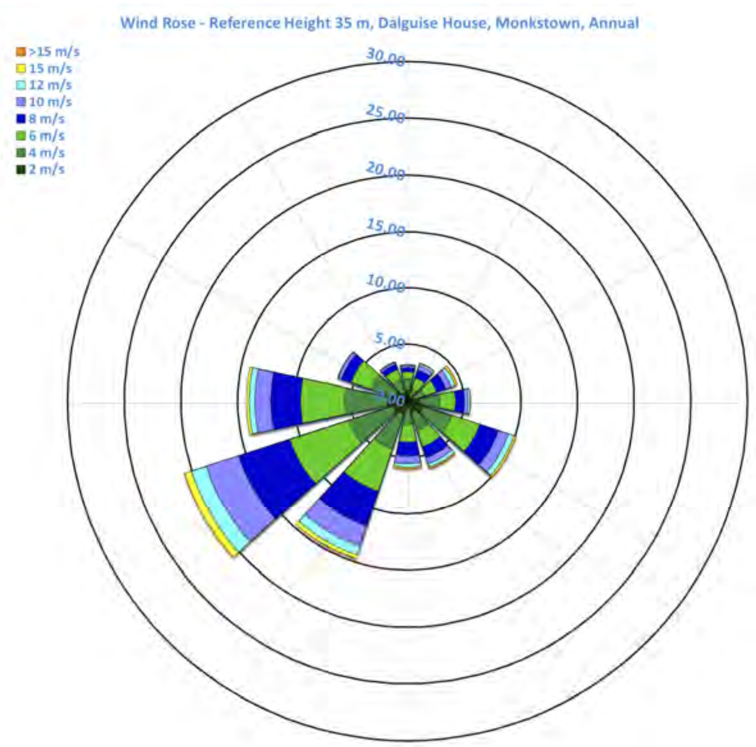

Figure 10: Annual Period Wind Rose at Reference Height for the Site

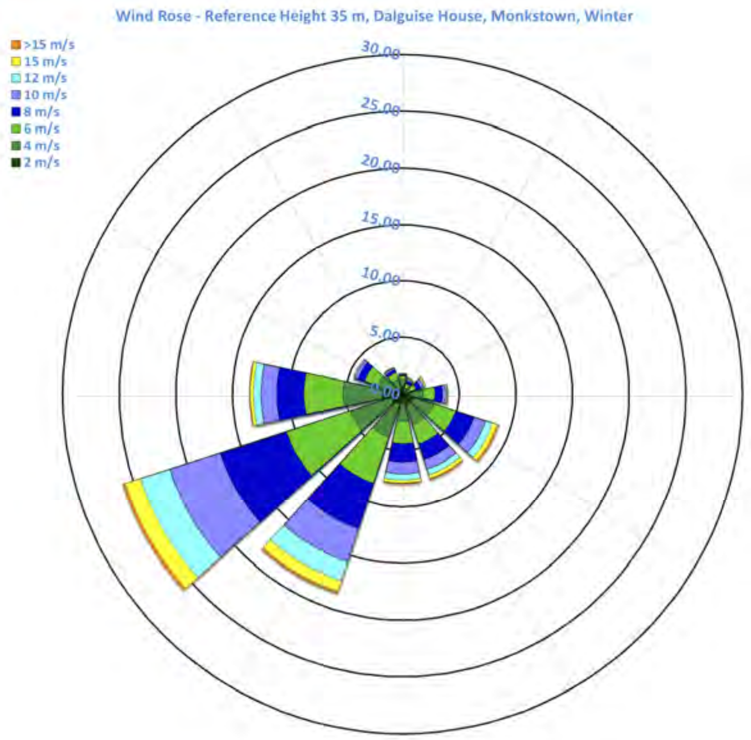

Figure 11: Winter Period Wind Rose at Reference Height for the Site

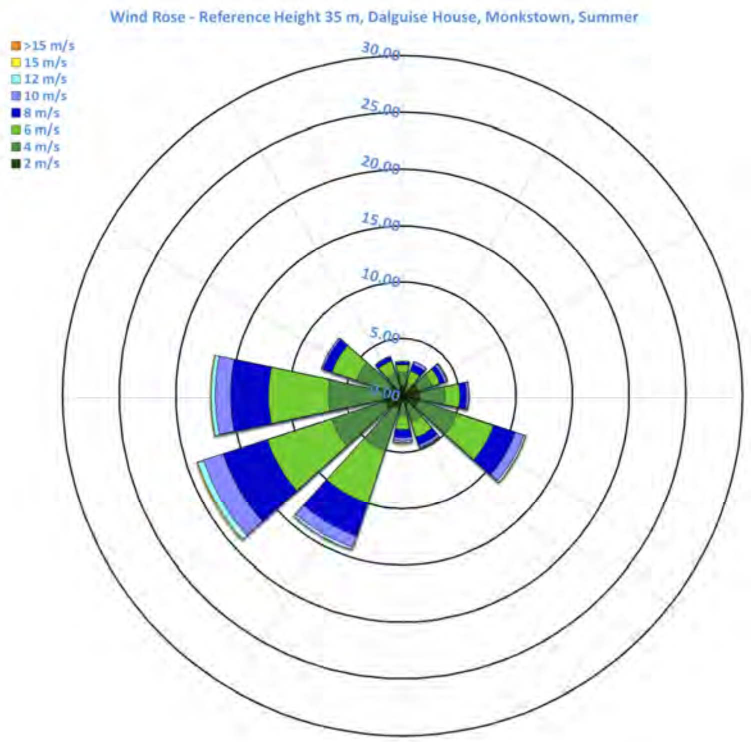

Figure 12: Summer Period Wind Rose at Reference Height for the Site

3.0 RESULTS OF THE ASSESSMENT

The main body of the report contains results for Pedestrian Comfort and Pedestrian Distress. Additionally, plots of velocity ratio for each of the 12 wind directions modelled are provided in Appendix A Velocity Ratio.

3.1 PEDESTRIAN COMFORT

Figure 13 shows a plot of Pedestrian Comfort rating at 1.5m above ground level for the worst seasonal conditions, which at this site occurs during winter. Figure 14 shows a plot of Pedestrian Comfort for the summer period.

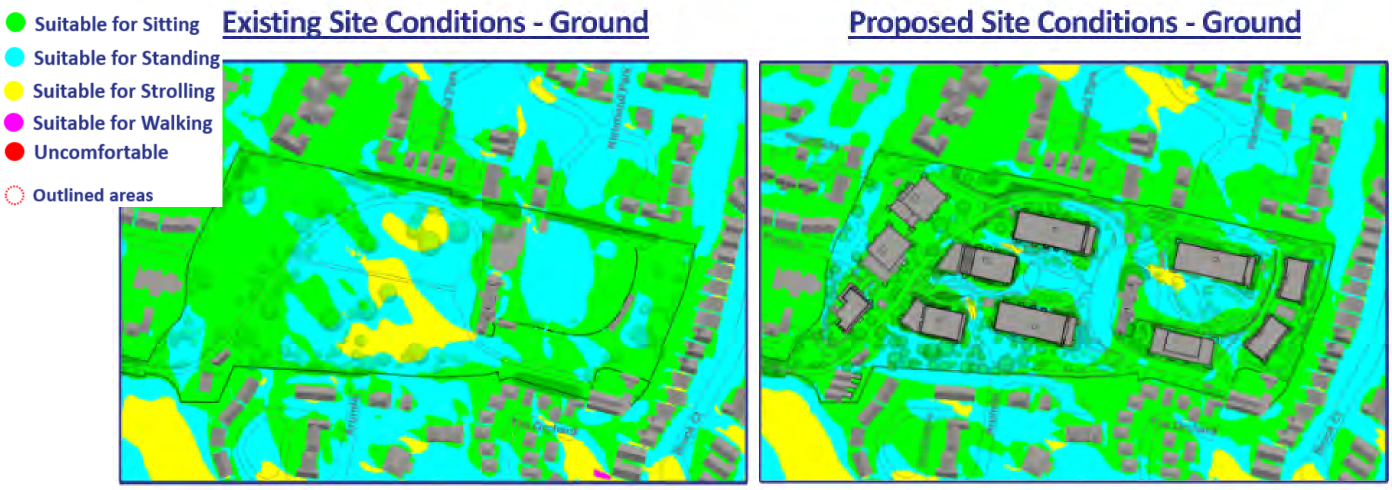

Figure 13: Pedestrian Comfort Rating for Worst Seasonal Conditions

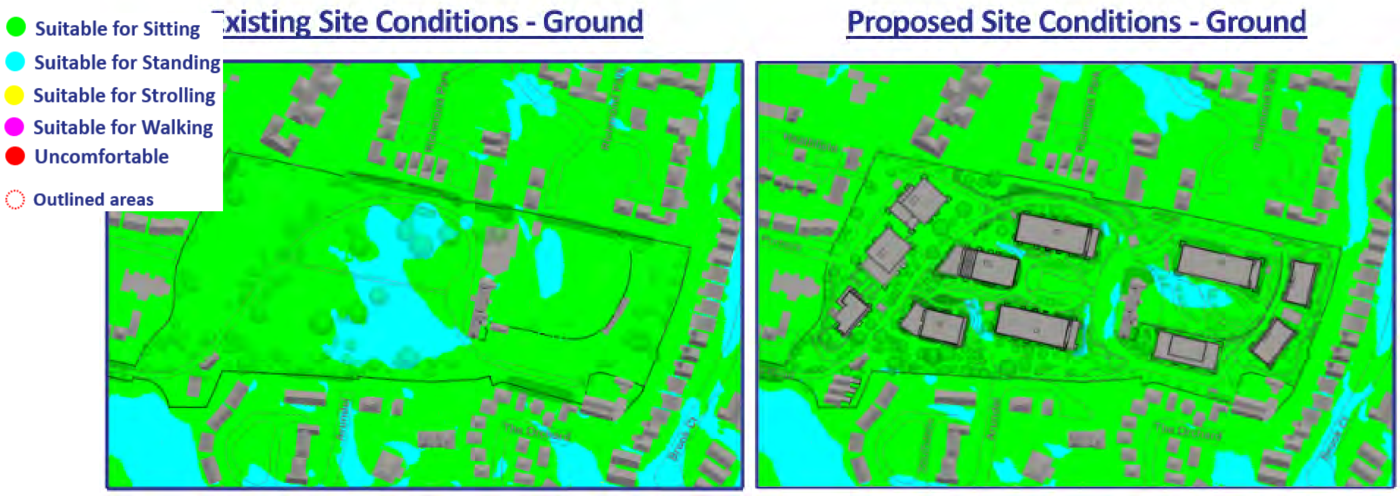

Figure 14: Pedestrian Comfort Rating for Summer Period

3.2 PEDESTRIAN DISTRESS/SAFETY

Figure 15 shows a plot of Pedestrian Distress/Safety Rating at 1.5m above ground level, where the Lawson Pedestrian Distress/Safety Criterion of 15m/s is exceeded, based on an exceedance probability of 0.022% [1].

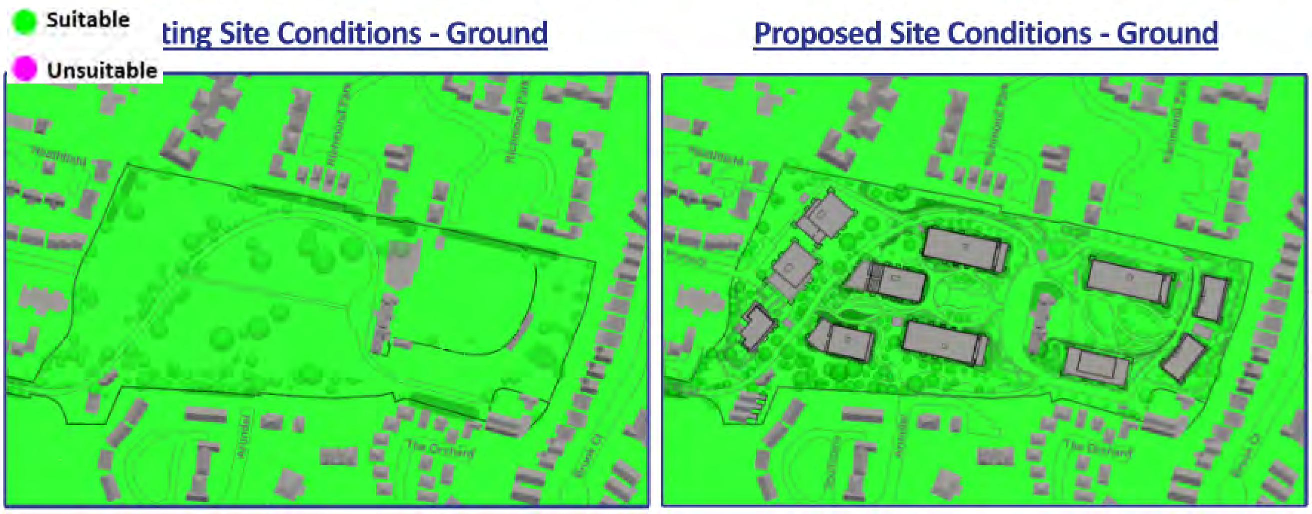

Figure 15: Pedestrian Distress Rating

4.0 SUMMARY

4.1 GENERAL OBSERVATIONS

The proposed development at Dalguise House, Monkstown constitutes a significant increase in the overall massing at the site. It is taller than surrounding buildings and is therefore at risk of downdraft/downwash causing wind acceleration at pedestrian level.

4.2 PEDESTRIAN COMFORT

The wind microclimate assessment for the proposed development identified the following regarding pedestrian comfort:

- Pedestrian comfort was achieved in all locations within and adjacent to the development.

4.3 PEDESTRIAN DISTRESS/SAFETY

With regards to pedestrian distress/safety, the assessments key findings were as follows:

- Pedestrian safety was achieved at ground level within the proposed site and adjacent public spaces.
- In winter, the northwest corner of Block H was mostly rated as suitable for strolling with a very small area rated as suitable for walking. Here the prevailing wind direction created the worst-case wind speeds. Extra soft landscaping at and around the northwest corner of Block H is recommended, but not required.

APPENDIX A – VELOCITY RATIO

Figure A1 to Figure A12 show contour plots of velocity magnitude ratio in and around the existing and proposed site for each of the 12 wind directions modelled. The velocity magnitude is calculated by dividing the local air speed by the reference air speed: the wind speed at 35m above ground level at the start of the explicitly modelled inner area of the domain as calculated by terrain and wind profile analysis using the EDSU methodology [6].

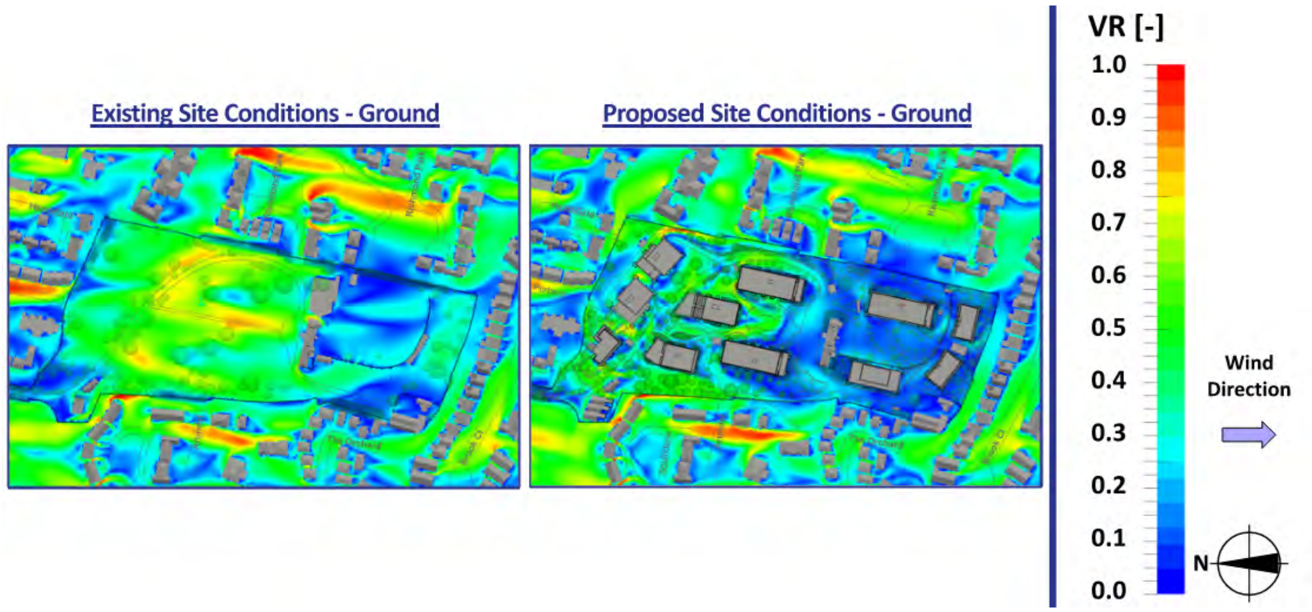

Figure A1: Velocity Ratio, Wind Direction of 0 Degrees (Northerly)

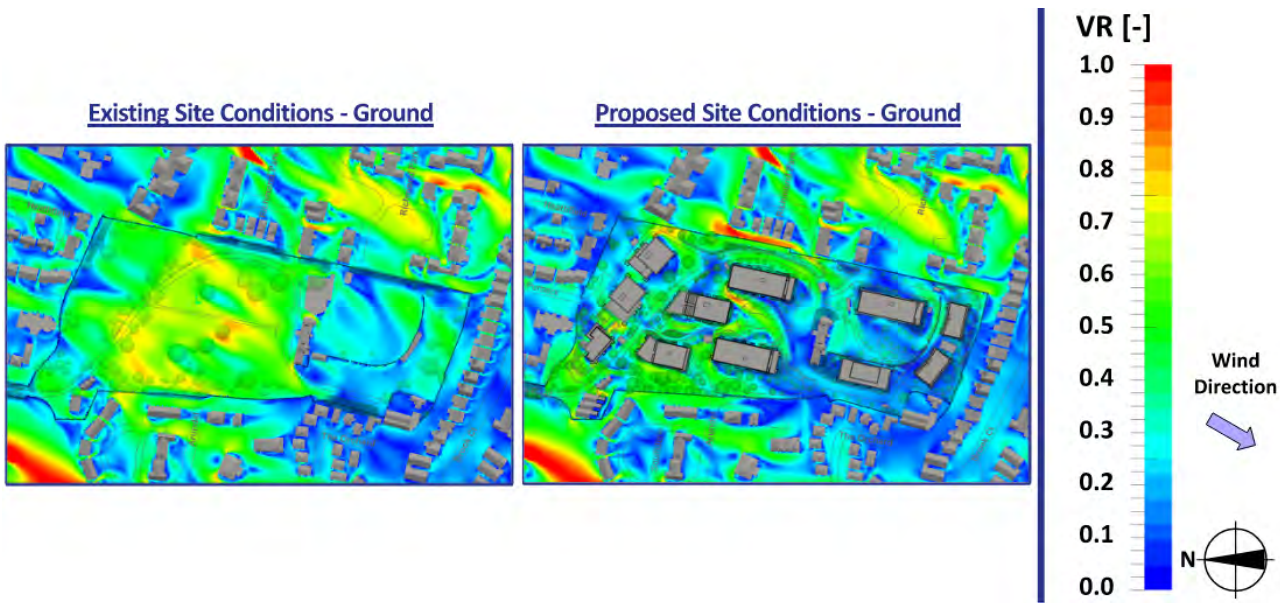

Figure A2: Velocity Ratio, Wind Direction of 30 Degrees

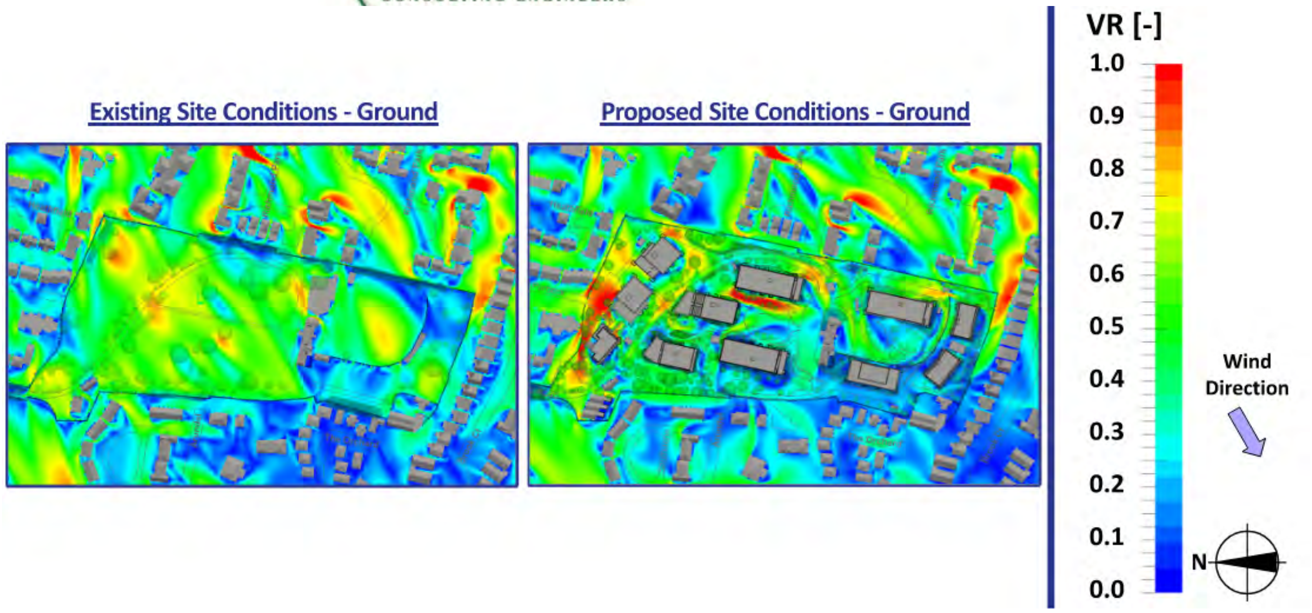

Figure A3: Velocity Ratio, Wind Direction of 60 Degrees

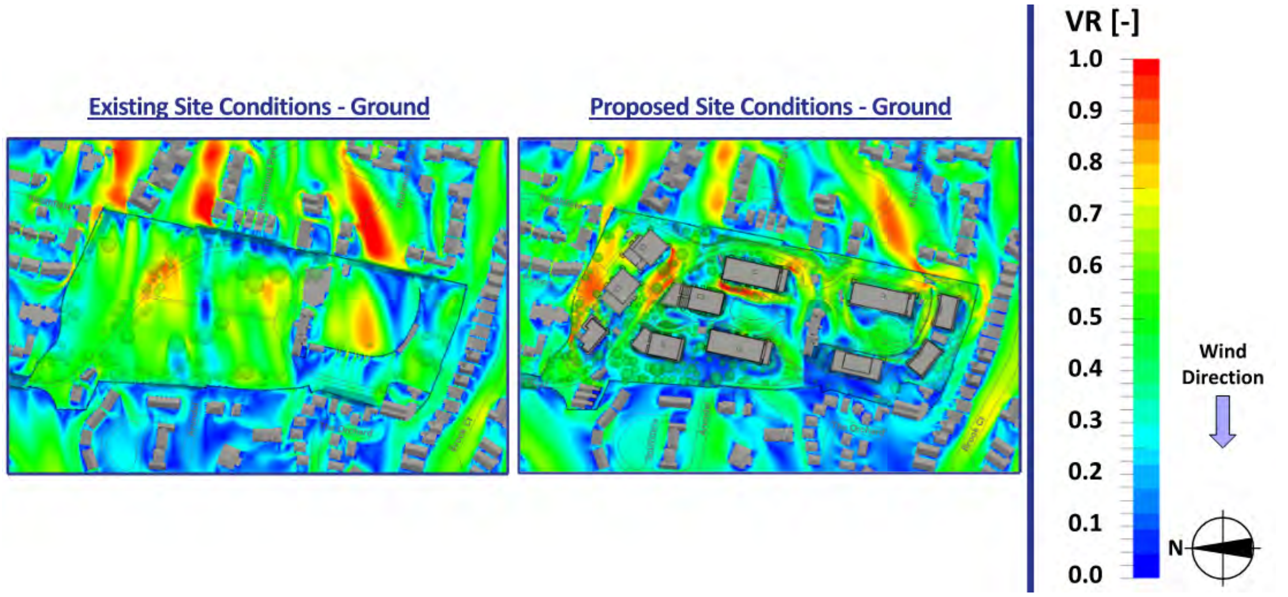

Figure A4: Velocity Ratio, Wind Direction of 90 Degrees (Easterly)

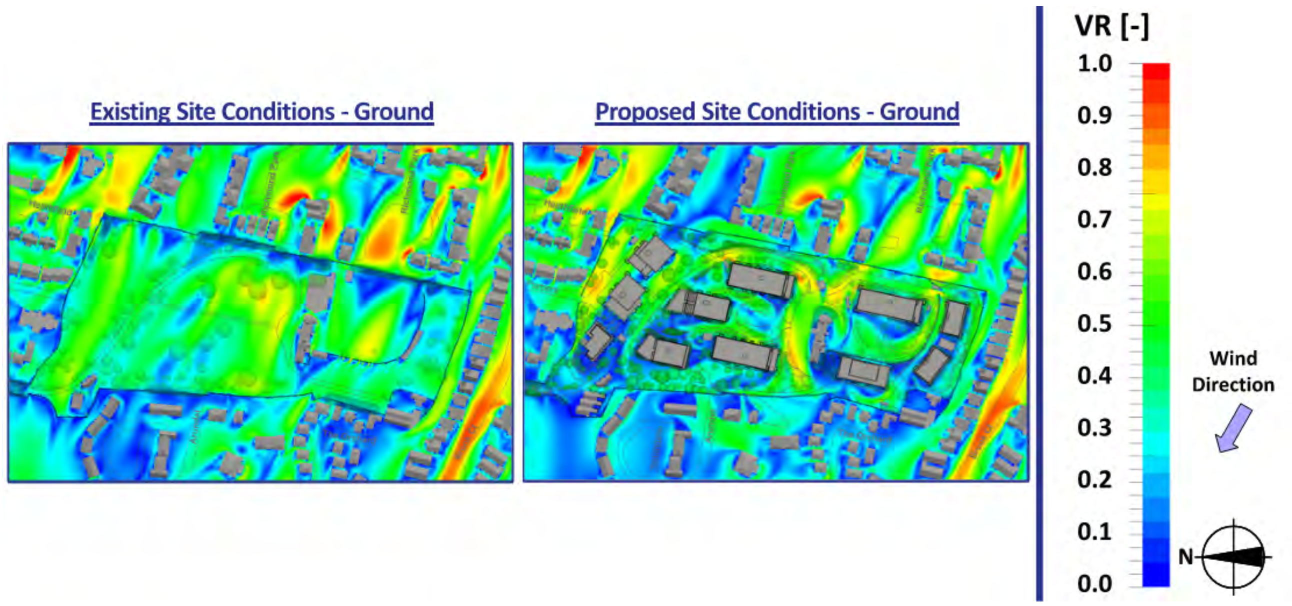

Figure A5: Velocity Ratio, Wind Direction of 120 Degrees

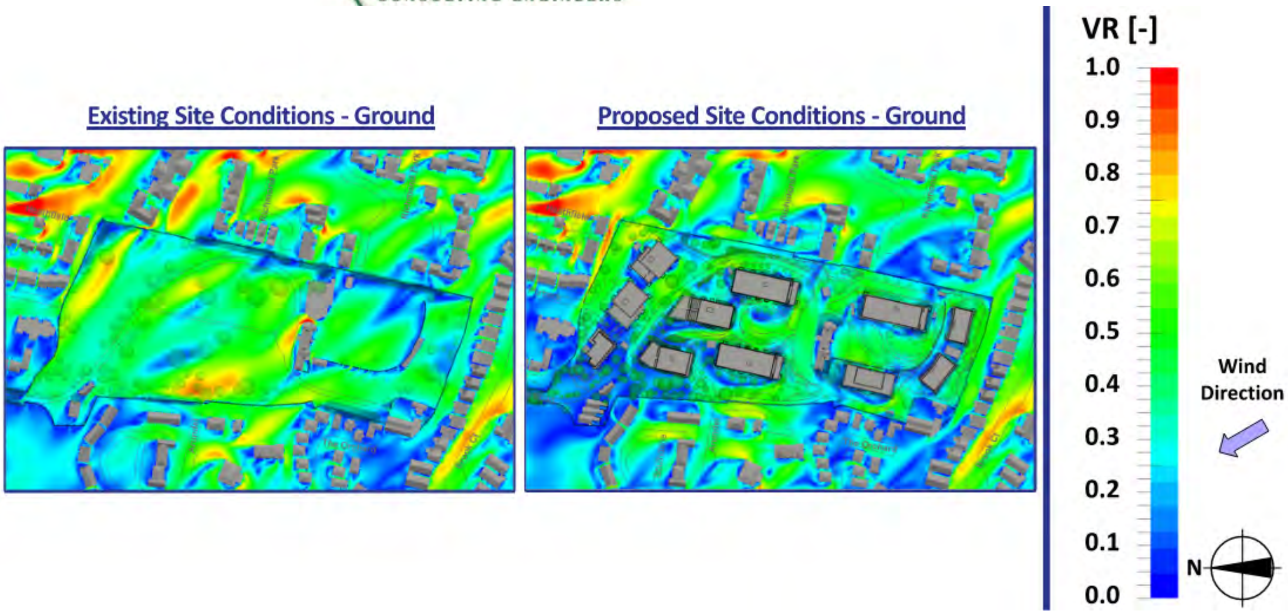

Figure A6: Velocity Ratio, Wind Direction of 150 Degrees

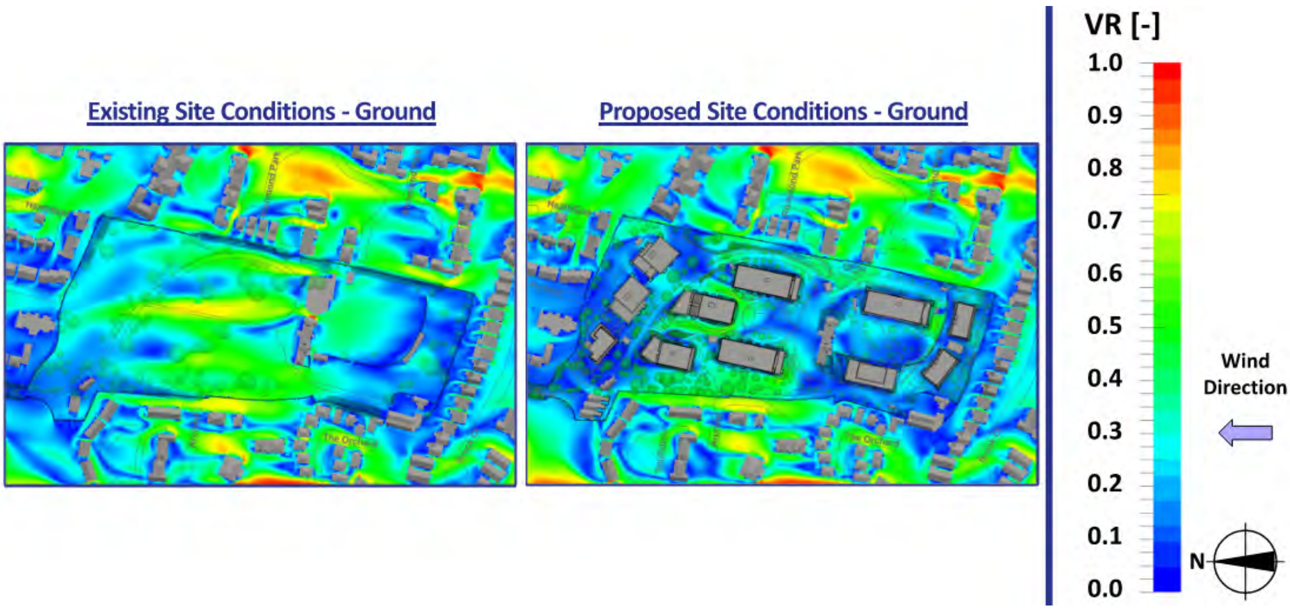

Figure A7: Velocity Ratio, Wind Direction of 180 Degrees (Southerly)

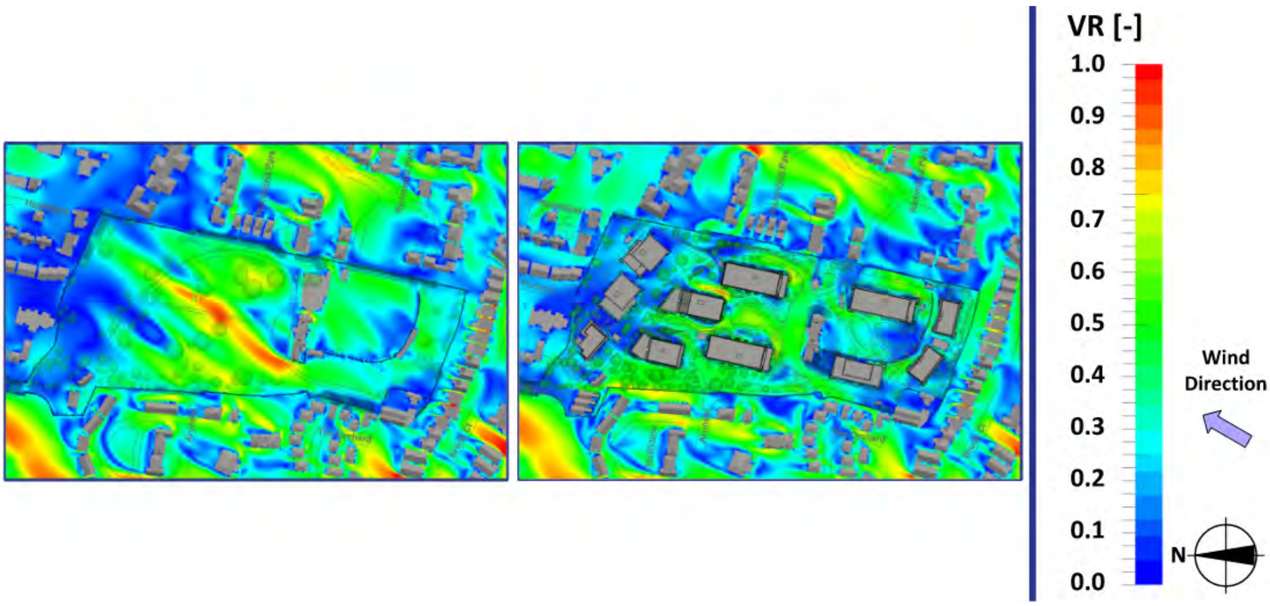

Figure A8: Velocity Ratio, Wind Direction of 210 Degrees

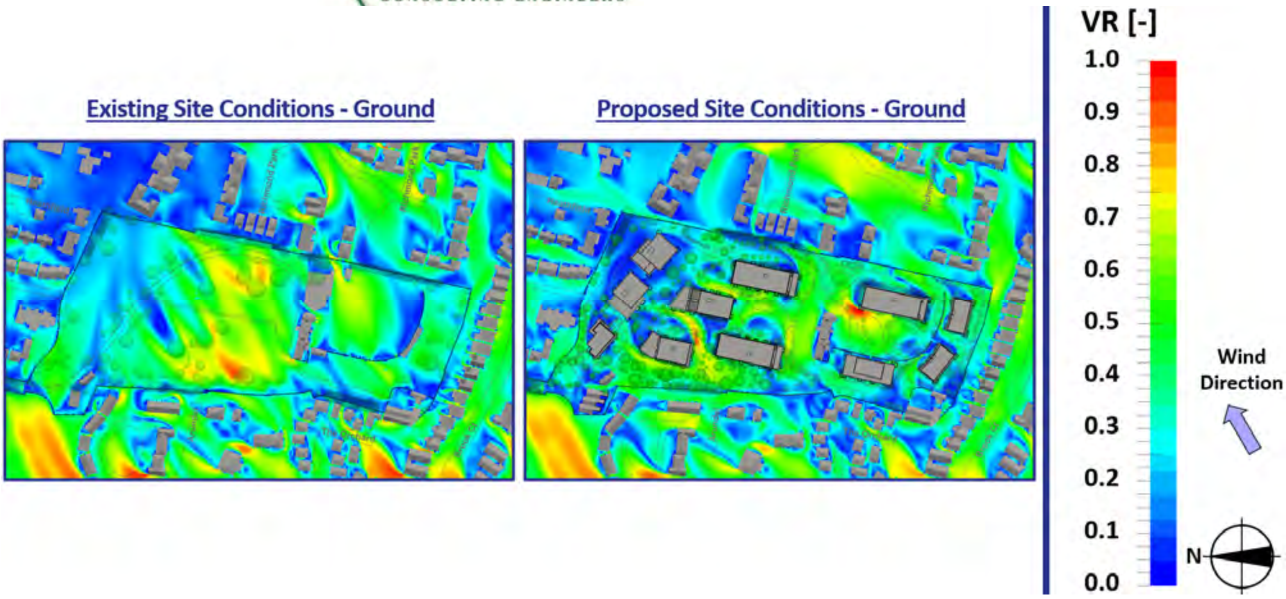

Figure A9: Velocity Ratio, Wind Direction of 240 Degrees

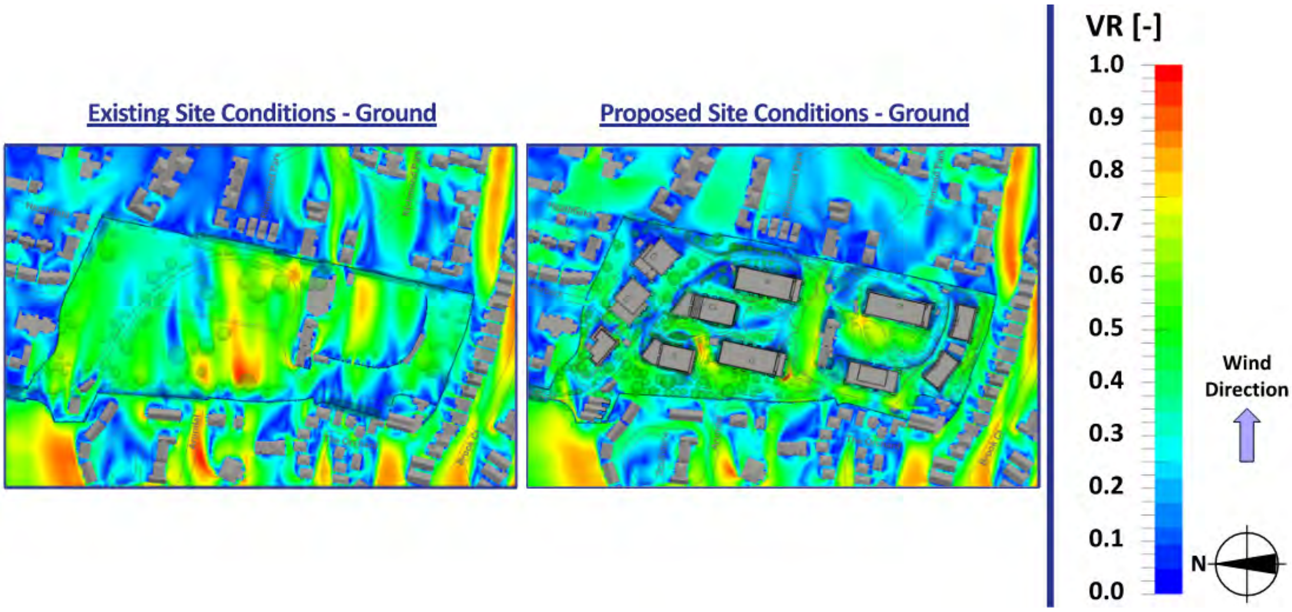

Figure A10: Velocity Ratio, Wind Direction of 270 Degrees (Westerly)

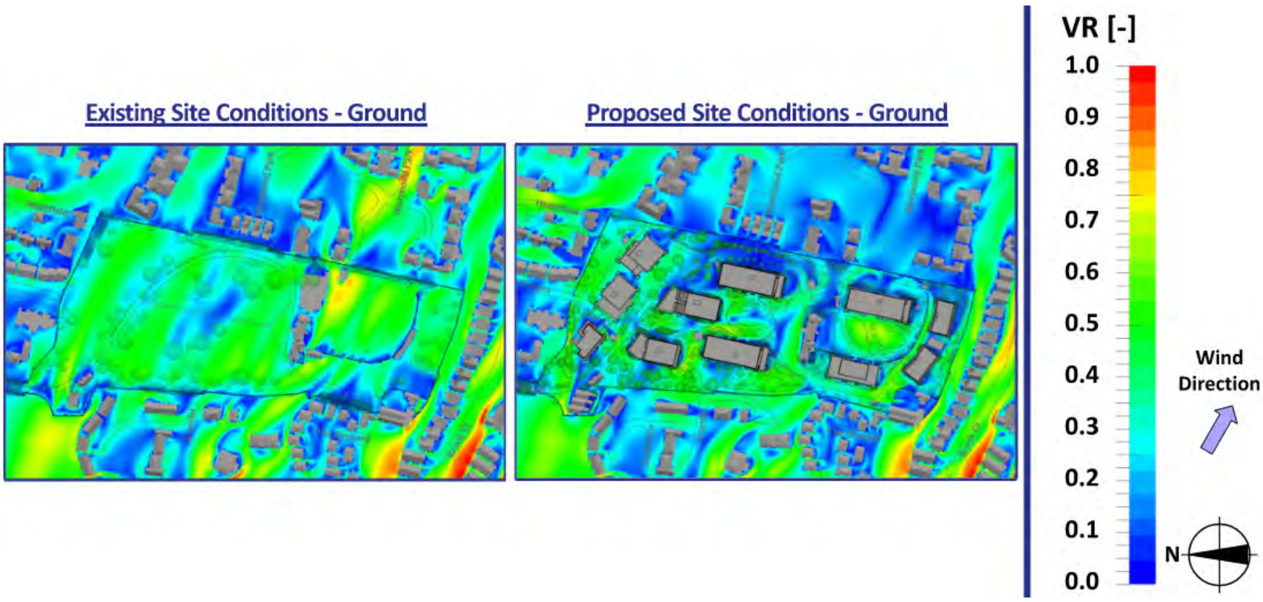

Figure A11: Velocity Ratio, Wind Direction of 300 Degrees

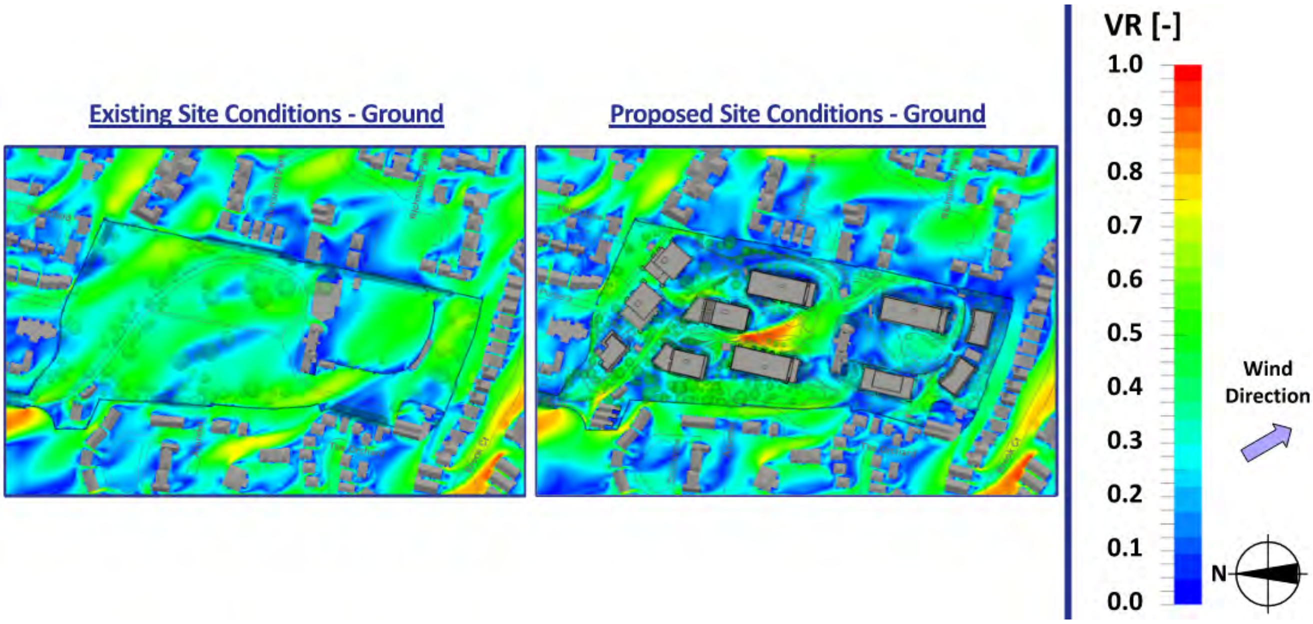

Figure A12: Velocity Ratio, Wind Direction of 330 Degrees

APPENDIX B – ADDITIONAL WIND DATA

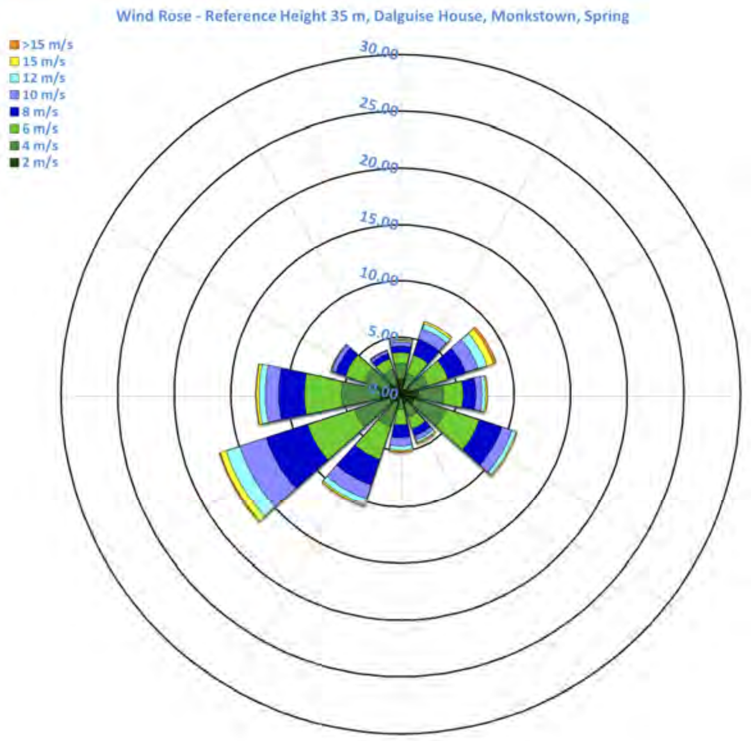

Figure B1: Spring Period Wind Rose at Reference Height for the Development Site

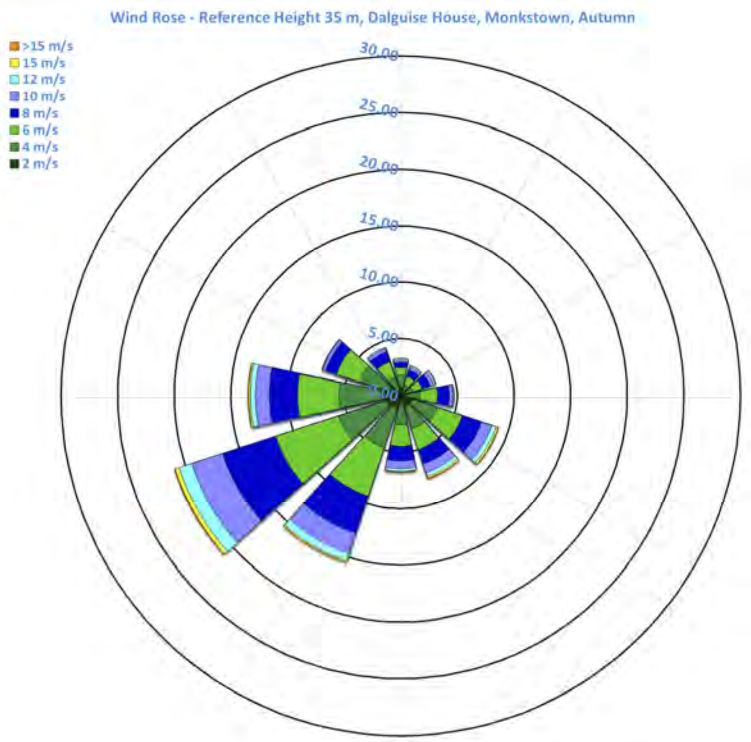

Figure B1: Autumn Period Wind Rose at Reference Height for the Development Site

APPENDIX C – CFD MODELLING METHODOLOGY

GENERAL

The multi-purpose CFD software Helyx® (https://engys.com/products/helyx, version 3.2) was used for the wind environment simulations. A total of 24 steady state atmospheric boundary layer simulations were completed for the assessment, covering two site configurations and 360 degrees of approaching winds, with a wind sector increment of 30 degrees.

SPATIAL DISCRETIZATION

The spatial discretization of the 3D model was completed with snappyHexMesh utility, part of the CFD code OpenFoam®. Computational meshes, consisting of approximately 14 million hexahedral and polyhedral elements, were constructed for two site configurations:

- The existing site within the existing surrounds,
- The proposed site within the existing surrounds.

The computational domain included the proposed development site, the surrounding buildings and terrain explicitly modelled to approximately 500 m from the development, 1000 m in radius ground surface and the outer boundaries (side and upper at 1000 m height from the ground).

The base cell size in the numerical grid was 32.0 m. The refinement level increased to 0.1 m in the zone closest to the proposed site, to capture the detailed geometrical features. Additionally, 5 prism surface layers were introduced to all pedestrian ground level surfaces, with the first layer height of approximately 0.4 m.

SOLUTION METHOD

The RANS (Reynolds-averaged Navier–Stokes) CFD simulations were performed using the simpleFoam solver. The modelling of an incompressible fluid flow was completed using the semi-implicit method for pressure-linked equations (SIMPLE) algorithms. The resulted flow turbulent features were modelled using the Shear Stress Transport (SST) k-ω turbulence model. This model by Menter [2] and is based on a two-equation eddy-viscosity approach, where the SST model formulation combines the use of a k-ω in the inner parts of the boundary layer, but also switches to a k-ε behaviour in the free-stream regions of the solutions. Further details for the selected turbulence model are provided in the work of Menter [3].

BOUNDARY CONDITIONS

The atmospheric boundary layer flow was simulated by implementing a logarithmic velocity profile model presented by Richards and Hoxey [4], with the following main assumptions:

- o The vertical velocity component at the domain boundary is negligible.
- o The pressure gradient and shear stress are constant.

The model implies the following equation for the mean inlet velocity at the CFD domain:

$$U(z) = \frac{U^*}{\kappa} ln\left(\frac{z + z_0}{z_0}\right)$$

where:

κ - is the von Karman's constant.

z - is the distance from the ground surface in vertical direction.

z_o - is the ground surface roughness length in meters.

The friction velocity U* is calculated by the following equations:

$$U^* = \kappa \frac{U_{ref}}{ln\left(\frac{z_{ref} + z_0}{z_0}\right)}$$

where:

z_{ref} – is the reference height in meters.

U_{ref} - is the reference velocity in m/s measured at z_{ref}.

The turbulent velocity fluctuations at the domain inlet are induced by the constant shear stress with height, maintained by the turbulent kinetic energy k:

$$k(z) = \frac{U^{*2}}{\sqrt{C_\mu}}$$

where:

$C_\mu = 0.09$ - is the usual k-ε turbulence model constant.

Within the inner region of the domain (i.e., where the development, surrounding buildings, and terrain were modelled) all surface boundary conditions were modelled as smooth walls with a no-slip condition. On the surface representing the ground in the outer region of the domain (i.e., the region without explicitly modelled building geometry) a no-slip wall boundary condition with a varying roughness length based on the terrain analysis for that region was applied.

POROUS MEDIA MODEL

The permeability of existing and proposed vegetation within vicinity of the site was modelled by introduction of a volumetric source term in the momentum equation applied at two different cell zones defined within the CFD model:

- Deciduous trees
- Hedges

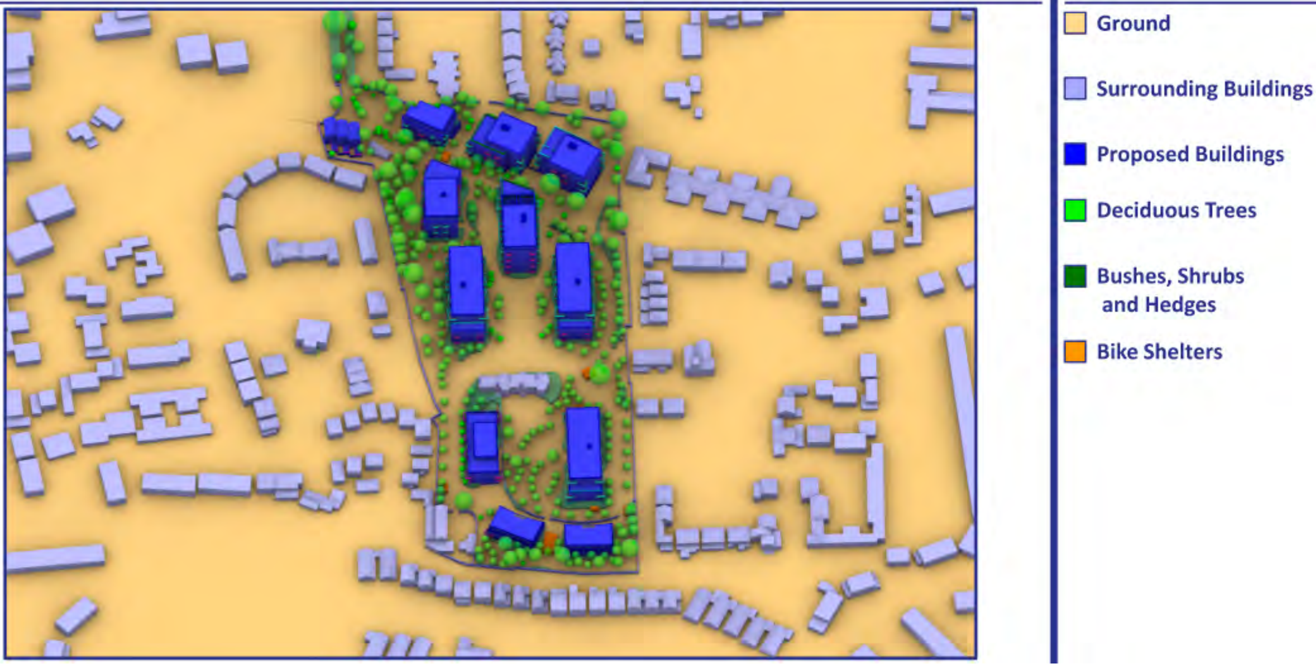

Figure C3 – 3D Model of the proposed and existing vegetation

The model is based on the Darcy-Forchheimer formula, implementing full scale wind tunnel experimental data [7]. The numerical model is based on the conservative assumption of winter leaf cover.

APPENDIX D – WIND MICROCLIMATE ON BALCONIES AND TERRACES

Though they are intended for analysis of public spaces rather than balconies, here we apply pedestrian comfort and distress criteria to quantify the wind conditions experienced on the balconies and terraces of the proposed development. Although there are no strict criteria for balconies, the generally accepted industry norm is to target a summer comfort rating of Suitable for Sitting, and that the annual pedestrian safety criterion should be met.

Figures D1, D2 and D3 show contour plots of pedestrian comfort in winter, pedestrian comfort in the summer, and pedestrian distress/safety on the balconies and terraces of the proposed development respectively.

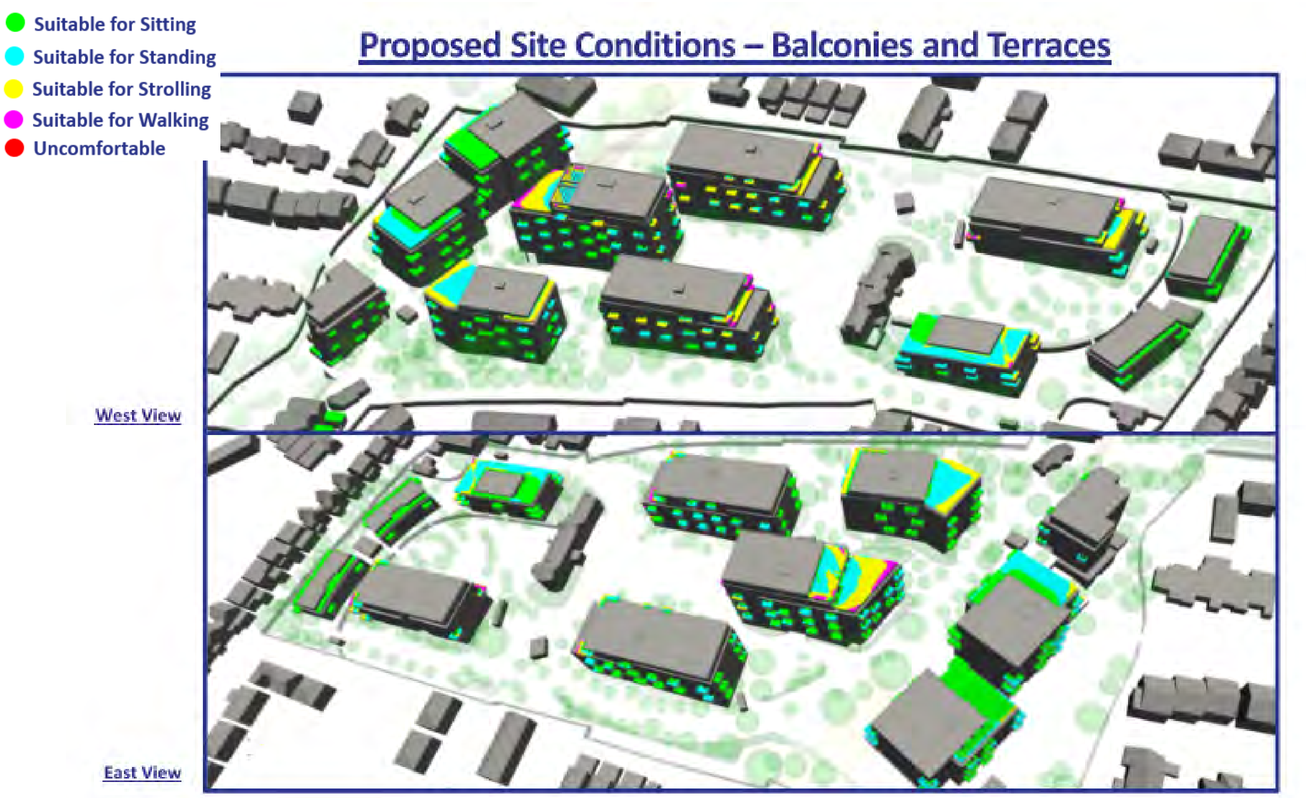

Figure D1: Pedestrian Comfort Rating for Worst Seasonal Conditions

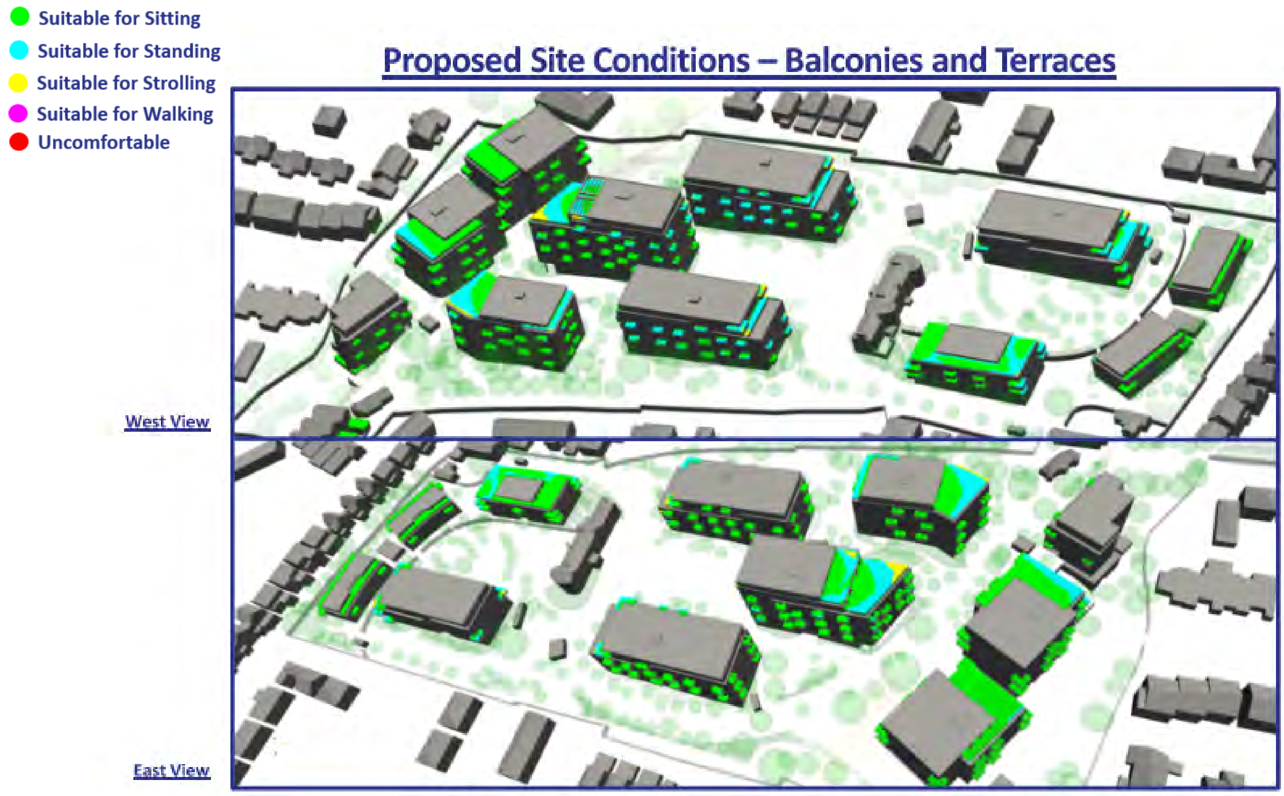

Figure D2: Pedestrian Comfort Rating for Summer Period

Figure D2 highlights balconies and roof terrace areas where the summer period target rating of suitable for sitting is exceeded. Most of the terraces and balconies were rated as Suitable for Sitting or Suitable for Standing. The northwest corner of the Block E terrace was rated as Suitable for Strolling.

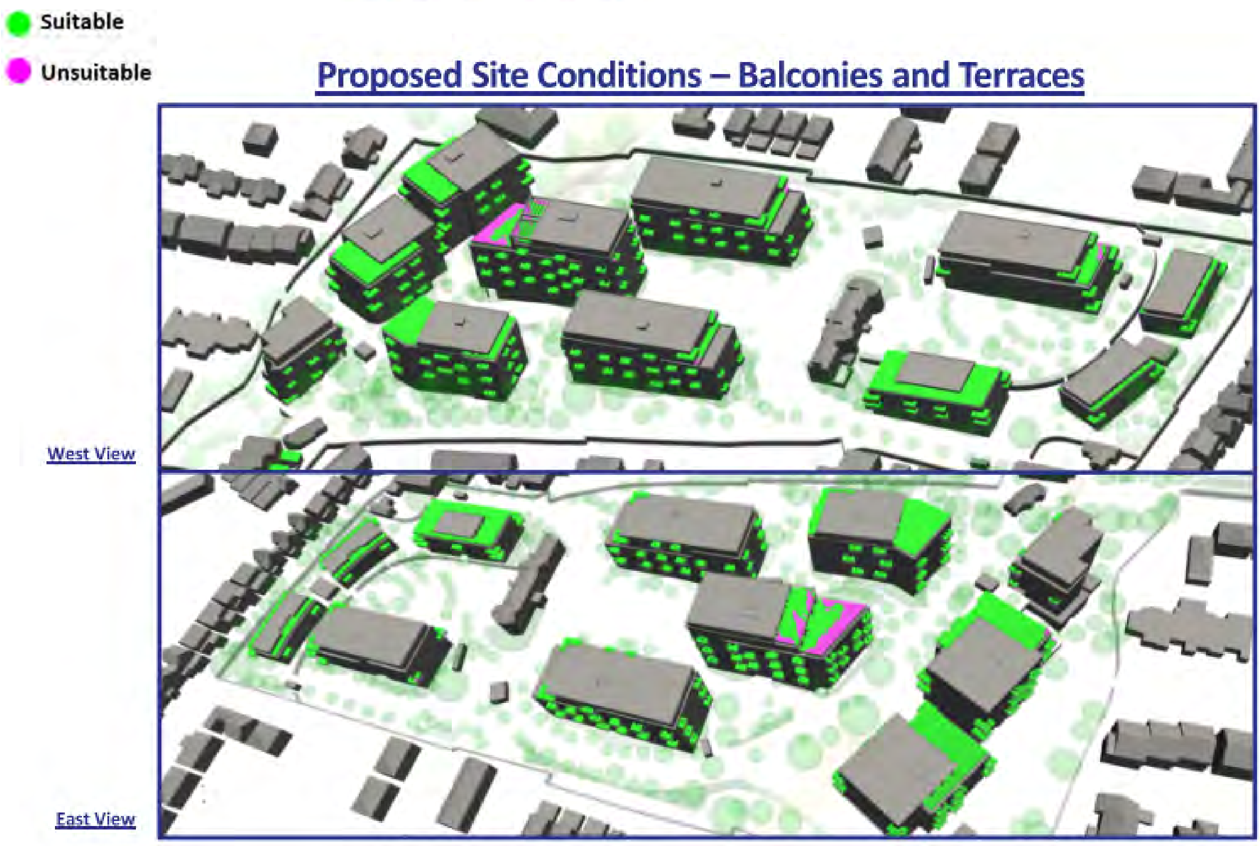

Figure D3: Pedestrian Distress/Safety Rating

Figure D3 highlights balconies and roof terrace areas where wind speeds exceed the pedestrian safety criterion.

Exceptions to the Lawson comfort and safety criteria were observed across a significant area of the terraces of Block E, as well as a small area on the terraces of Block D and H.

Mitigation is required for terraces, particularly on Block E. Mitigation measures could be in form of solid or porous mesh panels (<=50% porosity) with a height of 1.8m. Evergreen hedging on the terraces could also be used to slow the wind and provide more sheltering to allow for long-term sitting in the summer period.

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[1] Lawson T.V. (2001), Building Aerodynamics, Imperial College Press

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[7] Bitog, J.P., Lee, I.-B., Hwang, H.-S., Shin, M.-H., Hong, S.-W., Seo, I.-H., Mostafa, E., and Pang, Z. A wind tunnel study on aerodynamic porosity and windbreak drag, Forest Science and Technology, Vol. 7, No. 1, March 2011, 8–16.

APPENDIX 17.1

TRANSPORT IMPACT ASSESSMENT REPORT (TIA) AND TRAVEL PLAN/MOBILITY MANAGEMENT PLAN

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RESIDENTIAL DEVELOPMENT, DALGUISE HOUSE, MONKSTOWN, CO DUBLIN

Transport Impact Assessment Report

July 2023

ROD
ROUGHAN & O'DONOVAN

Residential Development, Dalguise House, Monkstown, Co Dublin

Transport Impact Assessment Report

Document No: 21.120

Author:.. Rico Raymundo (RR)

Checker: .... Eoin Ó Catháin (EOC)

Approver:... Eoin Ó Catháin (EOC)

Document No	Revision	Description	Made	Checked	Approved	Date
21.120	-	Draft	RR	EOC	EOC	May 2022
21.120	1	Client Comments	RR	EOC	EOC	May 2022
21.120	2	DLRCC Comments	EOC	RR	EOC	Sept 2022
21.120	3	TPA Final Comments	EOC	EOC	EOC	Oct 2022
21.120	4	MCF Comments	EOC	EOC	EOC	Oct 2022
21.120	5	TPA Comments	RR	RR	EOC	Oct 2022
21.120	6	Further Information	EOC	EOC	EOC	July 2023

Residential Development, Dalguise House, Monkstown, Co Dublin
Transport Impact Assessment Report

TABLE OF CONTENTS

1. INTRODUCTION

Roughan & O'Donovan has been commissioned by GEDV Monkstown Owner Limited – part of the Greystar Group - to prepare a Transport Impact Assessment Report for a proposed development at Dalguise house, Monkstown Road, Co. Dublin. The proposed development will consist of the following elements:

- 493 residential units comprising 3 no. conventional houses, 490 no. BRT units comprising 2 No. studio units, 289 No. 1-beds, 20 No. 2-beds/3 persons. 166 No. 2-beds/4persons, and 13 No. 3-beds
- Childcare Facility
- Restaurant/Cafe
- Private Residential Amenities including yoga studio, gym, resident's lounge, music room, library, and co working spaces.

This Transport Impact Assessment has been prepared to assess the traffic and transportation impacts of the proposed residential development. It follows the 'Traffic and Transport Assessment Guidelines' published by Transport Infrastructure Ireland (TII) and 'Guidelines for Transport Impact Assessment' published by the Chartered Institution of Highways and Transportation [CIHT]. The following additional documents are considered best practice in the industry and have been considered in the preparation of this report:

- Design Standards for New Apartments published by the Department of Housing, Planning and Local Government in March 2018;
- Sustainable Urban Housing: Design Standards for New Apartments, Government of Ireland, December 2020
- The Design Manual for Urban Roads and Streets, published by DTTaS and DoE;
- The Design Manual for Roads and Bridges, published by TII; and
- The National Cycle Manual, published by the NTA.

2. SITE LOCATION AND PROPOSED DEVELOPMENT

2.1 Site Location

The proposed residential development is located south of Monkstown Road. The site is approximately 3.58 ha and is bounded by existing residential estates to south, east, and west. To the north, the site is bounded by Purbeck which connects with Monkstown Road by means of a simple priority T-junction. The site is approximately 300m from Monkstown Village and 500m from Salthill and Monkstown Dart Station.

An aerial image of the site is shown below with the subject lands outlined in red.

Figure 1: Aerial Photo of Site Location (Source: Google Maps)

2.2 Development Details

The proposed development includes 493 residential units comprising 3 no. conventional houses, 490 no. BRT units comprising 2 No. studio units, 289 No. 1-beds, 20 No. 2-beds/3 persons. 166 No. 2-beds/4persons, and 13 No. 3-beds, childcare facility, restaurant/café, residential amenities including yoga studio, gym, resident's lounge, music room, library, and co working spaces. The development also includes 228 car parking spaces (of which 6 are dedicated car share spaces), and 967 bike spaces. 711 bike parking spaces will be secure long stays for residents and 256 will be provided for visitors at convenient locations throughout the site. In addition to this, 20 cargo bike spaces (16 in basement and 4 at surface) and 8 motorbike spaces will also be provided.

All short-term cycle spaces are provided as 'Sheffield' cycle parking to DLRCC's standard, Long term parking in basement, undercroft or the internal of buildings is provided as single level stacker stands, Long term parking in above ground secure cycle shelters is provided with a mix of 'Sheffield' cycle parking to DLRCC's standard and single level stacker stands.

The proposed development will be developer owned and managed as a “Build to Rent” development. Greystar is an international company providing high quality managed accommodation, and this is one of several residential campuses it is developing in Ireland. These developments are self-contained with amenities and essential services for residents, and are typically located in proximity to public transport and cycling corridors to minimise the need for car use. Greystar are operational long term holders with directly employed staff, supporting local employment. Other schemes in Ireland include Dublin Landings and Griffith Woods which are high quality well managed schemes in Dublin City Council jurisdiction.

2.3 Access

Vehicular access to the proposed development will be primarily via Purbeck, from which the main underground car park will be accessed, while the rear part of the site will be accessed via the Dalguise House Access Avenue. The proposal includes the provision of passing bays along the avenue to facilitate the low volumes of two-way vehicular traffic. Car traffic from Blocks A – G (i.e. the blocks in front of Dalguise House) will access the site via Purbeck (385 of 493 units). This represents approx. 78% of total development traffic. Car traffic from Blocks H – I, Dalguise House, Coach House, Brick Gate Lodge, and North West House will access the site via the Dalguise House Access Avenue (108 of 493 units).

Sightlines have been checked at both access locations and adequate visibility is available in both directions from a 2.4m setback. The standard required is 49m to oncoming traffic (DMURS Table 4.2). On-site management personnel will maintain the hedgerows at the Dalguise access to ensure overgrowth doesn’t obstruct the sightlines.

Figure 2: Visibility from 2.4m setback at Purbeck

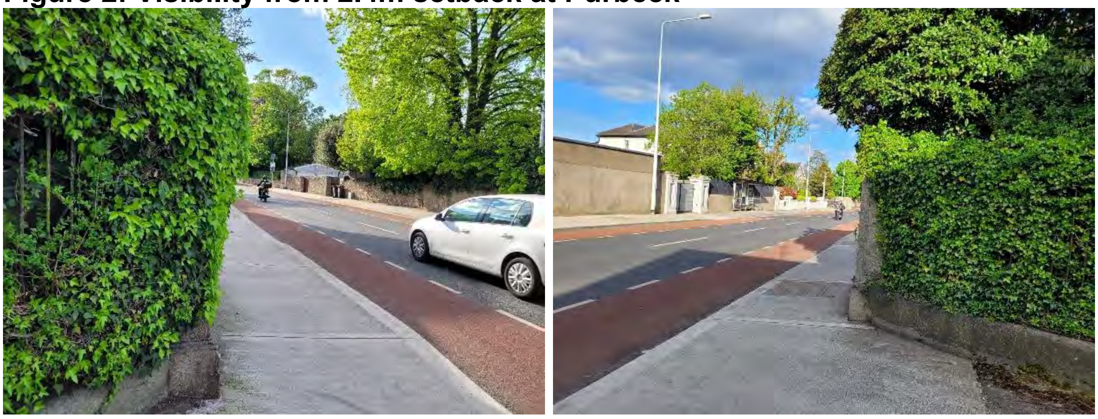


Figure 3: Visibility from 2.4m setback at Dalguise House Access

Pedestrian and cycle access will be predominantly along the Dalguise House Access Avenue. Delivery and service access will also be predominantly via this route, although a bin store is provided for Blocks A, B and C via the Purbeck access.

Construction access will primarily be via the Dalguise House access avenue, except for traffic associated with the construction of the bridge and road at the rear of Purbeck. In keeping with best practice, it is proposed to maintain the existing arrangements at both accesses, whereby the footpath is continuous across the access, and crossing traffic must give way to pedestrians.

3. SURROUNDING TRANSPORT NETOWRK

3.1 Road Network

North of the Site is the R119 Monkstown Road, a regional road single carriageway with a 50km/hr speed limit. Monkstown Road from the proposed site connects to Monkstown Village to the east and Blackrock to the west.

Monkstown Road has a good road surface and includes advisory cycle lanes in both directions. The horizontal alignment of Monkstown Road from the proposed site is straight with the vertical profile being almost flat. The general layout of Monkstown Road along the frontage of the Purbeck Lodge T-junction is shown in Figure 2 and Figure 3 below.

Figure 4: Monkstown Road Westbound and Eastbound Views

The road network close to the site is shown in Figure 5 below.

Figure 5: Surrounding Road Network.

3.2 Public Transport Accessibility

The proposed development site is highly accessible by public transport. It is within 500m (5 minute walk) of the Salthill and Monkstown Train Station. The DART suburban rail service connects directly to Connolly Station in Dublin City Centre, where it connects to the national rail network, as well as the Luas red line and the national bus network via BusÁras. The DART is a high frequency, high capacity regular service, operating at frequencies of up to 1 train every 10 minutes, with potential to further increase this in future.

The site also enjoys excellent accessibility by bus. Routes 7, 7a and 7d directly serve the site on the R119 Monkstown Road (connecting to Mountjoy Square at one end and Bride's Glen, Loughlinstown Wood, and Dalkey respectively at the other end). In addition, the 703 route connects the site directly to Dublin Airport. There is up to 1 bus every 12 minutes at peak times.

Various observations on site have indicated no difficulty boarding either buses or trains at any time of day. The site therefore enjoys excellent accessibility by public transport.

As part of the BusConnects programme, it is proposed to reorganise the bus services in the area. BusConnects is a programme of ongoing investment in Dublin's bus network, involving both the acquisition of additional buses and staff, and improvements to bus infrastructure. The service improvements are being rolled out on an ongoing basis, with 5 of 11 phases already implemented and improvements in the Blackrock / Monkstown area planned for 2024. The earliest possible occupation date for the proposed development is 2025, by which time the revised service plan will be in place.

3.2.1 Accessibility for Cyclist and Pedestrians

The proposed development will be fully accessible for pedestrians, cyclists, and the mobility impaired and disabled. All the surrounding main roads have adequate width footpaths on both sides and crossing facilities at junctions. Along the R119 Monkstown Road footpath width on the south side is approximately 1.8m and between 2-2.5m on the northern side.

In terms of cyclist accessibility, cycle facilities are present along the R119 Monkstown Road. These connect to express routes to the city centre along both the Blackrock Road and Coast Road corridors. These major routes are subject to ongoing improvement as part of the implementation of the GDA Cycle Network Plan and the BusConnects programme.

Pedestrian and cycle facilities within the site will be provided in accordance with the Design Manual for Urban Roads and Streets [DMURS]. The developer hopes to maximise permeability through the site by linking through to adjoining developments at Richmond Park and Arundel. This would complement the network of walking and cycling routes separate to the road network throughout the Monkstown area. While the developer doesn't have the power to implement these links without the consent of adjacent landowners, it is the developer's intention to work closely with Dún Laoghaire – Rathdown County Council towards their realisation.

3.2.2 Future Transport Network

As part of the BusConnects programme, it is proposed to further enhance the number of bus service in the area. The following BusConnects routes will serve Monkstown Road:

- B3: Dun Laoghaire – City Centre – Tyrrelstown, with a frequency of 15 minutes;
- S8: Dun Laoghaire – Sandyford – Tallaght, with a frequency of 15-30 minutes;
- 98: Loughlinstown Drive – Dun Laoghaire – Mountjoy Square, with a frequency 60 minutes.

Figure 6: **Proposed BusConnects Network**

The GDA Cycle Network Plan identifies the R119 Monkstown Road as a secondary route, Temple Hill/Stradbrook Road as a Primary route to the west, and Carrickbrennan Road as a feeder route to the east.

Figure 7: **GDA Proposed Cycle Network Plan**

4. EXISTING TRAFFIC

A traffic survey was undertaken by Traffinomics Ltd on Tuesday March 8th, 2022, at the Monkstown Road/Purbeck / Brighton Avenue junction and at the existing Dalguise House access at the Albany Avenue junction. The full traffic survey data is included in Appendix **A**. the traffic counts were carried out over a 12-hour period between 7am and 7pm.

The traffic survey indicates the following periods represent the peak hours:

- AM Peak Hour: 08:00 – 09:00
- PM Peak Hour: 17:00 – 18:00

4.1 Existing Traffic Survey Data

The traffic survey data was reviewed and has been summarised in Figure 8 and Figure 9 below. The summary shows the existing traffic volume for each movement during the peak hour, expressed in passenger car units (PCU's).

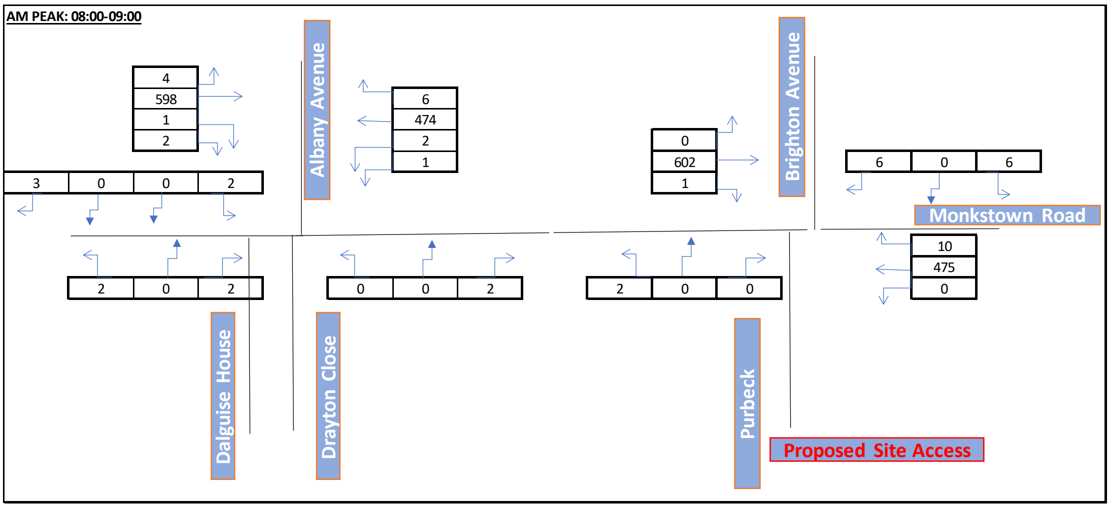


Figure 8: AM Peak existing turning movements.

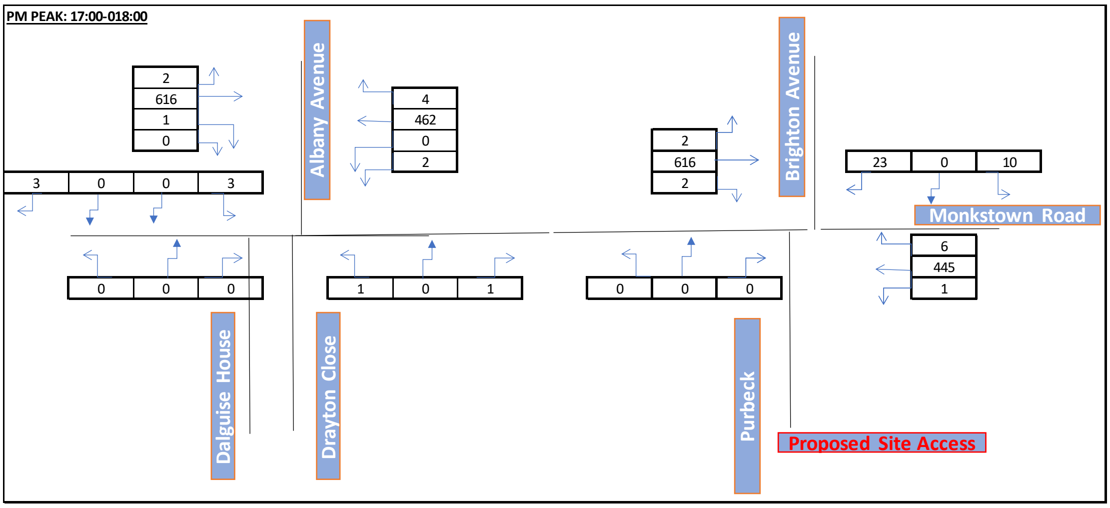


Figure 9: PM Peak existing turning movements.

The data above indicates modest existing traffic volumes on Monkstown Road (up to 11 cars per minute per direction) and very light traffic on the side roads (less than 1 car a minute). The higher eastbound flows reflect the closure of Seapoint Avenue in this direction.

4.2 Annual Average Daily Traffic (AADT)

The AADT of Monkstown Road has been calculated having regard to Unit 16.1 of the TII Project Appraisal Guidelies for National Roads, October 2016. There is no equivalent document for non-national roads so it is common practice to use this guidance, which is region specific. For Monkstown (Dublin), the guidance is:

1) 0800-0900 Peak hour is 7.7% of daily flow.
2) Tuesday flows are 107% of the daily average.
3) March flows are 98% of the monthly average.

On the basis of the foregoing, the calculated AADT is 13,500. HGVs comprise 1.5% of traffic volumes on Monkstown Road.

4.3 Existing Modal Split

The 2016 CSO census Small Area Population statistics (SAPS) was analysed for the nearby existing residential area on Monkstown Road to understand the travel patterns in the area. The data considers the means of travel to work, school, or college for the population in the area aged 5 years and over. The data was used to calculate the existing percentage of people who walk, cycle, use public transport or take a private vehicle to commute. Table 4.1 below shows the existing travel modes in the area.

Table 4.1: Existing Travel Patterns for Monkstown Road

Means of Travel	%
On foot	8%
Bicycle	12%
Bus, minibus or coach	12%
Train, DART or LUAS	16%
Motorcycle or scooter	1%
Car driver	30%
Car passenger	15%
Van	0%
Other (incl. lorry)	0%
Work mainly at or from home	3%
Not stated	3%
Total	**100%**

The data indicates a low modal share for car drivers in Monkstown compared with the regional and national averages (see Table 4.2 below). This reflects the high accessibility of the area by other modes. Indeed, the number of public transport trips is almost equal to the number of car movements (allowing that 33% of car trips are passengers).

Table 4.2: Existing Travel Patterns for Dublin / Leinster and National

Current Modal Split - Dublin/Leinster/National			
Existing Modal Share	**Dublin**	**Leinster**	**National**
On Foot	19.09%	15.87%	13.94%
Bicycle	6.30%	3.83%	2.68%
Bus, minibus or coach	14.09%	11.74%	10.24%
Train, DART or LUAS	6.78%	4.52%	2.70%
Motorcycle or scooter	0.51%	0.36%	0.28%
Car Driver	31.84%	36.58%	39.31%
Car passenger	11.83%	16.12%	18.64%
Van	2.13%	3.45%	4.20%
Other (incl. lorry)	0.14%	0.29%	0.39%
Work mainly at or from home	1.66%	2.51%	3.14%
Not stated	5.63%	4.73%	4.48%

5. TRANSPORT DEMAND GENERATION

5.1 Modal Split

A Travel Plan / Mobility Management Plan (MMP) has been prepared for the proposed development and this is included in **Appendix E**. The Travel Plan sets out modal split targets for the development and prescribes measures required to achieved them. The implementation of these measures will reduce pressure on the vehicular and public transport networks in the area associated with the proposed development. The trip generation has been calibrated with the Travel Plan to ensure that the traffic generation is calculated based on a comparison with similar sites.

5.2 Trip Generation

The traffic generated by the proposed development has been calculated using the TRICS Software. TRICS is a database of various development types throughout Ireland and the UK, which allows the trip generation of new developments to be accurately calculated on similar sites in similar locations. The vehicular trip generation data for the proposed development is summarised below with further detail provided in **Appendix B.** At RFI stage, the total number of residential units increased from 491 to 493. This difference of 0.4% is not significant, and therefore the analysis below was not rerun.

The number of trips generated by the development has been calculated for the AM peak hour, between 08:00-09:00, and the PM peak hour, between 17:00-18:00. A summary of the estimated number of trips generated by the proposed development is given below.

Table 5.1 Parameters Used for TRICS

Use		
Apartment units	491	No.
Childcare Facility	540	Sqm
Restaurant/Cafe	273	Sqm

Table 5.2 Trips Generated in AM Peak Hour

Use	Trip Rate			No. Trips		
	Unit	Inbound	Outbound	Inbound	Outbound	Two-way
				(veh/hr)		
Apartment Units	/Dwelling	0.045	0.127	22	62	84
Childcare Facility	/100 Sqm	3.682	2.879	20	16	36
Restaurant/Cafe	/100 Sqm	1.691	0.520	6	1	7
Total				**48**	**79**	**127**

Table 5.3 Trips Generated in PM Peak Hour

Use	Trip Rate			No. Trips		
	Unit	Inbound	Outbound	Inbound	Outbound	Two-way
				(veh/hr)		
Apartment Units	/Dwelling	0.120	0.066	59	32	91
Childcare Facility	/100 Sqm	2.398	3.129	13	17	30
Restaurant/Cafe	/100 Sqm	2.670	1.481	7	4	8
Total				**75**	**49**	**124**

Given the creche and restaurant / café are predominantly going to serve the development itself and the local population within walking distance, the vehicular trip generation of the creche has been reduced by 60% and the trip generation of the restaurant / café by 20%.

Table 5.4 Trips Generated in AM Peak Hour (Adjusted)

Use	Trip Rate			No. Trips		
	Unit	Inbound	Outbound	Inbound	Outbound	Two-way
				(veh/hr)		
Apartment Units	/Dwelling	0.045	0.127	22	62	84
Childcare Facility	/100 Sqm	3.682	2.879	8	6	14
Restaurant/Cafe	/100 Sqm	1.691	0.520	5	1	6
Total				**35**	**69**	**104**

Table 5.5 Trips Generated in PM Peak Hour (Adjusted)

Use	Trip Rate			No. Trips		
	Unit	Inbound	Outbound	Inbound	Outbound	Two-way
				(veh/hr)		
Apartment Units	/Dwelling	0.120	0.066	59	32	91
Childcare Facility	/100 Sqm	2.398	3.129	5	7	12
Restaurant/Cafe	/100 Sqm	2.670	1.481	6	3	9
Total				**70**	**44**	**112**

Car traffic from Blocks A – G (i.e. the blocks in front of Dalguise House) will access the site via Purbeck (385 of 493 units). This represents approx. 78% of total development traffic. Car traffic from Blocks H – I, Dalguise House, Coach House, Brick Gate Lodge, and North West House will access the site via the Dalguise House Access Avenue (108 of 493 units). However, for the purposes of assessment, all traffic has been loaded onto the Purbeck access to stress test the junction performance. As shown in Section 4.1, the junction of Monkstown Road, Purbeck and Brighton Avenue is considerably busier than the junction of Monkstown Road, Dalguise House Access and Albany Avenue. Therefore, the former is the critical junction in terms of capacity, and if it can be shown to operate satisfactorily, it can be inferred that the less busy junction will also operate satisfactorily.

5.3 Public Transport Capacity

The peak additional passenger loading onto the public transport system as a result of the proposed development is likely to be towards the city centre during the morning peak hour. As outlined in the accompanying Travel Plan (see **Appendix E**), the anticipated patronage for buses and trains in the morning is 63 and 85 respectively, of which 50% will be during the morning peak hour. During the morning peak hour, there will therefore be approximately 74 outbound movements to public transport. A little over half of these will be to the DART (c.42) and the rest by bus (c. 32). It is assumed that 90% of these movements will be towards the city centre (approx. 39 by DART and 29 by bus).

There is an inbound DART train every 10 minutes during the morning peak hour. Iarnród Éireann indicates that inbound capacity for the hour is 6,500 passengers to increase to 10,000 by 2027. As such, the anticipated loading from the proposed development is less than 1% of the DART's capacity (0.6% in 2022 and 0.4% in 2027), and therefore its impact on the DART public transportation system will be negligible.

In terms of bus movements, BusConnects proposes five services an hour to the city centre (4 x B3 plus 1 x 98), each with a capacity of 90 passengers, giving total passenger capacity of 450 per hour. The anticipated loading of 29 passengers per hour by bus equals 6.4% of this capacity. The BusConnects service plan is based on citywide multi-modal transport modelling, taking account of additional property development and population. Therefore, the impact of this additional passenger loading has been taken into account in the design of the future bus service network. The existing bus network also has 5 citybound services an hour on Monkstown Road during the morning peak hour, with the same capacity to cater for additional passengers even in the event of the rollout of BusConnects being delayed.

In summary, the local public transportation system has and will have adequate capacity to cater for the additional passenger loading associated with the proposed development.

6. TRAFFIC GROWTH

Traffic growth on the external road network is inevitable over time as a result of further economic development in Dublin and Monkstown area. The performance of the road network has been assessed for the estimated Opening Year (2024), opening + 5 years (2029), and opening + 15 years (2039). The purpose of analysing the road network for future traffic growth is to ensure the surrounding road network has sufficient capacity not alone for the proposed development, but also for the other development, including other residential developments in the vicinity of the proposed development site, that will occur over time. These additional developments are captured by applying the growth factors calculated in the TII Project Appraisal Guidelines Unit 5.3 - Travel Demand Projections (October 2021).

The medium growth rates (used for this analysis) for Dublin anticipate a 1.8% annual traffic growth until 2030 for light vehicles. Beyond 2030 until 2040, a 0.62% annual growth is anticipated for light vehicles. These figures are net, and include, in addition to new development traffic, modal shift for existing travel movements to sustainable transport modes as services and infrastructure are improved on an ongoing basis (e.g. BusConnects, Cycle Network Plan, DART service improvements, etc). The application of these growth factors thereby ensures that the analysis takes account of other new developments in the area in line with best practice TII guidelines.

The traffic analysis has assumed no new road improvements in the area in the 15-year design horizon – so any such new road development will improve the capacity projections outlined in this report.

The traffic growth calculated for each traffic movement is shown in **Appendix C.**

7. TRAFFIC ANALYSIS & RESULTS

7.1 Microsimulation Analysis

The junction that will be most affected by the Dalguise House development is the Purbeck / Monkstown Road T-junction. This junction is the main access and egress to the proposed development. The priority junction has been assessed using Junctions 10 under the following scenarios:

(1) Baseline Year 2022

(2) Opening Year 2024 (With and Without Development)

(3) Opening Year + 5 2029 (With and Without Development)

(4) Opening Year + 15 2039 (With and Without Development)

The opening year consists of the 2022 Traffic Survey Data with growth factors applied. Similarly for 2029 and 2039 as above, growth factors have also been applied. As noted above, 100% of development car traffic has been loaded onto this junction, even though only 79% of the traffic will use it in practice, with the balance using the existing access avenue to Dalguise House. As shown in Section 4.1, the junction of Monkstown Road, Purbeck and Brighton Avenue is considerably busier than the junction of Monkstown Road, Dalguise House Access and Albany Avenue. Therefore, the former is the critical junction in terms of capacity, and if it can be shown to operate satisfactorily, it can be inferred that the less busy junction will also operate satisfactorily. Further, the detailed junction analysis was undertaken on an earlier development proposal with approximately 10% higher inbound and outbound traffic flows, adding an extra degree of robustness.

The assessment outputs are presented in terms of Ratio of Flow to Capacity (RFC), which provides a basis for judging the acceptability of a junction. A junction with an RFC of less than 0.85 (i.e. operating at 85% of its theoretical maximum capacity) is considered to be operating within capacity. The second output is delay given in seconds; is the average time a vehicle must wait on the approach before it can enter the junction. Where 0.00 is indicated, the flows are either zero or too low to register in the traffic software.

Base Year [2022] Scenario

The priority junction was analysed using the 2022 traffic survey data. The results indicate that the base year operates within capacity. A summary of the results is shown below and full results of the analysis in included in **Appendix D.**

Table 7.1 Summary of Junction Analysis in Base Year

Baseline 2022			
Arm/Stream	**Peak Hour**	**Delay (s)**	**RFC**
Arm A - Monkstown Road W	AM Peak (08:00-09:00)	8.03	0.02
	PM Peak (17:00-18:00)	8.19	0.01
Arm B - Purbeck (Site)	AM Peak (08:00-09:00)	0.00	0.00
	PM Peak (17:00-18:00)	0.00	0.00
Arm C - Monkstown Road E	AM Peak (08:00-09:00)	7.58	0.00
	PM Peak (17:00-18:00)	7.60	0.00

Baseline 2022			
Arm/Stream	Peak Hour	Delay (s)	RFC
Arm D - Brighton Avenue	AM Peak (08:00-09:00)	11.38	0.04
	PM Peak (17:00-18:00)	13.79	0.12

Opening Year [2024] Scenario

Analysis has been carried out in opening year scenario, assuming the development has been completed and fully occupied by then. The analysis was carried out with and without development (in both cases taking account of other development in the area by application of the TII growth factors). The analysis shows that the opening year operates within capacity for both scenarios. A summary of the results is shown below and full results of the analysis in included in **Appendix D.**

Table 7.2 Summary of Junction Analysis in Opening Year 2024

Opening Year 2024 No Development				With Development	
Arm/Stream	Peak Hour	Delay (s)	RFC	Delay (s)	RFC
Arm A - Monkstown Road W	AM Peak (08:00-09:00)	8.11	0.02	8.34	0.03
	PM Peak (17:00-18:00)	8.28	0.01	8.38	0.02
Arm B - Purbeck (Site)	AM Peak (08:00-09:00)	0.00	0.00	14.71	0.26
	PM Peak (17:00-18:00)	0.00	0.00	13.37	0.17
Arm C - Monkstown Road E	AM Peak (08:00-09:00)	7.64	0.00	7.89	0.05
	PM Peak (17:00-18:00)	7.66	0.00	7.92	0.09
Arm D - Brighton Avenue	AM Peak (08:00-09:00)	11.64	0.04	12.21	0.04
	PM Peak (17:00-18:00)	14.28	0.13	14.89	0.13

Opening Year + 5-year Forecast [2029] Scenario

Analysis has been carried out in opening year + 5-year forecast scenario. The analysis was carried out with and without development (in both cases taking account of other development in the area by application of the TII growth factors). The analysis shows that the opening year + 5 years operates within capacity for both scenarios. A summary of the results is shown below and full results of the analysis in included in **Appendix D.**

Table 7.3 Summary of Junction Analysis in Opening Year +5 2029

Opening Year +5 2029 No Development				With Development	
Arm/Stream	Peak Hour	Delay (s)	RFC	Delay (s)	RFC
Arm A - Monkstown Road W	AM Peak (08:00-09:00)	8.37	0.03	8.60	0.03
	PM Peak (17:00-18:00)	8.60	0.03	8.66	0.03
Arm B - Purbeck (Site)	AM Peak (08:00-09:00)	0.00	0.00	15.68	0.27
	PM Peak (17:00-18:00)	0.00	0.00	14.17	0.18
Arm C - Monkstown Road E	AM Peak (08:00-09:00)	7.79	0.00	7.96	0.05
	PM Peak (17:00-18:00)	7.73	0.05	7.87	0.10

Opening Year +5 2029 No Development				With Development	
Arm/Stream	**Peak Hour**	**Delay (s)**	**RFC**	**Delay (s)**	**RFC**
Arm D - Brighton Avenue	AM Peak (08:00-09:00)	12.38	0.05	13.03	0.05
	PM Peak (17:00-18:00)	15.31	0.02	16.18	0.15

Opening Year + 15-year Forecast [2039] Scenario

Analysis has been carried out in opening year + 15-year forecast scenario. The analysis was carried out with and without development (in both cases taking account of other development in the area by application of the TII growth factors). The analysis shows that the opening year + 15 years operates within capacity for both scenarios. A summary of the results is shown below and full results of the analysis in included in **Appendix D.**

Table 7.4 Summary of Junction Analysis in Opening Year +15 2039

Opening Year +15 2039 No Development				With Development	
Arm/Stream	**Peak Hour**	**Delay (s)**	**RFC**	**Delay (s)**	**RFC**
Arm A - Monkstown Road W	AM Peak (08:00-09:00)	8.46	0.03	8.90	0.03
	PM Peak (17:00-18:00)	8.60	0.03	9.04	0.03
Arm B - Purbeck (Site)	AM Peak (08:00-09:00)	0.00	0.00	16.61	0.29
	PM Peak (17:00-18:00)	0.00	0.00	14.93	0.18
Arm C - Monkstown Road E	AM Peak (08:00-09:00)	7.92	0.00	8.18	0.05
	PM Peak (17:00-18:00)	7.85	0.00	8.11	0.10
Arm D - Brighton Avenue	AM Peak (08:00-09:00)	13.02	0.05	13.74	0.05
	PM Peak (17:00-18:00)	16.32	0.16	17.32	0.17

Table 7.4 above indicates that the proposed site access on Purbeck can comfortably accommodate the projected traffic growth in 2039 and the projected levels of traffic associated with the proposed 491 apartment units, restaurant / café and creche development. Given the particular nature of the Greystar development model, which is very much sustainability focussed, it is anticipated that actual car traffic generation will be lower than modelled.

7.2 Annual Average Daily Traffic (AADT)

The AADT of Monkstown Road has been calculated having regard to Unit 16.1 of the TII Project Appraisal Guidelies for National Roads, October 2016 as 13,500. Given the AM peak hour comprises 7.7% of daily flow, the additional AADT associated with the proposed development is 1,350. This is equal to 10% of the existing AADT and will result in a post development AADT of 14,850 in the Opening Year (including for background traffic growth). This will increase to 16,500 in the Design Year (2039).

The development will not generate regular HGV traffic, therefore the % HGV on Monkstown Road will reduce to 1.2% following completion of the development.

8. PARKING AND SERVICING

8.1 Car Parking

Table 8.1 below sets out the car parking requirements based on the Dun Laoghaire Rathdown County Development Plan 2022-2028. The site intersects Parking Zones 2 and 3, and the Zone 2 standards have been adopted on the basis of the proximity to high quality public transport services.

Table 8.1 Car Parking Standards (County Development Plan)

	Number / Size	Unit	No.	Parking Standard (DLRCC Development Plan 2022 – 2028)	Total Required
Apartments	493	Studio/1-bed unit	291	1 per 1-bed	291
		2 bed unit	186	1 per 2-bed	186
		3 bed unit/ 3 Bed House	16	2 per 3-bed	32
Childcare Facility	540 sqm	-	540 sqm	1 per 60	9
Restaurant / Cafe	273 sqm	-	273 sqm	1 per 50	5
Total					**521**

However, Section 12.4.5.2 of the County Development Plan sets out circumstances under which these parking standards can be relaxed. These include:

1) Proximity to public transport services and level of service and interchange available. In this regard, it is noted that the proposed development is served by regular bus services along Monkstown Road in addition to the excellent accessibility afforded by the DART line at Salthill / Monkstown DART station.
2) Walking and cycling accessibility / permeability and any improvement to same. In this regard, it is noted that the proposed development intends to increase permeability with adjacent developments, subject to neighbour and County Council support.
3) Accessibility of car sharing and bike / e-bike sharing facilities. It is confirmed that both of these facilities will be available on site. In the first instance, 2 car share spaces will be reserved, and this will be increased as demand dictates. Bike / E-bike sharing will also be encouraged and facilitated.
4) Potential nature, scale and characteristics of the proposed development. The Greystar model is a unique campus style model for long-term rental accommodation. This model has worked successfully in many other countries but is relatively new to Ireland. The on-site management by the developer means a more serviced model, which lends itself to lower car ownership. The reduced parking provision proposed is in line with what has been successfully implemented at other similar Greystar sites overseas in similarly accessible locations.

With specific regard to Build to Rent developments, Section 12.4.5.6 states:

"For the purposes of the parking standards set out in Table 12.5 below Built to Rent development are considered to be residential apartments. Where a Built to

Rent scheme avails of lower car parking based on the nature of the use a condition should be attached to any grant of permission to state that planning permission shall be sought for a change of tenure to another tenure model following the period specified in the covenant."

It is confirmed that the developer is satisfied for such a condition to be attached to the planning permission, since it is wholly consistent with the developer's long-term vision for a sustainable, long-term, settled rental community on the site.

The proposed car parking provision for the proposed 491 units is 210 spaces. The proposed allocation is summarised below:

Table 8.2 Proposed Car Parking Provision

	Number / Size	Unit	No.	Proposed Provision	Total Proposed
Apartments	493	Studio/1-bed unit	291	0.29 per 1-bed	84
		2 bed unit	186	0.58 per 2-bed	108
		3 bed unit	16	1 per 3-bed	16
Childcare Facility	540 sqm	-	540 sqm	Staff parking only – drop-off facility only for external patrons	6
Restaurant / Cafe	273 sqm	-	273 sqm	8 (to cater for visitors also)	8
Total					**223**

In addition to the above, 6 car share spaces will be provided centrally within the site, and GoCar has committed to providing cars to service these spaces from completion occupation of the first phase of the development (see Appendix C of Travel Plan in Appendix E). The rental agreements will include a surcharge for the provision of a car parking space. Car parking spaces will be allocated on a first come / first served basis for prospective tenants. Basement car park access fobs will only be available to those having paid the surcharge. There is no suitable convenient on-street long-stay car parking in the vicinity, since on-street parking in Monkstown Village is pay and display. Therefore, it is not considered likely that the proposed development will give rise to additional car parking demand external to the site.

While the proposed development parking provision is considerably lower than the prevailing County Development Plan, it is consistent with the Design Standards for New Apartments published by the Department of Housing, Planning and Local Government in March 2018. Sections 4.19 and 4.20 of the "Sustainable Urban Housing: Design Standards for New Apartments", Government of Ireland, December 2020 state:

"In larger scale and higher density developments, comprising wholly of apartments in more central locations that are well served by public transport, the default policy is for car parking provision to be minimised, <u>substantially reduced</u> or wholly eliminated in certain circumstances. The policies above would be particularly applicable in <u>highly accessible areas</u> such as in or adjoining city cores or at a <u>confluence of public transport systems</u> such rail and bus stations located in close proximity.

These locations are most likely to be in cities, especially in or adjacent to (i.e. within 15 minutes walking distance of) city centres or centrally located employment

> *locations. This includes 10 minutes walking distance of DART, commuter rail or Luas stops [emphasis added] or within 5 minutes walking distance of high frequency (min 10 minute peak hour frequency) bus services."*

Section 4.21 states:

> *"In suburban/urban locations served by public transport or close to town centres or employment areas and particularly for housing schemes with more than 45 dwellings per hectare net (18 per acre), planning authorities must consider a reduced overall car parking standard [emphasis added] and apply an appropriate maximum car parking standard."*

The proposed development is wholly located within 5 minutes' walk of the Salthill / Monkstown DART station, thereby permitting a substantially reduced car parking standard to be applied. As outlined above, this is very much in keeping with the sustainability principles at the core of the Greystar Build-to-rent model.

8.2 Bicycle Parking

Table 8.3 below sets out the bicycle parking requirements based on the Dun Laoghaire Rathdown County Council Standards for Cycle Parking and associated Cycling Facilities for New Developments January 2018.

Table 8.3 DLRCC Bicycle Parking Standards (long-stay)

	Number / Size	**Unit**	**No.**	**DLRCC Parking Standard (long-stay)**	**Total Required**
Apartments	493	Studio / 1-bed unit	291	1 per unit	291
		2 bed unit	186	1 per unit	186
		3 bed unit/House	16	1 per unit	16
Childcare Facility	540 sqm	-	540 sqm	1 per 5 staff	2
Restaurant / Cafe	273 sqm	-	273 sqm	1 per 5 staff	2
Total					**497**

The Design Standards for New Apartments published by the Department of Housing, Planning and Local Government in March 2018 have a higher requirement for bicycle parking. These are summarised below.

Table 8.4 Department of Housing Bicycle Parking Standards (long-stay)

	Number /Size	Unit	No.	DoH Parking Standard (long-stay)	Total Required
Apartments	493	Studio/1-bed unit	291	1 per bedroom	291
		2 bed unit	186	1 per bedroom	372
		3 bed unit/House	16	1 per bedroom	48
Childcare Facility	540 sqm	-	540 sqm	1 per 5 staff	2
Restaurant / Cafe	273 sqm	-	273 sqm	1 per 5 staff	2
Total					**715**

711 secure long-stay bicycle parking spaces and 16 long term secure cargo bike spaces are proposed for residents and staff of the proposed development, giving a total of 727 bike parking spaces. This is 46% in excess of the required Dun Laoghaire Rathdown County Council Standards for Cycle Parking and associated Cycling Facilities for New Developments and in compliance with the Design Standards for New Apartments.

The Council standards also require short-term bicycle parking to be provided for visitors. The required standards are summarised below:

Table 8.5 DLRCC Bicycle Parking Standards (short-stay)

	Number / Size	Unit	No.	DLRCC Parking Standard (long-stay)	Total Required
Apartments	493	Studio/1-bed unit	291	1 per 5 units	58
		2 bed unit	186	1 per 5 units	37
		3 bed unit/House	16	1 per 5 units	4
Childcare Facility	540 sqm	-	540 sqm	1 per 10 children	3
Restaurant /Cafe	273 sqm	-	273 sqm	1 per 100 sqm	3
Total					**105**

The Design Standards for New Apartments published by the Department of Housing, Planning and Local Government in March 2018 have a higher requirement for visitor bicycle parking. These are summarised below.

Table 8.6 Department of Housing Bicycle Parking Standards (short-stay)

	Number / Size	Unit	No.	DoH Parking Standard (long-stay)	Total Required
Apartments	493	Studio/1-bed unit	291	1 per 2 units	145
		2 bed unit	186	1 per 2 units	93
		3 bed unit/House	16	1 per 2 units	8
Childcare Facility	540 sqm	-	540 sqm	1 per 10 children	3
Restaurant / Cafe	273 sqm	-	273 sqm	1 per 100 sqm	3
Total					**252**

256 short-stay bicycle parking spaces and four cargo bike spaces at surface level are proposed for visitors to the proposed development, which is more than double the DLRCC standard and 103% of the requirements of the Design Standards for New Apartments.

8.3 Motorbike Parking

In addition to the above, 8 motorbike spaces are proposed across the development.

8.4 Creche and Restaurant

The creche is primarily intended for use by residents of the development. However, it is expected that a small amount of external users in the area will avail of it. Staff parking only will be provided for the creche, and this will be within the basement car park. A drop-off facility is provided for external users. The anticipated usage of this is low, with 14 two-way user movements an hour (approx. 7 children being dropped by car).

In keeping with the principles of the development, very limited visitor car parking (8 spaces) will be provided on site to cater for occasional visitors and for the restaurant / café use. Access will be managed by the on-site 24 hour management / security team., and visitor spaces will need to be pre-booked. On-street paid parking is available in Monkstown Village and on Albany and Brighton Avenues for occasional car-borne visitors. Exceptional access for special vehicles for the mobility or visually impaired will be arranged by appointment through the on-site 24 hour management / security team.

8.5 Servicing and Loading

Appendix B of the Travel Plan included in Appendix E of this report sets out the GDV approach to managing deliveries to the residential users. The centrally managed approach to deliveries will minimise trips to and from the development by delivery companies. Service deliveries to the café / restaurant will be by regular appointment.

Refuse truck access will be managed by the 24/7 security team, as will taxis and occasional furniture removal trucks and other large deliveries. Visitor space allocation will be by appointment with the exception of the café / restaurant, which will again be managed by the 24/7 security team.

9. SUMMARY AND CONCLUSION

The summary of this Traffic Impact Assessment are as follows:

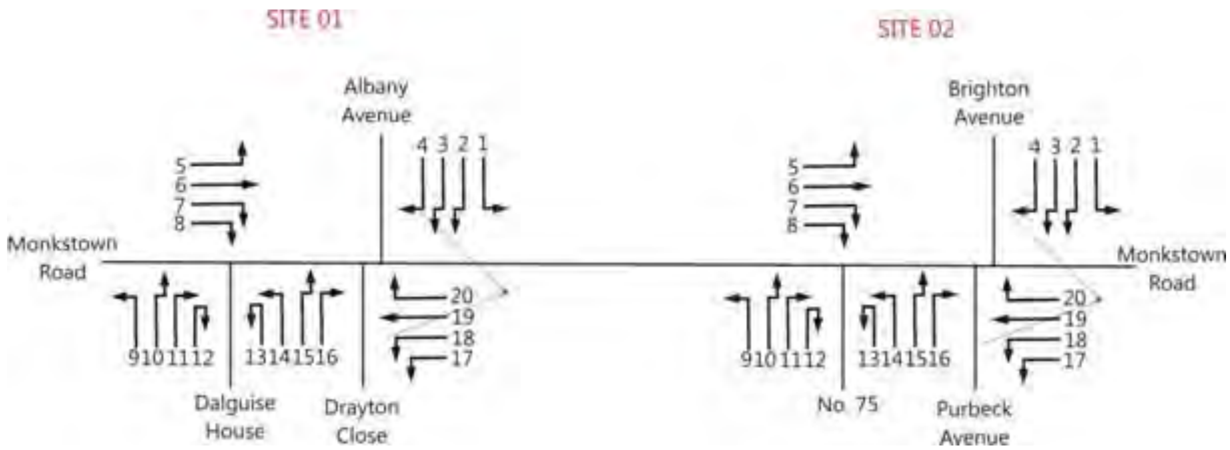
- The proposed development consists of 493 dwellings, a 540sqm childcare facility and a 273sqm restaurant/cafe.
- The site enjoys excellent accessibility by bus, DART and bicycle.
- Vehicular access to the proposed development will be via Purbeck (78%) and Dalguise House Access (22%).
- The unique nature of this managed campus development means that a reduced car parking standard is appropriate. It is proposed to provide 208 secure resident parking spaces. In addition, 6 car share spaces will be provided on site, and a car share operator has committed to servicing them. Non-resident cars will only be permitted to access the site by appointment and on a managed basis (including taxis and deliveries). There is also on-street pay and display parking in the general vicinity of the site.
- Bicycle parking will be provided well in excess of the required standards for both residents and visitors. More than 1 secure space per bedroom will be provided as well as 260 visitor spaces.
- Safe access is available at both proposed access locations and both junctions can operate well within their respective capacities. A worst-case scenario was assessed whereby all development traffic was loaded onto the busier of the two access junctions at Brighton Avenue / Purbeck and the junction was found to operate well within capacity under all scenarios assessed. Given the sustainability focussed and centrally managed nature of the build-to-rent development proposal, it is anticipated that actual car traffic generation will be lower than modelled.
- The receiving public transport network is high capacity and high frequency, and can cater for the proposed development.
- A Travel Plan has been prepared to inform the Management Company's approach to maximising the uptake of sustainable travel modes.

In conclusion, the proposed development will have negligible impact on the receiving transportation network, which has ample spare capacity to cater for the modest volumes of traffic generated.

APPENDIX A
TRAFFIC SURVEY DATA

Site Locations

Movement Numbering



Job number: TRA/22/068	Job Date: 8th March 2022	Drawing No: TRA/22/068-01	traffinomics ie
Client: Roughan & O'Donovan	Job Day: Tuesday	Author: SPW	

TRAFFINOMICS LIMITED

MONKSTOWN ROAD TRAFFIC COUNTS MARCH 2022
MANUAL CLASSIFIED JUNCTION TURNING COUNTS TRA/22/068

MONKSTOWN ROAD TRAFFIC COUNTS MARCH 2022
MANUAL CLASSIFIED JUNCTION TURNING COUNTS TRA/22/068

MONKSTO
MANUAL (

SITE: 01 DATE: 8th March 2022

LOCATION: Monkstown Road/Albany Avenue/Drayton Close/Dalguise House DAY: Tuesday

SITE: 01 DATE: 8th March 2022

LOCATION: Monkstown Road/Albany Avenue/Drayton Close/Dalguise House DAY: Tuesday

SITE:

LOCATION:

	MOVEMENT 1								MOVEMENT 2								MOVEMENT 3								MOVEMENT 4							
TIME	PCL	MCL	CAR	LGV	HGV	BUS	TOT	PCU	PCL	MCL	CAR	LGV	HGV	BUS	TOT	PCU	PCL	MCL	CAR	LGV	HGV	BUS	TOT	PCU	PCL	MCL	CAR	LGV	HGV	BUS	TOT	PCU
7:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	3	3
7:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	2	2
H/TOT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	0	0	0	5	5
8:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1
8:15	0	0	1	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	2	2
8:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45	0	0	1	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
H/TOT	0	0	2	0	0	0	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	3	3
9:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	2	2
9:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1
9:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1	0	0	0	0	0	0	0	0
9:45	0	0	1	1	0	0	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
H/TOT	0	0	1	1	0	0	2	2	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1	0	0	3	0	0	0	3	3
10:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	2	2
10:15	0	0	1	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
H/TOT	0	0	1	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	2	2
11:00	0	0	3	0	0	0	3	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1
11:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1
11:30	0	0	3	0	0	0	3	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	2
11:45	0	0	1	1	1	0	3	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1
H/TOT	0	0	7	1	1	0	9	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	1	0	4	5
12:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15	0	0	2	0	0	0	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1
12:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	2	2
12:45	0	0	2	0	0	0	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
H/TOT	0	0	4	0	0	0	4	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	3	3

	MOVEMENT 5								MOVEMENT 6								MOVEMENT 7								MOVEMENT 8									
TIME	PCL	MCL	CAR	LGV	HGV	BUS	TOT	PCU	PCL	MCL	CAR	LGV	HGV	BUS	TOT	PCU	PCL	MCL	CAR	LGV	HGV	BUS	TOT	PCU	PCL	MCL	CAR	LGV	HGV	BUS	TOT	PCU	TIME	PCL
7:00	0	0	0	0	0	0	0	0	1	0	39	12	3	3	58	63	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7:00	0
7:15	0	0	0	0	0	0	0	0	1	1	55	12	2	0	71	72	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7:15	0
7:30	0	0	0	0	0	0	0	0	1	0	44	13	2	2	62	65	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7:30	0
7:45	0	0	1	0	0	0	1	1	3	0	97	13	1	3	117	119	0	0	1	0	0	0	1	1	0	0	0	1	0	0	1	1	7:45	0
H/TOT	0	0	1	0	0	0	1	1	6	1	235	50	8	8	308	319	0	0	1	0	0	0	1	1	0	0	0	1	0	0	1	1	**H/TOT**	0
8:00	0	0	0	0	0	0	0	0	6	0	81	13	4	4	108	111	0	0	1	0	0	0	1	1	0	0	0	0	0	0	0	0	8:00	0
8:15	0	0	1	0	1	0	2	3	5	3	134	16	2	2	162	160	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1	8:15	0
8:30	0	0	0	0	0	0	0	0	4	1	151	11	0	2	169	167	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8:30	0
8:45	1	0	1	0	0	0	2	1	6	0	144	8	1	2	161	159	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1	8:45	0
H/TOT	1	0	2	0	1	0	4	4	21	4	510	48	7	10	600	598	0	0	1	0	0	0	1	1	0	0	2	0	0	0	2	2	**H/TOT**	0
9:00	0	0	0	0	0	0	0	0	4	0	143	20	3	3	173	176	0	0	0	1	0	0	1	1	0	0	0	0	0	0	0	0	9:00	0
9:15	0	0	0	0	0	0	0	0	3	1	103	7	2	4	120	123	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9:15	0
9:30	0	0	2	0	0	0	2	2	0	2	108	15	2	0	127	128	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1	9:30	0
9:45	1	0	0	0	0	0	1	0	0	1	85	14	4	3	107	113	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1	9:45	0
H/TOT	1	0	2	0	0	0	3	2	7	4	439	56	11	10	527	540	0	0	0	1	0	0	1	1	0	0	1	1	0	0	2	2	**H/TOT**	0
10:00	0	0	1	0	0	0	1	1	2	0	94	14	2	0	112	112	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	10:00	0
10:15	0	0	1	0	0	0	1	1	1	0	96	17	4	2	120	125	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	10:15	0
10:30	0	0	0	0	0	0	0	0	0	1	92	16	5	2	116	122	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	10:30	0
10:45	0	0	0	0	0	0	0	0	0	3	106	18	1	1	129	129	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	10:45	0
H/TOT	0	0	2	0	0	0	2	2	3	4	388	65	12	5	477	489	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**H/TOT**	0
11:00	0	0	2	0	0	0	2	2	0	1	90	13	3	0	107	109	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	11:00	0
11:15	0	0	1	2	0	0	3	3	0	2	95	15	5	2	119	125	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	11:15	0
11:30	0	0	0	0	0	0	0	0	0	0	99	13	4	1	117	122	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	11:30	0
11:45	0	0	0	0	0	0	0	0	0	4	98	10	3	0	115	116	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	11:45	0
H/TOT	0	0	3	2	0	0	5	5	0	7	382	51	15	3	458	472	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**H/TOT**	0
12:00	0	0	1	0	0	0	1	1	0	1	115	14	2	1	133	135	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	12:00	0
12:15	0	0	1	1	0	0	2	2	0	3	109	15	1	3	131	133	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	12:15	0
12:30	0	0	0	0	0	0	0	0	0	1	113	16	6	0	136	141	0	0	1	0	0	0	1	1	0	0	0	0	0	0	0	0	12:30	0
12:45	0	0	0	1	0	0	1	1	0	0	93	18	2	1	114	117	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	12:45	0
H/TOT	0	0	2	2	0	0	4	4	0	5	430	63	11	5	514	527	0	0	1	0	0	0	1	1	0	0	0	0	0	0	0	0	**H/TOT**	0

TRAFFINOMICS LIMITED

MONKSTOWN ROAD TRAFFIC COUNTS MARCH 2022
MANUAL CLASSIFIED JUNCTION TURNING COUNTS TRA/22/068

MONKSTO
MANUAL (

SITE: 01 DATE: 8th March 2022

LOCATION: Monkstown Road/Albany Avenue/Drayton Close/Dalguise House DAY: Tuesday

SITE: 01 DATE: 8th March 2022 SITE:

LOCATION: Monkstown Road/Albany Avenue/Drayton Close/Dalguise House DAY: Tuesday LOCATION:

	MOVEMENT 1								MOVEMENT 2								MOVEMENT 3								MOVEMENT 4							
TIME	PCL	MCL	CAR	LGV	HGV	BUS	TOT	PCU	PCL	MCL	CAR	LGV	HGV	BUS	TOT	PCU	PCL	MCL	CAR	LGV	HGV	BUS	TOT	PCU	PCL	MCL	CAR	LGV	HGV	BUS	TOT	PCU
13:00	0	0	3	0	0	0	3	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13:15	0	0	1	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	2	2
13:30	0	0	2	0	0	0	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13:45	0	0	1	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	2	2
H/TOT	0	0	7	0	0	0	7	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	1	0	0	4	4
14:00	0	0	2	0	0	0	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1
14:15	0	0	1	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14:30	0	0	3	0	0	0	3	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	2	2
14:45	0	0	1	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	3	3
H/TOT	0	0	7	0	0	0	7	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6	0	0	0	6	6
15:00	0	0	1	1	0	0	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	2	2
15:15	0	0	3	0	0	0	3	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1
15:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1
15:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
H/TOT	0	0	4	1	0	0	5	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	0	0	4	4
16:00	0	0	1	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	2	2
16:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1
16:30	0	0	1	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	3	3
16:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1
H/TOT	0	0	2	0	0	0	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7	0	0	0	7	7
17:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:30	0	0	1	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0
17:45	0	0	2	0	0	0	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	3	0	0	0	4	3
H/TOT	0	0	3	0	0	0	3	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	3	0	0	0	5	3
18:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	2	0	0	3	3
18:15	0	0	0	1	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	2	2
18:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	2	2
18:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
H/TOT	0	0	0	1	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	2	0	0	7	7
P/TOT	0	0	38	4	1	0	43	44	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1	2	0	47	3	1	0	53	52

	MOVEMENT 5								MOVEMENT 6								MOVEMENT 7								MOVEMENT 8									
TIME	PCL	MCL	CAR	LGV	HGV	BUS	TOT	PCU	PCL	MCL	CAR	LGV	HGV	BUS	TOT	PCU	PCL	MCL	CAR	LGV	HGV	BUS	TOT	PCU	PCL	MCL	CAR	LGV	HGV	BUS	TOT	PCU	**TIME**	PCL
13:00	0	0	0	0	0	0	0	0	1	2	103	19	3	3	131	135	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	13:00	0
13:15	0	0	1	0	0	0	1	1	1	1	132	18	3	2	157	161	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	13:15	0
13:30	0	0	2	0	0	0	2	2	0	1	107	10	5	0	123	127	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	13:30	0
13:45	0	0	0	0	0	0	0	0	0	1	107	13	1	3	125	128	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	13:45	0
H/TOT	0	0	3	0	0	0	3	3	2	5	449	60	12	8	536	551	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**H/TOT**	0
14:00	0	0	0	0	0	0	0	0	0	2	105	11	2	0	120	121	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	14:00	0
14:15	0	0	0	1	0	0	1	1	15	3	134	11	0	3	166	155	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	14:15	0
14:30	0	0	1	0	0	0	1	1	5	1	173	12	2	1	194	192	0	0	1	0	0	0	1	1	0	0	1	0	0	0	1	1	14:30	0
14:45	0	0	1	0	0	0	1	1	2	2	111	13	1	2	131	131	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	14:45	0
H/TOT	0	0	2	1	0	0	3	3	22	8	523	47	5	6	611	600	0	0	1	0	0	0	1	1	0	0	1	0	0	0	1	1	**H/TOT**	0
15:00	0	0	2	0	0	0	2	2	2	1	125	9	2	5	144	149	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	15:00	0
15:15	0	0	1	0	0	0	1	1	4	1	132	10	0	2	149	147	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	15:15	0
15:30	0	0	0	0	0	0	0	0	3	3	143	10	2	3	164	165	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	15:30	0
15:45	0	0	1	0	0	0	1	1	4	1	140	11	3	0	159	158	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	15:45	0
H/TOT	0	0	4	0	0	0	4	4	13	6	540	40	7	10	616	619	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**H/TOT**	0
16:00	0	0	1	0	0	0	1	1	2	2	132	8	0	3	147	147	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	16:00	0
16:15	0	0	2	0	0	0	2	2	6	2	136	8	1	2	155	152	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	16:15	0
16:30	0	0	0	0	0	0	0	0	1	1	136	16	2	1	157	159	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	16:30	0
16:45	0	0	2	0	0	0	2	2	2	1	151	15	0	1	170	169	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	16:45	0
H/TOT	0	0	5	0	0	0	5	5	11	6	555	47	3	7	629	627	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**H/TOT**	0
17:00	0	0	0	0	0	0	0	0	5	5	134	9	0	1	154	148	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	17:00	0
17:15	0	0	0	0	0	0	0	0	3	3	141	7	0	1	155	152	0	0	1	0	0	0	1	1	0	0	0	0	0	0	0	0	17:15	0
17:30	0	0	2	0	0	0	2	2	5	2	162	6	1	2	178	176	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	17:30	0
17:45	0	0	0	0	0	0	0	0	0	2	135	3	1	0	141	141	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	17:45	0
H/TOT	0	0	2	0	0	0	2	2	13	12	572	25	2	4	628	616	0	0	1	0	0	0	1	1	0	0	0	0	0	0	0	0	**H/TOT**	0
18:00	0	0	0	0	0	0	0	0	6	2	127	5	0	1	141	136	0	0	1	0	0	0	1	1	0	0	0	0	0	0	0	0	18:00	0
18:15	0	0	0	1	0	0	1	1	6	4	137	4	0	3	154	150	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1	18:15	0
18:30	0	0	1	0	0	0	1	1	2	1	152	5	0	0	160	158	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	18:30	0
18:45	0	0	2	0	0	0	2	2	2	2	122	4	2	1	133	133	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	18:45	0
H/TOT	0	0	3	1	0	0	4	4	16	9	538	18	2	5	588	577	0	0	1	0	0	0	1	1	0	0	1	0	0	0	1	1	**H/TOT**	0
P/TOT	2	0	31	6	1	0	40	39	114	71	5561	570	95	81	6492	6534	0	0	6	1	0	0	7	7	0	0	5	2	0	0	7	7	**P/TOT**	0

01

Monkstown Road/Albany Avenue/Drayton Close/Dalguise House

TRAFFINOMICS LIMITED

DATE: 8th March 2022 SITE: 01

DAY: Tuesday LOCATION: Monkstown Road/Albany Avenue/Drayton Close/Dalguise House

MARCH 2022 MONKSTOWN ROAD
TRA/22/068 MANUAL CLASSIFIED

DATE: 8th March 2022 SITE: 01

DAY: Tuesday LOCATION: Monks

TIME	MOVEMENT 9 MCL	CAR	LGV	HGV	BUS	TOT	PCU	MOVEMENT 10 PCL	MCL	CAR	LGV	HGV	BUS	TOT	PCU	MOVEMENT 11 PCL	MCL	CAR	LGV	HGV	BUS	TOT	PCU	MOVEMENT 12 PCL	MCL	CAR	LGV	HGV	BUS	TOT	PCU
7:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
H/TOT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00	0	1	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1	0	0	0	0	0	0	0	0
8:15	0	1	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1	0	0	0	0	0	0	0	0
H/TOT	0	2	0	0	0	2	2	0	0	0	0	0	0	0	0	0	0	2	0	0	0	2	2	0	0	0	0	0	0	0	0
9:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:30	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:45	0	0	1	0	0	1	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1	0	0	0	0	0	0	0	0
H/TOT	0	0	1	0	0	1	1	0	0	1	0	0	0	1	1	0	0	1	0	0	0	1	1	0	0	0	0	0	0	0	0
10:00	0	2	0	0	0	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:15	0	0	1	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
H/TOT	0	2	1	0	0	3	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
H/TOT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1	0	0	0	0	0	0	0	0
12:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45	0	0	0	1	0	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
H/TOT	0	0	0	1	0	1	2	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1	0	0	0	0	0	0	0	0

TIME	MOVEMENT 13 PCL	MCL	CAR	LGV	HGV	BUS	TOT	PCU	MOVEMENT 14 PCL	MCL	CAR	LGV	HGV	BUS	TOT	PCU	MOVEMENT 15 PCL	MCL	CAR	LGV	HGV	BUS	TOT	PCU	MOVEMENT 16 PCL	MCL	CAR	LGV	HGV	BUS	TOT	PCU	TIME	MOVEMENT PCL	MCL	CAR	LGV
7:00	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7:00	0	0	0	1
7:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7:15	0	0	0	0
7:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7:30	0	0	0	0
7:45	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7:45	0	0	0	0
H/TOT	0	0	0	0	0	0	0	0	0	0	2	0	0	0	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**H/TOT**	0	0	0	1
8:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8:00	0	0	0	0
8:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1	8:15	0	0	0	0
8:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1	8:30	0	0	0	0
8:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8:45	0	0	0	1
H/TOT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	2	2	**H/TOT**	0	0	0	1
9:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9:00	0	0	0	0
9:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1	9:15	0	0	0	0
9:30	0	0	1	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9:30	0	0	1	0
9:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9:45	0	0	0	1
H/TOT	0	0	1	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1	**H/TOT**	0	0	1	1
10:00	0	0	0	0	0	0	0	0	0	0	2	0	0	0	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	10:00	0	0	1	0
10:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	2	10:15	0	0	0	0
10:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1	10:30	0	0	0	0
10:45	0	0	0	0	0	0	0	0	1	0	1	0	0	0	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	10:45	1	0	0	1
H/TOT	0	0	0	0	0	0	0	0	1	0	3	0	0	0	4	3	0	0	0	0	0	0	0	0	0	0	0	1	1	0	2	3	**H/TOT**	1	0	1	1
11:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	11:00	0	0	0	0
11:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	11:15	0	0	0	0
11:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	11:30	0	0	0	0
11:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1	0	0	0	0	0	0	0	0	11:45	0	0	1	0
H/TOT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1	0	0	0	0	0	0	0	0	**H/TOT**	0	0	1	0
12:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	12:00	0	0	1	0
12:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1	12:15	0	0	0	0
12:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	12:30	0	0	0	0
12:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	12:45	0	0	0	0
H/TOT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1	**H/TOT**	0	0	1	0

01 DATE: 8th March 2022 SITE: 01 DATE: 8th March 2022 SITE: 01

: Monkstown Road/Albany Avenue/Drayton Close/Dalguise House DAY: Tuesday LOCATION: Monkstown Road/Albany Avenue/Drayton Close/Dalguise House DAY: Tuesday LOCATION: Monks

	MOVEMENT 9							MOVEMENT 10								MOVEMENT 11								MOVEMENT 12							
TIME	MCL	CAR	LGV	HGV	BUS	TOT	PCU	PCL	MCL	CAR	LGV	HGV	BUS	TOT	PCU	PCL	MCL	CAR	LGV	HGV	BUS	TOT	PCU	PCL	MCL	CAR	LGV	HGV	BUS	TOT	PCU
13:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13:30	0	1	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13:45	0	0	1	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
H/TOT	0	1	1	0	0	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
H/TOT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
H/TOT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:15	0	0	1	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:30	0	0	1	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
H/TOT	0	0	2	0	0	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
H/TOT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18:00	0	1	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18:45	0	1	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
H/TOT	0	2	0	0	0	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
P/TOT	0	7	5	1	0	13	14	0	0	1	0	0	0	1	1	0	0	4	0	0	0	4	4	0	0	0	0	0	0	0	0

	MOVEMENT 13								MOVEMENT 14								MOVEMENT 15								MOVEMENT 16								MOVEMENT			
TIME	PCL	MCL	CAR	LGV	HGV	BUS	TOT	PCU	PCL	MCL	CAR	LGV	HGV	BUS	TOT	PCU	PCL	MCL	CAR	LGV	HGV	BUS	TOT	PCU	PCL	MCL	CAR	LGV	HGV	BUS	TOT	PCU	PCL	MCL	CAR	LGV
13:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
13:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
H/TOT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
14:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14:30	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14:45	0	0	0	0	0	0	0	0	0	0	1	1	0	0	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
H/TOT	0	0	0	0	0	0	0	0	0	0	2	1	0	0	3	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
15:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
15:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
15:30	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
H/TOT	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0
16:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
16:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
16:45	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
H/TOT	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0
17:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:15	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
17:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
17:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1	0	0	0	0
H/TOT	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1	0	0	2	0
18:00	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18:45	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
H/TOT	0	0	0	0	0	0	0	0	0	0	2	0	0	0	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
P/TOT	0	0	1	0	0	0	1	1	1	0	11	3	0	0	15	14	0	0	1	0	0	0	1	1	0	0	3	3	1	0	7	8	1	0	11	5

TRAFFINOMICS LIMITED

) TRAFFIC COUNTS **MARCH 2022**

) JUNCTION TURNING COUNTS **TRA/22/068**

DATE: 8th March 2022

town Road/Albany Avenue/Drayton Close/Dalguise House DAY: Tuesday

' 17				MOVEMENT 18								MOVEMENT 19								MOVEMENT 20								PCU's Through Junction
HGV	BUS	TOT	PCU	PCL	MCL	CAR	LGV	HGV	BUS	TOT	PCU	PCL	MCL	CAR	LGV	HGV	BUS	TOT	PCU	PCL	MCL	CAR	LGV	HGV	BUS	TOT	PCU	
0	0	1	1	0	0	0	0	0	0	0	0	2	1	72	7	0	1	83	82	0	0	0	0	0	0	0	0	147
0	0	0	0	0	0	0	0	0	0	0	0	4	1	94	9	0	2	110	108	0	0	0	0	0	0	0	0	180
0	0	0	0	0	0	0	1	0	0	1	1	0	1	115	7	1	1	125	126	0	0	1	0	0	0	1	1	197
0	0	0	0	0	0	0	0	0	0	0	0	2	0	137	15	2	2	158	160	0	0	2	0	0	0	2	2	287
0	0	1	1	0	0	0	1	0	0	1	1	8	3	418	38	3	6	476	477	0	0	3	0	0	0	3	3	810
0	0	0	0	0	0	1	1	0	0	2	2	11	3	134	11	1	3	163	156	1	0	0	0	0	0	1	0	274
0	0	0	0	0	0	0	0	0	0	0	0	11	1	93	6	1	1	113	106	0	0	1	0	0	1	2	3	278
0	0	0	0	0	0	0	0	0	0	0	0	16	1	92	10	2	2	123	114	0	0	0	1	0	0	1	1	283
0	0	1	1	0	0	0	0	0	0	0	0	6	2	85	3	3	1	100	98	0	0	2	0	0	0	2	2	264
0	0	1	1	0	0	1	1	0	0	2	2	44	7	404	30	7	7	499	474	1	0	3	1	0	1	6	6	1099
0	0	0	0	0	0	0	0	0	0	0	0	6	0	97	8	1	2	114	112	0	0	1	0	0	0	1	1	292
0	0	0	0	0	0	0	0	0	0	0	0	3	0	98	13	2	3	119	122	0	0	1	0	0	0	1	1	248
0	0	1	1	0	0	0	0	0	0	0	0	3	0	96	6	1	4	110	113	0	0	1	0	0	0	1	1	248
0	0	1	1	0	0	0	0	0	0	0	0	2	0	88	11	1	2	104	105	0	0	0	0	0	0	0	0	225
0	0	2	2	0	0	0	0	0	0	0	0	14	0	379	38	5	11	447	452	0	0	3	0	0	0	3	3	1013
0	0	1	1	0	0	0	0	0	0	0	0	2	2	75	12	1	2	94	94	0	0	3	0	0	0	3	3	218
1	0	1	2	0	0	0	1	0	0	1	1	0	2	73	11	1	1	88	89	0	0	2	0	0	0	2	2	224
0	0	0	0	0	0	0	1	0	0	1	1	1	1	82	7	7	1	99	106	0	0	0	1	0	0	1	1	231
0	0	2	1	0	0	0	0	0	0	0	0	1	0	85	13	1	1	101	102	0	0	1	0	0	0	1	1	235
1	0	4	4	0	0	0	2	0	0	2	2	4	5	315	43	10	5	382	391	0	0	6	1	0	0	7	7	907
0	0	0	0	0	0	0	0	0	0	0	0	0	1	68	10	5	2	86	92	0	0	1	0	0	0	1	1	209
0	0	0	0	0	0	0	0	0	0	0	0	0	0	103	7	3	1	114	118	0	0	0	0	0	0	0	0	247
0	0	0	0	0	0	0	0	0	0	0	0	3	1	67	7	6	2	86	91	0	0	1	0	0	0	1	1	219
0	0	1	1	0	0	0	0	0	0	0	0	0	1	86	15	1	1	104	105	0	0	0	0	0	0	0	0	228
0	0	1	1	0	0	0	0	0	0	0	0	3	3	324	39	15	6	390	407	0	0	2	0	0	0	2	2	903
0	0	1	1	0	0	0	0	0	0	0	0	1	1	102	16	1	1	122	123	0	0	0	0	0	0	0	0	261
0	0	0	0	0	0	0	0	0	0	0	0	1	1	96	7	3	1	109	112	0	0	0	0	0	0	0	0	251
0	0	0	0	0	0	0	0	1	0	1	2	1	0	83	13	3	1	101	104	0	0	0	0	0	0	0	0	251
0	0	0	0	0	0	0	0	0	0	0	0	1	2	119	11	4	0	137	139	0	0	5	0	0	0	5	5	266
0	0	1	1	0	0	0	0	1	0	1	2	4	4	400	47	11	3	469	477	0	0	5	0	0	0	5	5	1028

TRAFFINOMICS LIMITED

) TRAFFIC COUNTS **MARCH 2022**

) JUNCTION TURNING COUNTS **TRA/22/068**

DATE: 8th March 2022

town Road/Albany Avenue/Drayton Close/Dalguise House DAY: Tuesday

' 17				MOVEMENT 18								MOVEMENT 19								MOVEMENT 20								PCU's Through Junction
HGV	BUS	TOT	PCU	PCL	MCL	CAR	LGV	HGV	BUS	TOT	PCU	PCL	MCL	CAR	LGV	HGV	BUS	TOT	PCU	PCL	MCL	CAR	LGV	HGV	BUS	TOT	PCU	
0	0	1	1	0	0	0	0	0	0	0	0	1	1	98	11	2	3	116	120	0	0	0	1	0	0	1	1	260
0	0	0	0	0	0	0	0	0	0	0	0	1	0	77	19	2	1	100	102	0	0	1	0	0	0	1	1	268
0	0	0	0	0	0	0	0	0	0	0	0	0	2	92	13	2	2	111	114	0	0	0	0	0	0	0	0	246
0	0	0	0	0	0	0	0	0	0	0	0	0	0	104	8	2	1	115	118	0	0	2	0	0	0	2	2	252
0	0	1	1	0	0	0	0	0	0	0	0	2	3	371	51	8	7	442	454	0	0	3	1	0	0	4	4	1026
0	0	0	0	0	0	0	0	0	0	0	0	3	1	118	15	2	2	141	142	0	0	1	0	0	0	1	1	267
0	0	0	0	0	0	0	0	0	0	0	0	2	2	85	11	4	2	106	109	0	0	1	0	0	0	1	1	267
0	0	0	0	0	0	0	0	0	0	0	0	1	2	86	16	1	1	107	107	0	0	4	0	0	0	4	4	312
0	0	1	1	0	0	0	0	0	0	0	0	1	0	87	5	1	1	95	96	0	0	0	0	0	0	0	0	235
0	0	1	1	0	0	0	0	0	0	0	0	7	5	376	47	8	6	449	454	0	0	6	0	0	0	6	6	1082
0	0	1	1	0	0	0	0	0	0	0	0	3	1	95	8	2	3	112	114	0	0	1	0	0	0	1	1	271
0	0	1	1	0	0	0	0	0	0	0	0	2	2	92	11	1	2	110	110	0	0	2	0	0	0	2	2	265
0	0	0	0	0	0	0	0	0	0	0	0	3	1	92	9	1	1	107	106	0	0	3	0	0	0	3	3	277
0	0	0	0	0	0	0	0	0	0	0	0	1	1	102	12	0	0	116	115	0	0	0	0	0	0	0	0	274
0	0	2	2	0	0	0	0	0	0	0	0	9	5	381	40	4	6	445	445	0	0	6	0	0	0	6	6	1087
0	0	1	1	0	0	0	0	0	0	0	0	1	0	92	13	1	2	109	111	0	0	3	0	0	0	3	3	266
0	0	0	0	0	0	0	0	0	0	0	0	1	1	93	11	0	0	106	105	0	0	0	0	0	0	0	0	261
0	0	1	1	0	0	0	0	0	0	0	0	3	0	93	21	0	2	119	119	0	0	1	0	0	0	1	1	284
0	0	0	0	0	0	0	0	0	0	0	0	2	2	99	10	0	1	114	112	0	0	2	0	0	0	2	2	287
0	0	2	2	0	0	0	0	0	0	0	0	7	3	377	55	1	5	448	447	0	0	6	0	0	0	6	6	1098
0	0	0	0	0	0	0	0	0	0	0	0	2	2	120	8	0	1	133	131	0	0	2	0	0	0	2	2	281
0	0	1	1	0	0	0	0	0	0	0	0	3	2	104	9	0	3	121	120	0	0	0	0	0	0	0	0	275
0	0	1	1	0	0	0	0	0	0	0	0	2	1	102	9	0	1	115	114	0	0	1	0	0	0	1	1	295
0	0	0	0	0	0	0	0	0	0	0	0	4	1	88	3	1	1	98	96	0	0	1	0	0	0	1	1	244
0	0	2	2	0	0	0	0	0	0	0	0	11	6	414	29	1	6	467	462	0	0	4	0	0	0	4	4	1095
0	0	0	0	0	0	0	0	0	0	0	0	6	4	97	4	3	0	114	110	0	0	1	0	0	0	1	1	253
0	0	0	0	0	0	1	0	0	0	1	1	0	0	101	9	1	3	114	118	0	0	0	0	0	0	0	0	274
0	0	0	0	0	0	0	0	0	0	0	0	2	5	71	8	0	2	88	85	0	0	0	0	0	0	0	0	246
0	0	0	0	0	0	0	0	0	0	0	0	4	2	88	11	0	1	106	103	0	0	1	0	0	0	1	1	241
0	0	0	0	0	0	1	0	0	0	1	1	12	11	357	32	4	6	422	416	0	0	2	0	0	0	2	2	1014
1	0	18	18	0	0	2	4	1	0	7	8	125	55	4516	489	77	74	5336	5354	1	0	49	3	0	1	54	54	12163

TRAFFINOMICS LIMITED

MONKSTOWN ROAD TRAFFIC COUNTS MARCH 2022 **MONKSTOWN ROAD TRAFFIC COUNTS** MARCH 2022 **MONKSTO**

MANUAL CLASSIFIED JUNCTION TURNING COUNTS TRA/22/068 **MANUAL CLASSIFIED JUNCTION TURNING COUNTS** TRA/22/068 **MANUAL (**

SITE: 02 DATE: 8th March 2022 SITE: 02 DATE: 8th March 2022 SITE:

LOCATION: Monkstown Road/Brighton Avenue/Purbeck Avenue/No. 75 DAY: Tuesday LOCATION: Monkstown Road/Brighton Avenue/Purbeck Avenue/No. 75 DAY: Tuesday LOCATION:

	MOVEMENT 1								MOVEMENT 2								MOVEMENT 3								MOVEMENT 4							
TIME	PCL	MCL	CAR	LGV	HGV	BUS	TOT	PCU	PCL	MCL	CAR	LGV	HGV	BUS	TOT	PCU	PCL	MCL	CAR	LGV	HGV	BUS	TOT	PCU	PCL	MCL	CAR	LGV	HGV	BUS	TOT	PCU
7:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15	0	0	1	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30	0	0	0	0	1	0	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45	0	0	0	1	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	0	0	4	4
H/TOT	0	0	1	1	1	0	3	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	0	0	4	4
8:00	0	0	2	0	0	0	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1
8:15	0	0	1	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	1	0	0	4	4
8:30	2	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1
8:45	0	0	0	1	1	0	2	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
H/TOT	2	0	3	1	1	0	7	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	3	0	0	6	6
9:00	1	0	4	0	0	0	5	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:15	0	0	3	2	0	0	5	5	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	2	2
9:30	0	0	1	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	0	0	4	4
9:45	0	0	1	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	2	2
H/TOT	1	0	9	2	0	0	12	11	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	8	0	0	0	8	8
10:00	0	0	3	1	1	0	5	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	2	2
10:15	0	0	2	2	1	0	5	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	3	0	0	4	4
10:30	0	0	6	1	0	0	7	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	1	0	0	4	4
10:45	0	0	7	0	0	0	7	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	11	1	0	0	12	12
H/TOT	0	0	18	4	2	0	24	26	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	16	6	0	0	22	22
11:00	0	0	6	1	0	0	7	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	4	0	1	0	6	6
11:15	0	0	3	2	0	0	5	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	0	0	0	5	5
11:30	0	0	12	2	0	0	14	14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1
11:45	0	0	3	0	1	0	4	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	1	0	0	3	3
H/TOT	0	0	24	5	1	0	30	31	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	12	1	1	0	15	15
12:00	0	0	10	1	1	0	12	13	0	0	0	1	0	0	1	1	0	0	0	0	0	0	0	0	0	0	2	2	0	0	4	4
12:15	0	0	6	0	0	0	6	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	1	0	0	4	4
12:30	0	0	5	0	0	0	5	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	4	1	0	6	7
12:45	0	0	6	1	0	0	7	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	3	0	0	8	8
H/TOT	0	0	27	2	1	0	30	31	0	0	0	1	0	0	1	1	0	0	0	0	0	0	0	0	0	0	11	10	1	0	22	23

	MOVEMENT 5								MOVEMENT 6								MOVEMENT 7								MOVEMENT 8									
TIME	PCL	MCL	CAR	LGV	HGV	BUS	TOT	PCU	PCL	MCL	CAR	LGV	HGV	BUS	TOT	PCU	PCL	MCL	CAR	LGV	HGV	BUS	TOT	PCU	PCL	MCL	CAR	LGV	HGV	BUS	TOT	PCU	**TIME**	PCL
7:00	0	0	0	0	0	0	0	0	1	0	39	12	3	3	58	63	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7:00	0
7:15	0	0	0	0	0	0	0	0	1	1	55	12	2	0	71	72	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7:15	0
7:30	0	0	0	0	0	0	0	0	1	0	44	13	2	2	62	65	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7:30	0
7:45	0	0	0	0	0	0	0	0	3	0	97	13	1	3	117	119	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7:45	0
H/TOT	0	0	0	0	0	0	0	0	6	1	235	50	8	8	308	319	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**H/TOT**	0
8:00	0	0	0	0	0	0	0	0	6	0	82	13	4	4	109	112	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8:00	0
8:15	0	0	0	0	0	0	0	0	5	3	135	16	2	2	163	161	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1	8:15	0
8:30	0	0	0	0	0	0	0	0	4	1	150	12	0	2	169	167	0	0	1	0	0	0	1	1	0	0	0	0	0	0	0	0	8:30	0
8:45	0	0	0	0	0	0	0	0	6	0	146	8	1	2	163	161	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8:45	0
H/TOT	0	0	0	0	0	0	0	0	21	4	513	49	7	10	604	602	0	0	1	0	0	0	1	1	0	0	1	0	0	0	1	1	**H/TOT**	0
9:00	0	0	0	0	0	0	0	0	4	0	143	20	3	3	173	176	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9:00	0
9:15	0	0	1	0	0	0	1	1	3	1	102	7	2	4	119	122	0	0	0	1	0	0	1	1	0	0	0	0	0	0	0	0	9:15	0
9:30	0	0	0	0	0	0	0	0	0	2	107	15	2	0	126	127	0	0	1	0	0	0	1	1	0	0	0	0	0	0	0	0	9:30	0
9:45	0	0	0	0	0	0	0	0	0	1	87	15	4	3	110	116	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9:45	0
H/TOT	0	0	1	0	0	0	1	1	7	4	439	57	11	10	528	541	0	0	1	1	0	0	2	2	0	0	0	0	0	0	0	0	**H/TOT**	0
10:00	0	0	0	0	0	0	0	0	2	0	94	14	2	0	112	112	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	10:00	0
10:15	0	0	0	0	0	0	0	0	1	0	97	17	4	2	121	126	0	0	0	0	1	0	1	2	0	0	0	0	0	0	0	0	10:15	0
10:30	0	0	0	0	0	0	0	0	0	1	92	17	5	2	117	123	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	10:30	0
10:45	0	0	1	0	0	0	1	1	0	3	105	18	1	1	128	128	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	10:45	0
H/TOT	0	0	1	0	0	0	1	1	3	4	388	66	12	5	478	490	0	0	0	0	1	0	1	2	0	0	0	0	0	0	0	0	**H/TOT**	0
11:00	0	0	0	0	0	0	0	0	0	1	93	13	3	0	110	112	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	11:00	0
11:15	0	0	2	0	0	0	2	2	0	2	93	15	5	2	117	123	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	11:15	0
11:30	0	0	1	0	0	0	1	1	0	0	101	13	4	1	119	124	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	11:30	0
11:45	0	0	0	0	0	0	0	0	0	4	99	11	4	0	118	120	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	11:45	0
H/TOT	0	0	3	0	0	0	3	3	0	7	386	52	16	3	464	479	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**H/TOT**	0
12:00	0	0	1	0	0	0	1	1	0	1	113	14	2	1	131	133	0	0	1	0	0	0	1	1	0	0	1	0	0	0	1	1	12:00	0
12:15	0	0	0	0	0	0	0	0	0	3	112	15	1	3	134	136	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	12:15	0
12:30	0	0	0	0	0	0	0	0	0	1	113	16	6	0	136	141	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	12:30	0
12:45	0	0	0	0	0	0	0	0	0	0	95	18	2	1	116	119	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	12:45	0
H/TOT	0	0	1	0	0	0	1	1	0	5	433	63	11	5	517	530	0	0	1	0	0	0	1	1	0	0	1	0	0	0	1	1	**H/TOT**	0

MONKSTOWN ROAD TRAFFIC COUNTS **MARCH 2022**

MANUAL CLASSIFIED JUNCTION TURNING COUNTS **TRA/22/068**

SITE: 02 DATE: 8th March 2022

LOCATION: Monkstown Road/Brighton Avenue/Purbeck Avenue/No. 75 DAY: Tuesday

TRAFFINOMICS LIMITED

MONKSTOWN ROAD TRAFFIC COUNTS **MARCH 2022** **MONKSTO**

MANUAL CLASSIFIED JUNCTION TURNING COUNTS **TRA/22/068** **MANUAL (**

SITE: 02 DATE: 8th March 2022 SITE:

LOCATION: Monkstown Road/Brighton Avenue/Purbeck Avenue/No. 75 DAY: Tuesday LOCATION:

TIME	MOVEMENT 1								MOVEMENT 2								MOVEMENT 3								MOVEMENT 4							
	PCL	MCL	CAR	LGV	HGV	BUS	TOT	PCU	PCL	MCL	CAR	LGV	HGV	BUS	TOT	PCU	PCL	MCL	CAR	LGV	HGV	BUS	TOT	PCU	PCL	MCL	CAR	LGV	HGV	BUS	TOT	PCU
13:00	0	0	3	0	0	0	3	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	2	1	0	0	4	3
13:15	0	0	6	2	0	0	8	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8	1	0	0	9	9
13:30	0	0	4	1	0	0	5	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	1	0	0	3	3
13:45	0	0	3	2	0	0	5	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	3	3
H/TOT	0	0	16	5	0	0	21	21	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	12	6	0	0	19	18
14:00	0	0	4	1	0	0	5	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	2	0	0	4	3
14:15	0	0	7	0	1	0	8	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14:30	0	0	3	0	0	0	3	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	2	2
14:45	1	0	7	0	0	0	8	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	1	0	0	5	5
H/TOT	1	0	21	1	1	0	24	24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	7	3	0	0	11	10
15:00	0	0	4	0	0	0	4	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	2	0	0	6	6
15:15	0	0	3	0	0	0	3	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	1	0	0	6	6
15:30	0	0	4	0	0	0	4	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	3	3
15:45	0	0	3	0	0	0	3	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	2	2
H/TOT	0	0	14	0	0	0	14	14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	14	3	0	0	17	17
16:00	0	0	7	0	0	0	7	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6	1	0	0	7	7
16:15	0	0	8	1	0	0	9	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	2	2
16:30	0	0	6	2	0	0	8	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	1	0	0	4	4
16:45	0	0	6	0	0	0	6	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	2	2
H/TOT	0	0	27	3	0	0	30	30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	13	2	0	0	15	15
17:00	0	0	3	0	0	0	3	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	2	2
17:15	0	0	0	1	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6	0	0	0	6	6
17:30	0	0	2	1	0	0	3	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	10	1	0	0	11	11
17:45	0	0	3	0	0	0	3	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	0	0	4	4
H/TOT	0	0	8	2	0	0	10	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	22	1	0	0	23	23
18:00	0	0	5	1	0	0	6	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	0	0	0	5	5
18:15	0	0	4	0	0	0	4	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8	0	0	0	8	8
18:30	0	0	4	2	0	0	6	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	3	1	0	0	5	4
18:45	0	1	7	1	0	0	9	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	5	4	0	0	10	9
H/TOT	0	1	20	4	0	0	25	24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	21	5	0	0	28	27
P/TOT	4	1	188	30	7	0	230	233	1	0	0	1	0	0	2	1	0	0	0	0	0	0	0	0	1	4	143	40	2	0	190	189

TIME	MOVEMENT 5								MOVEMENT 6								MOVEMENT 7								MOVEMENT 8								TIME	
	PCL	MCL	CAR	LGV	HGV	BUS	TOT	PCU	PCL	MCL	CAR	LGV	HGV	BUS	TOT	PCU	PCL	MCL	CAR	LGV	HGV	BUS	TOT	PCU	PCL	MCL	CAR	LGV	HGV	BUS	TOT	PCU		PCL
13:00	0	0	0	0	0	0	0	0	1	2	106	19	3	3	134	138	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	13:00	0
13:15	0	0	1	0	0	0	1	1	1	1	132	18	3	2	157	161	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	13:15	0
13:30	0	0	1	0	0	0	1	1	0	1	108	10	5	0	124	128	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	13:30	0
13:45	0	0	0	0	0	0	0	0	0	1	108	13	1	3	126	129	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	13:45	0
H/TOT	0	0	2	0	0	0	2	2	2	5	454	60	12	8	541	556	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**H/TOT**	0
14:00	0	0	0	0	0	0	0	0	0	2	107	11	2	0	122	123	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	14:00	0
14:15	0	0	0	0	0	0	0	0	15	3	134	11	0	3	166	155	0	0	1	0	0	0	1	1	0	0	0	0	0	0	0	0	14:15	0
14:30	0	0	3	0	0	0	3	3	5	1	173	12	2	1	194	192	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	14:30	0
14:45	0	0	0	0	0	0	0	0	2	2	112	13	1	2	132	132	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	14:45	0
H/TOT	0	0	3	0	0	0	3	3	22	8	526	47	5	6	614	603	0	0	1	0	0	0	1	1	0	0	0	0	0	0	0	0	**H/TOT**	0
15:00	0	0	0	0	0	0	0	0	2	1	126	10	2	5	146	151	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	15:00	0
15:15	0	0	0	0	0	0	0	0	4	1	135	10	0	2	152	150	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	15:15	0
15:30	0	0	0	0	0	0	0	0	3	3	142	10	2	3	163	164	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1	15:30	0
15:45	0	0	0	0	0	0	0	0	4	1	139	11	3	0	158	157	0	0	1	0	0	0	1	1	0	0	0	0	0	0	0	0	15:45	0
H/TOT	0	0	0	0	0	0	0	0	13	6	542	41	7	10	619	622	0	0	1	0	0	0	1	1	0	0	1	0	0	0	1	1	**H/TOT**	0
16:00	0	0	0	0	0	0	0	0	2	2	133	8	0	3	148	148	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	16:00	0
16:15	0	0	0	0	0	0	0	0	6	2	136	8	1	2	155	152	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	16:15	0
16:30	0	0	0	0	0	0	0	0	1	1	137	16	2	1	158	160	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	16:30	0
16:45	0	0	2	0	0	0	2	2	2	1	148	15	0	1	167	166	0	0	1	0	0	0	1	1	0	0	0	0	0	0	0	0	16:45	0
H/TOT	0	0	2	0	0	0	2	2	11	6	554	47	3	7	628	626	0	0	1	0	0	0	1	1	0	0	0	0	0	0	0	0	**H/TOT**	0
17:00	0	0	1	0	0	0	1	1	5	5	133	9	0	1	153	147	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	17:00	0
17:15	0	0	0	0	0	0	0	0	3	3	141	7	0	1	155	152	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	17:15	0
17:30	0	0	1	0	0	0	1	1	5	2	161	6	1	2	177	175	0	0	1	0	0	0	1	1	0	0	0	0	0	0	0	0	17:30	0
17:45	0	0	0	0	0	0	0	0	0	2	137	3	1	0	143	143	0	0	1	0	0	0	1	1	0	0	0	0	0	0	0	0	17:45	0
H/TOT	0	0	2	0	0	0	2	2	13	12	572	25	2	4	628	616	0	0	2	0	0	0	2	2	0	0	0	0	0	0	0	0	**H/TOT**	0
18:00	0	0	0	0	0	0	0	0	6	2	127	5	0	1	141	136	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	18:00	0
18:15	0	0	0	0	0	0	0	0	6	4	137	5	0	3	155	151	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	18:15	0
18:30	0	0	0	0	0	0	0	0	2	1	152	5	0	0	160	158	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	18:30	0
18:45	0	0	0	0	0	0	0	0	2	2	120	4	2	1	131	131	0	0	1	0	0	0	1	1	0	0	1	0	0	0	1	1	18:45	0
H/TOT	0	0	0	0	0	0	0	0	16	9	536	19	2	5	587	576	0	0	1	0	0	0	1	1	0	0	1	0	0	0	1	1	**H/TOT**	0
P/TOT	0	0	15	0	0	0	15	15	114	71	5578	576	96	81	6516	6559	0	0	9	1	1	0	11	12	0	0	4	0	0	0	4	4	**P/TOT**	0

TRAFFINOMICS LIMITED **TRAFFINOMICS LIMITED**

WN ROAD TRAFFIC COUNTS **MARCH 2022 MONKSTOWN ROAD TRAFFIC COUNTS** **MARCH 2022 MONKSTOWN ROAD**

LASSIFIED JUNCTION TURNING COUNTS **TRA/22/068 MANUAL CLASSIFIED JUNCTION TURNING COUNTS** **TRA/22/068 MANUAL CLASSIFIED**

02 DATE: 8th March 2022 SITE: 02 DATE: 8th March 2022 SITE: 02

Monkstown Road/Brighton Avenue/Purbeck Avenue/No. 75 DAY: Tuesday LOCATION: Monkstown Road/Brighton Avenue/Purbeck Avenue/No. 75 DAY: Tuesday LOCATION: Monks

MOVEMENT 9							MOVEMENT 10								MOVEMENT 11								MOVEMENT 12								
MCL	CAR	LGV	HGV	BUS	TOT	PCU	PCL	MCL	CAR	LGV	HGV	BUS	TOT	PCU	PCL	MCL	CAR	LGV	HGV	BUS	TOT	PCU	PCL	MCL	CAR	LGV	HGV	BUS	TOT	PCU	TIME
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7:00
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7:15
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7:30
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7:45
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**H/TOT**
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8:00
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8:15
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8:30
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8:45
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**H/TOT**
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9:00
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1	0	0	0	0	0	0	0	0	9:15
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9:30
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9:45
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1	0	0	0	0	0	0	0	0	**H/TOT**
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	10:00
0	2	0	0	0	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	10:15
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	10:30
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	10:45
0	2	0	0	0	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**H/TOT**
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1	0	0	0	0	0	0	0	0	11:00
0	1	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	11:15
0	1	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	11:30
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	11:45
0	2	0	0	0	2	2	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1	0	0	0	0	0	0	0	0	**H/TOT**
0	1	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	12:00
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1	0	0	0	0	0	0	0	0	12:15
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	12:30
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	12:45
0	1	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1	0	0	0	0	0	0	0	0	**H/TOT**

MOVEMENT 13								MOVEMENT 14								MOVEMENT 15								MOVEMENT 16									MOVEMENT			
PCL	MCL	CAR	LGV	HGV	BUS	TOT	PCU	PCL	MCL	CAR	LGV	HGV	BUS	TOT	PCU	PCL	MCL	CAR	LGV	HGV	BUS	TOT	PCU	PCL	MCL	CAR	LGV	HGV	BUS	TOT	PCU	TIME	PCL	MCL	CAR	LGV
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7:00	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7:15	0	0	0	0
0	0	0	0	0	0	0	0	0	0	3	0	0	0	3	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7:30	0	0	0	0
0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7:45	0	0	0	0
0	0	0	0	0	0	0	0	0	0	4	0	0	0	4	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**H/TOT**	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8:00	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8:15	0	0	0	0
0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8:30	0	0	0	0
0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8:45	0	0	0	0
0	0	0	0	0	0	0	0	0	0	2	0	0	0	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**H/TOT**	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1	9:00	0	0	0	1
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1	0	0	0	0	0	0	0	0	9:15	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9:30	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9:45	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1	0	0	0	1	0	0	1	1	**H/TOT**	0	0	0	1
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	10:00	0	0	0	0
0	0	0	0	0	0	0	0	0	0	1	0	1	0	2	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	10:15	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	2	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1	10:30	0	0	1	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	10:45	1	0	0	0
0	0	0	0	0	0	0	0	0	0	1	0	2	0	3	5	0	0	0	0	0	0	0	0	1	0	1	0	0	0	2	1	**H/TOT**	1	0	1	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	11:00	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	11:15	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1	11:30	0	0	1	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	11:45	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1	**H/TOT**	0	0	1	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1	12:00	0	0	0	1
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	12:15	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	12:30	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	12:45	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1	**H/TOT**	0	0	0	1

WN ROAD TRAFFIC COUNTS
LASSIFIED JUNCTION TURNING COUNTS

MARCH 2022 MONKSTOWN ROAD TRAFFIC COUNTS
TRA/22/068 MANUAL CLASSIFIED JUNCTION TURNING COUNTS

MARCH 2022 MONKSTOWN ROAD
TRA/22/068 MANUAL CLASSIFIEI

02

: Monkstown Road/Brighton Avenue/Purbeck Avenue/No. 75

DATE: 8th March 2022 SITE: 02

DAY: Tuesday LOCATION: Monkstown Road/Brighton Avenue/Purbeck Avenue/No. 75

DATE: 8th March 2022 SITE: 02

DAY: Tuesday LOCATION: Monks

TIME	MOVEMENT 9							MOVEMENT 10								MOVEMENT 11								MOVEMENT 12							
	MCL	CAR	LGV	HGV	BUS	TOT	PCU	PCL	MCL	CAR	LGV	HGV	BUS	TOT	PCU	PCL	MCL	CAR	LGV	HGV	BUS	TOT	PCU	PCL	MCL	CAR	LGV	HGV	BUS	TOT	PCU
13:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
H/TOT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14:00	0	1	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
H/TOT	0	1	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
H/TOT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
H/TOT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
H/TOT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18:15	0	1	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
H/TOT	0	1	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
P/TOT	0	7	0	0	0	7	7	0	0	0	0	0	0	0	0	0	0	2	1	0	0	3	3	0	0	0	0	0	0	0	0

TIME	MOVEMENT 13								MOVEMENT 14								MOVEMENT 15								MOVEMENT 16								TIME	MOVEMENT			
	PCL	MCL	CAR	LGV	HGV	BUS	TOT	PCU	PCL	MCL	CAR	LGV	HGV	BUS	TOT	PCU	PCL	MCL	CAR	LGV	HGV	BUS	TOT	PCU	PCL	MCL	CAR	LGV	HGV	BUS	TOT	PCU		PCL	MCL	CAR	LGV
13:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	13:00	0	0	0	0
13:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1	13:15	0	0	1	0
13:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	13:30	0	0	0	0
13:45	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	13:45	0	0	0	0
H/TOT	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1	**H/TOT**	0	0	1	0
14:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	14:00	0	0	0	0
14:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1	14:15	0	0	0	0
14:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	14:30	0	0	0	0
14:45	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	14:45	0	0	0	0
H/TOT	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1	**H/TOT**	0	0	0	0
15:00	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	15:00	0	0	0	0
15:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	15:15	0	0	0	0
15:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	15:30	0	0	0	0
15:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	15:45	0	0	0	0
H/TOT	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**H/TOT**	0	0	0	0
16:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	16:00	0	0	0	0
16:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	16:15	0	0	0	0
16:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	16:30	0	0	0	0
16:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	16:45	0	0	1	0
H/TOT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**H/TOT**	0	0	1	0
17:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	17:00	0	0	0	0
17:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	17:15	0	0	0	0
17:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	17:30	0	0	0	0
17:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	17:45	0	0	1	0
H/TOT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**H/TOT**	0	0	1	0
18:00	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	18:00	0	0	0	0
18:15	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	18:15	0	0	0	0
18:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	18:30	0	0	0	0
18:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	18:45	0	0	0	0
H/TOT	0	0	0	0	0	0	0	0	0	0	1	0	1	0	2	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**H/TOT**	0	0	0	0
P/TOT	0	0	0	0	0	0	0	0	0	0	11	1	3	0	15	18	0	0	0	1	0	0	1	1	1	0	4	2	0	0	7	6	**P/TOT**	1	0	5	2

TRAFFINOMICS LIMITED

) TRAFFIC COUNTS **MARCH 2022**

) JUNCTION TURNING COUNTS **TRA/22/068**

DATE: 8th March 2022

town Road/Brighton Avenue/Purbeck Avenue/No. 75 DAY: Tuesday

' 17				MOVEMENT 18								MOVEMENT 19								MOVEMENT 20								PCU's Through Junction
HGV	BUS	TOT	PCU	PCL	MCL	CAR	LGV	HGV	BUS	TOT	PCU	PCL	MCL	CAR	LGV	HGV	BUS	TOT	PCU	PCL	MCL	CAR	LGV	HGV	BUS	TOT	PCU	
0	0	0	0	0	0	0	0	0	0	0	0	2	1	72	8	0	1	84	83	0	0	0	0	0	0	0	0	146
0	0	0	0	0	0	0	0	0	0	0	0	4	1	94	9	0	2	110	108	0	0	2	0	0	0	2	2	183
0	0	0	0	0	0	0	0	0	0	0	0	0	1	113	8	1	1	124	125	0	0	0	0	0	0	0	0	196
0	0	0	0	0	0	0	0	0	0	0	0	2	0	134	15	2	2	155	157	0	0	0	0	0	0	0	0	282
0	0	0	0	0	0	0	0	0	0	0	0	8	3	413	40	3	6	473	474	0	0	2	0	0	0	2	2	806
0	0	0	0	0	0	0	0	0	0	0	0	12	3	135	11	1	3	165	158	0	0	1	0	0	0	1	1	274
0	0	0	0	0	0	0	0	0	0	0	0	11	1	91	5	1	2	111	105	0	0	2	0	0	0	2	2	274
0	0	0	0	0	0	0	0	0	0	0	0	16	1	91	10	2	2	122	113	0	1	4	0	0	0	5	4	288
0	0	0	0	0	0	0	1	0	0	1	1	6	2	86	4	3	1	102	100	1	0	2	0	0	0	3	2	268
0	0	0	0	0	0	0	1	0	0	1	1	45	7	403	30	7	8	500	475	1	1	9	0	0	0	11	10	1104
0	0	1	1	0	0	0	0	0	0	0	0	6	0	98	8	1	2	115	113	0	0	1	2	0	0	3	3	298
0	0	0	0	0	0	0	0	0	0	0	0	3	0	97	13	2	3	118	121	0	0	1	0	0	0	1	1	255
0	0	0	0	0	0	0	0	0	0	0	0	3	0	94	6	1	4	108	111	0	0	1	0	0	0	1	1	244
0	0	0	0	0	0	0	0	0	0	0	0	2	0	86	12	1	2	103	104	0	0	3	0	0	0	3	3	227
0	0	1	1	0	0	0	0	0	0	0	0	14	0	375	39	5	11	444	449	0	0	6	2	0	0	8	8	1024
0	0	0	0	0	0	0	0	0	0	0	0	2	2	78	11	1	2	96	96	0	0	3	0	0	0	3	3	220
1	0	1	2	0	0	0	0	0	0	0	0	0	2	71	9	1	1	84	85	0	0	0	0	0	0	0	0	230
0	0	1	1	0	0	0	0	0	0	0	0	1	1	79	8	6	1	96	102	0	0	2	0	0	0	2	2	242
0	0	1	0	0	0	0	0	0	0	0	0	2	0	75	13	1	1	92	92	0	0	2	0	0	0	2	2	243
1	0	3	3	0	0	0	0	0	0	0	0	5	5	303	41	9	5	368	375	0	0	7	0	0	0	7	7	935
0	0	0	0	0	0	2	0	0	0	2	2	0	0	65	10	4	2	81	87	0	0	3	0	0	0	3	3	219
0	0	0	0	0	0	0	0	0	0	0	0	0	0	97	7	3	1	108	112	0	0	1	1	0	0	2	2	250
0	0	1	1	0	0	0	0	0	0	0	0	3	1	66	7	6	2	85	90	0	0	2	0	1	0	3	4	237
0	0	0	0	0	0	0	0	0	0	0	0	0	1	85	14	1	1	102	103	0	0	2	0	0	0	2	2	233
0	0	1	1	0	0	2	0	0	0	2	2	3	2	313	38	14	6	376	392	0	0	8	1	1	0	10	11	939
0	0	1	1	0	0	0	0	0	0	0	0	1	1	100	14	1	1	118	119	0	0	1	0	0	0	1	1	277
0	0	0	0	0	0	0	0	0	0	0	0	1	1	93	6	3	1	105	108	0	0	1	0	0	0	1	1	256
0	0	0	0	0	0	0	0	0	0	0	0	1	0	82	9	3	1	96	99	0	0	0	0	0	0	0	0	253
0	0	0	0	0	0	1	0	0	0	1	1	1	2	119	7	4	0	133	135	0	0	1	0	0	0	1	1	272
0	0	1	1	0	0	1	0	0	0	1	1	4	4	394	36	11	3	452	460	0	0	3	0	0	0	3	3	1057

) TRAFFIC COUNTS **MARCH 2022**

) JUNCTION TURNING COUNTS **TRA/22/068**

DATE: 8th March 2022

town Road/Brighton Avenue/Purbeck Avenue/No. 75 DAY: Tuesday

' 17				MOVEMENT 18								MOVEMENT 19								MOVEMENT 20								PCU's Through Junction
HGV	BUS	TOT	PCU	PCL	MCL	CAR	LGV	HGV	BUS	TOT	PCU	PCL	MCL	CAR	LGV	HGV	BUS	TOT	PCU	PCL	MCL	CAR	LGV	HGV	BUS	TOT	PCU	
0	0	0	0	0	0	0	0	0	0	0	0	1	0	97	11	2	3	114	118	0	0	3	0	0	0	3	3	266
0	0	1	1	0	0	0	0	0	0	0	0	1	0	70	18	2	1	92	94	0	0	2	0	0	0	2	2	277
0	0	0	0	0	0	0	0	0	0	0	0	0	2	90	12	2	2	108	111	0	0	4	0	0	0	4	4	252
0	0	0	0	0	0	1	0	0	0	1	1	0	0	105	5	2	1	113	116	0	0	3	1	0	0	4	4	259
0	0	1	1	0	0	1	0	0	0	1	1	2	2	362	46	8	7	427	439	0	0	12	1	0	0	13	13	1054
0	0	0	0	0	0	0	0	0	0	0	0	3	0	117	13	2	2	137	139	0	0	3	0	0	0	3	3	274
0	0	0	0	0	0	1	0	0	0	1	1	2	2	86	11	4	2	107	110	0	0	0	0	0	0	0	0	277
0	0	0	0	0	0	0	0	0	0	0	0	1	2	88	16	1	1	109	109	0	0	2	0	0	0	2	2	311
0	0	0	0	0	0	0	0	0	0	0	0	1	0	82	5	1	1	90	91	0	0	0	0	0	0	0	0	237
0	0	0	0	0	0	1	0	0	0	1	1	7	4	373	45	8	6	443	449	0	0	5	0	0	0	5	5	1099
0	0	0	0	0	0	0	0	0	0	0	0	3	1	92	6	2	3	107	109	0	0	0	0	0	0	0	0	271
0	0	0	0	0	0	0	0	0	0	0	0	2	2	90	10	1	2	107	107	0	0	0	0	0	0	0	0	266
0	0	0	0	0	0	0	0	0	0	0	0	3	1	92	9	1	1	107	106	0	0	1	1	0	0	2	2	280
0	0	0	0	0	0	0	0	0	0	0	0	1	1	100	12	0	0	114	113	0	0	2	0	0	0	2	2	278
0	0	0	0	0	0	0	0	0	0	0	0	9	5	374	37	4	6	435	435	0	0	3	1	0	0	4	4	1095
0	0	0	0	0	0	0	0	0	0	0	0	1	0	90	12	1	2	106	108	0	0	3	0	0	0	3	3	273
0	0	0	0	0	0	0	0	0	0	0	0	1	1	91	11	0	0	104	103	0	1	0	0	0	0	1	0	266
0	0	0	0	0	0	0	0	0	0	0	0	3	0	92	20	0	2	117	117	0	0	0	0	0	0	0	0	288
0	0	1	1	0	0	0	0	0	0	0	0	2	2	99	10	0	1	114	112	0	0	3	0	0	0	3	3	293
0	0	1	1	0	0	0	0	0	0	0	0	7	3	372	53	1	5	441	440	0	1	6	0	0	0	7	6	1121
0	0	0	0	0	0	0	0	0	0	0	0	2	2	120	8	0	1	133	131	0	0	3	0	0	0	3	3	287
0	0	0	0	0	0	0	0	0	0	0	0	3	2	99	9	0	3	116	115	0	1	1	0	0	0	2	1	276
0	0	0	0	0	0	0	0	0	0	0	0	2	1	94	8	0	1	106	105	0	0	0	0	0	0	0	0	296
0	0	1	1	0	0	0	0	0	0	0	0	4	1	85	3	1	1	95	93	0	0	2	0	0	0	2	2	247
0	0	1	1	0	0	0	0	0	0	0	0	11	6	398	28	1	6	450	445	0	1	6	0	0	0	7	6	1105
0	0	0	0	0	0	0	0	0	0	0	0	6	4	92	4	3	0	109	105	0	0	0	0	0	0	0	0	253
1	0	1	2	0	0	0	0	0	0	0	0	0	0	93	9	0	3	105	108	0	0	0	0	0	0	0	0	276
0	0	0	0	0	0	0	0	0	0	0	0	2	4	68	7	0	2	83	81	0	0	1	0	0	0	1	1	250
0	0	0	0	0	0	0	0	0	0	0	0	3	2	84	7	0	1	97	94	1	0	0	1	0	0	2	1	246
1	0	1	2	0	0	0	0	0	0	0	0	11	10	337	27	3	6	394	388	1	0	1	1	0	0	3	2	1025
2	0	10	11	0	0	5	1	0	0	6	6	126	51	4417	460	74	75	5203	5221	2	3	68	6	1	0	80	78	12364

APPENDIX B
TRICS DATA

Calculation Reference: AUDIT-357901-220419-0414

TRIP RATE CALCULATION SELECTION PARAMETERS:

Land Use : 03 - RESIDENTIAL
Category : C - FLATS PRIVATELY OWNED
TOTAL VEHICLES

Selected regions and areas:

01	GREATER LONDON		
	BE	BEXLEY	2 days
	BK	BARKING	1 days
	BM	BROMLEY	1 days
	BT	BRENT	2 days
	EN	ENFIELD	2 days
	HG	HARINGEY	2 days
	HK	HACKNEY	1 days
	HM	HAMMERSMITH AND FULHAM	2 days
	HO	HOUNSLOW	4 days
	HV	HAVERING	1 days
	IS	ISLINGTON	3 days
	KI	KINGSTON	1 days
	RD	RICHMOND	1 days
	SK	SOUTHWARK	3 days
	TH	TOWER HAMLETS	1 days
	WF	WALTHAM FOREST	6 days
02	SOUTH EAST		
	BD	BEDFORDSHIRE	3 days
	ES	EAST SUSSEX	1 days
	HC	HAMPSHIRE	1 days
	HF	HERTFORDSHIRE	4 days
03	SOUTH WEST		
	DC	DORSET	1 days
	DV	DEVON	1 days
04	EAST ANGLIA		
	CA	CAMBRIDGESHIRE	1 days
	NF	NORFOLK	2 days
	SF	SUFFOLK	4 days
05	EAST MIDLANDS		
	DS	DERBYSHIRE	1 days
	LE	LEICESTERSHIRE	1 days
	NT	NOTTINGHAMSHIRE	2 days
06	WEST MIDLANDS		
	WM	WEST MIDLANDS	1 days
07	YORKSHIRE & NORTH LINCOLNSHIRE		
	RI	EAST RIDING OF YORKSHIRE	1 days
	SY	SOUTH YORKSHIRE	1 days
08	NORTH WEST		
	MS	MERSEYSIDE	3 days
09	NORTH		
	CB	CUMBRIA	3 days
	TW	TYNE & WEAR	1 days
10	WALES		
	CO	CONWY	1 days
11	SCOTLAND		
	EB	CITY OF EDINBURGH	1 days
	SA	SOUTH AYRSHIRE	1 days
	SR	STIRLING	3 days
12	CONNAUGHT		
	MA	MAYO	1 days
13	MUNSTER		
	WA	WATERFORD	1 days
14	LEINSTER		
	LU	LOUTH	1 days
15	GREATER DUBLIN		
	DL	DUBLIN	4 days
17	ULSTER (NORTHERN IRELAND)		
	AN	ANTRIM	1 days

This section displays the number of survey days per TRICS® sub-region in the selected set

Primary Filtering selection:

This data displays the chosen trip rate parameter and its selected range. Only sites that fall within the parameter range are included in the trip rate calculation.

Parameter: No of Dwellings
Actual Range: 6 to 493 (units:)
Range Selected by User: 6 to 493 (units:)

Parking Spaces Range: All Surveys Included

Parking Spaces per Dwelling Range: All Surveys Included

Bedrooms per Dwelling Range: All Surveys Included

Percentage of dwellings privately owned: All Surveys Included

<u>Public Transport Provision:</u>
Selection by: Include all surveys

Date Range: 01/01/14 to 15/10/21

This data displays the range of survey dates selected. Only surveys that were conducted within this date range are included in the trip rate calculation.

<u>Selected survey days:</u>

Monday	11 days
Tuesday	25 days
Wednesday	23 days
Thursday	9 days
Friday	11 days

This data displays the number of selected surveys by day of the week.

<u>Selected survey types:</u>

Manual count	79 days
Directional ATC Count	0 days

This data displays the number of manual classified surveys and the number of unclassified ATC surveys, the total adding up to the overall number of surveys in the selected set. Manual surveys are undertaken using staff, whilst ATC surveys are undertaking using machines.

<u>Selected Locations:</u>

Town Centre	6
Edge of Town Centre	29
Suburban Area (PPS6 Out of Centre)	27
Edge of Town	9
Neighbourhood Centre (PPS6 Local Centre)	8

This data displays the number of surveys per main location category within the selected set. The main location categories consist of Free Standing, Edge of Town, Suburban Area, Neighbourhood Centre, Edge of Town Centre, Town Centre and Not Known.

<u>Selected Location Sub Categories:</u>

Industrial Zone	1
Development Zone	8
Residential Zone	44
Built-Up Zone	15
High Street	1
No Sub Category	10

This data displays the number of surveys per location sub-category within the selected set. The location sub-categories consist of Commercial Zone, Industrial Zone, Development Zone, Residential Zone, Retail Zone, Built-Up Zone, Village, Out of Town, High Street and No Sub Category.

Secondary Filtering selection:

<u>Use Class:</u>

C3	79 days

This data displays the number of surveys per Use Class classification within the selected set. The Use Classes Order 2005 has been used for this purpose, which can be found within the Library module of TRICS®.

<u>Population within 500m Range:</u>
All Surveys Included

Secondary Filtering selection (Cont.):

Population within 1 mile:

1,001 to 5,000	4 days
5,001 to 10,000	2 days
10,001 to 15,000	9 days
15,001 to 20,000	3 days
20,001 to 25,000	13 days
25,001 to 50,000	32 days
50,001 to 100,000	11 days
100,001 or More	5 days

This data displays the number of selected surveys within stated 1-mile radii of population.

Population within 5 miles:

5,001 to 25,000	2 days
25,001 to 50,000	1 days
50,001 to 75,000	12 days
75,001 to 100,000	3 days
125,001 to 250,000	15 days
250,001 to 500,000	11 days
500,001 or More	35 days

This data displays the number of selected surveys within stated 5-mile radii of population.

Car ownership within 5 miles:

0.5 or Less	7 days
0.6 to 1.0	46 days
1.1 to 1.5	25 days
1.6 to 2.0	1 days

This data displays the number of selected surveys within stated ranges of average cars owned per residential dwelling, within a radius of 5-miles of selected survey sites.

Travel Plan:

Yes	16 days
No	63 days

This data displays the number of surveys within the selected set that were undertaken at sites with Travel Plans in place, and the number of surveys that were undertaken at sites without Travel Plans.

PTAL Rating:

No PTAL Present	47 days
1a (Low) Very poor	2 days
1b Very poor	1 days
2 Poor	6 days
3 Moderate	5 days
4 Good	4 days
5 Very Good	5 days
6a Excellent	6 days
6b (High) Excellent	3 days

This data displays the number of selected surveys with PTAL Ratings.

Covid-19 Restrictions	Yes	At least one survey within the selected data set was undertaken at a time of Covid-19 restrictions

TRIP RATE for Land Use 03 - RESIDENTIAL/C - FLATS PRIVATELY OWNED

TOTAL VEHICLES

Calculation factor: 1 DWELLS

Estimated TRIP rate value per 476 DWELLS shown in shaded columns

BOLD print indicates peak (busiest) period

	ARRIVALS				DEPARTURES				TOTALS			
Time Range	No. Days	Ave. DWELLS	Trip Rate	Estimated Trip Rate	No. Days	Ave. DWELLS	Trip Rate	Estimated Trip Rate	No. Days	Ave. DWELLS	Trip Rate	Estimated Trip Rate
00:00 - 01:00												
01:00 - 02:00												
02:00 - 03:00												
03:00 - 04:00												
04:00 - 05:00												
05:00 - 06:00												
06:00 - 07:00	2	32	0.000	0.000	2	32	0.000	0.000	2	32	0.000	0.000
07:00 - 08:00	79	87	0.031	14.702	79	87	0.104	49.698	79	87	0.135	64.400
08:00 - 09:00	79	87	0.045	21.329	79	87	**0.127**	**60.673**	79	87	0.172	82.002
09:00 - 10:00	79	87	0.059	27.886	79	87	0.063	30.026	79	87	0.122	57.912
10:00 - 11:00	79	87	0.054	25.539	79	87	0.063	30.164	79	87	0.117	55.703
11:00 - 12:00	79	87	0.051	24.504	79	87	0.063	29.750	79	87	0.113	54.254
12:00 - 13:00	79	87	0.061	28.853	79	87	0.062	29.336	79	87	0.123	58.189
13:00 - 14:00	79	87	0.056	26.644	79	87	0.066	31.407	79	87	0.122	58.051
14:00 - 15:00	79	87	0.056	26.644	79	87	0.060	28.577	79	87	0.116	55.221
15:00 - 16:00	79	87	0.075	35.824	79	87	0.057	26.989	79	87	0.132	62.813
16:00 - 17:00	79	87	0.094	44.798	79	87	0.063	29.750	79	87	0.156	74.548
17:00 - 18:00	79	87	**0.120**	**56.946**	79	87	0.066	31.545	79	87	**0.186**	**88.491**
18:00 - 19:00	79	87	0.111	52.805	79	87	0.073	34.789	79	87	0.184	87.594
19:00 - 20:00	25	116	0.073	34.973	25	116	0.049	23.480	25	116	0.122	58.453
20:00 - 21:00	25	116	0.056	26.764	25	116	0.041	19.375	25	116	0.097	46.139
21:00 - 22:00												
22:00 - 23:00												
23:00 - 24:00												
Total Rates:			0.942	448.211			0.955	455.559			1.897	903.770

This section displays the trip rate results based on the selected set of surveys and the selected count type (shown just above the table). It is split by three main columns, representing arrivals trips, departures trips, and total trips (arrivals plus departures). Within each of these main columns are three sub-columns. These display the number of survey days where count data is included (per time period), the average value of the selected trip rate calculation parameter (per time period), and the trip rate result (per time period). Total trip rates (the sum of the column) are also displayed at the foot of the table.

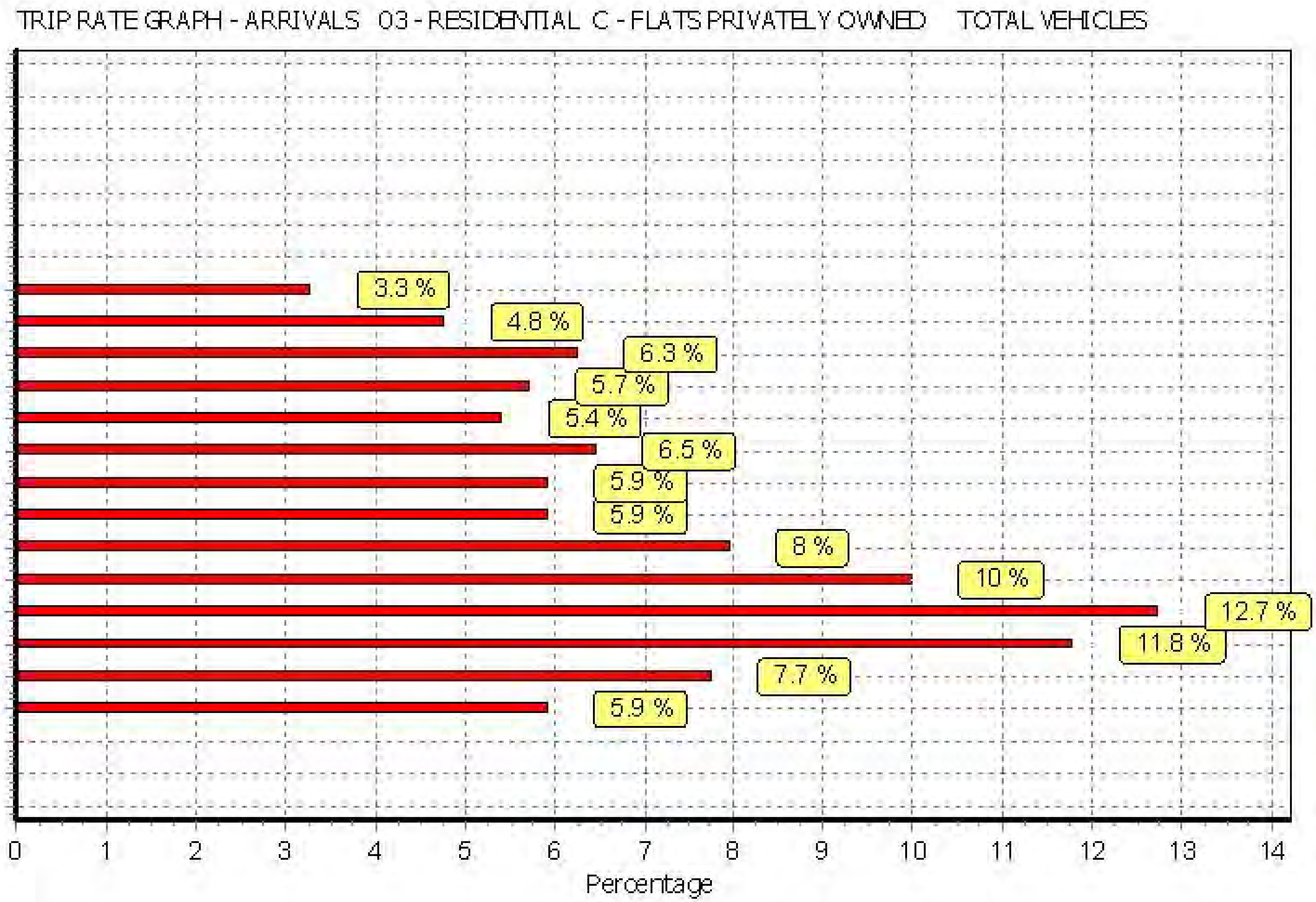
*To obtain a trip rate, the average (mean) trip rate parameter value (TRP) is first calculated for all selected survey days that have count data available for the stated time period. The average (mean) number of arrivals, departures or totals (whichever applies) is also calculated (COUNT) for all selected survey days that have count data available for the stated time period. Then, the average count is divided by the average trip rate parameter value, and multiplied by the stated calculation factor (shown just above the table and abbreviated here as FACT). So, the method is: COUNT/TRP*FACT. Trip rates are then rounded to 3 decimal places.*

Parameter summary

Trip rate parameter range selected:	6 - 493 (units:)
Survey date date range:	01/01/14 - 15/10/21
Number of weekdays (Monday-Friday):	79
Number of Saturdays:	0
Number of Sundays:	0
Surveys automatically removed from selection:	4
Surveys manually removed from selection:	0

This section displays a quick summary of some of the data filtering selections made by the TRICS® user. The trip rate calculation parameter range of all selected surveys is displayed first, followed by the range of minimum and maximum survey dates selected by the user. Then, the total number of selected weekdays and weekend days in the selected set of surveys are show. Finally, the number of survey days that have been manually removed from the selected set outside of the standard filtering procedure are displayed.

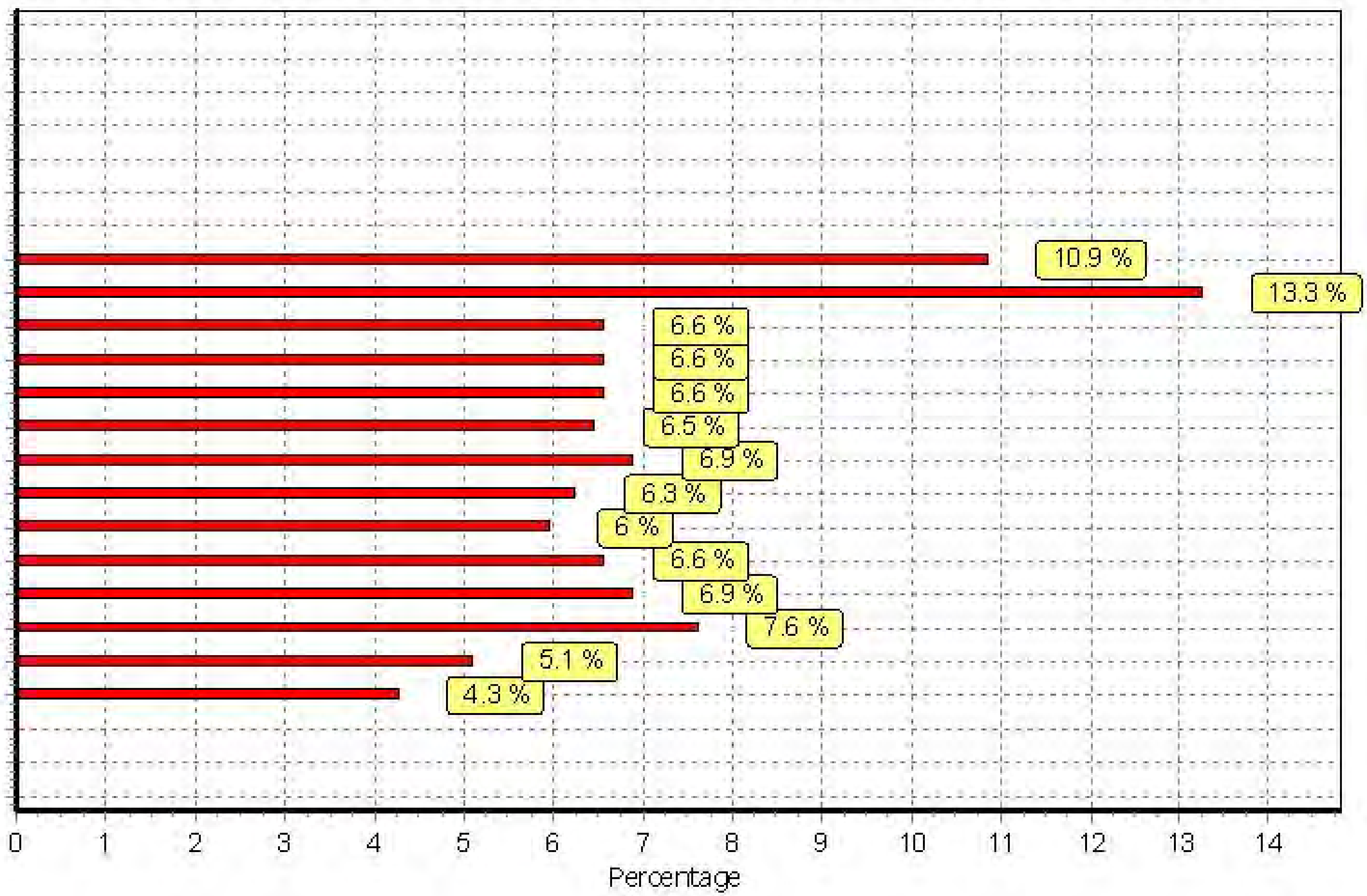
TIME	RATE	%
00:00-01:00		
01:00-02:00		
02:00-03:00		
03:00-04:00		
04:00-05:00		
05:00-06:00		
06:00-07:00		
07:00-08:00	0.031	3.3
08:00-09:00	0.045	4.8
09:00-10:00	0.059	6.3
10:00-11:00	0.054	5.7
11:00-12:00	0.051	5.4
12:00-13:00	0.061	6.5
13:00-14:00	0.056	5.9
14:00-15:00	0.056	5.9
15:00-16:00	0.075	8.0
16:00-17:00	0.094	10.0
17:00-18:00	0.120	12.7
18:00-19:00	0.111	11.8
19:00-20:00	0.073	7.7
20:00-21:00	0.056	5.9
21:00-22:00		
22:00-23:00		
23:00-24:00		



This graph is a visual representation of the trip rate calculation results screen. The same time periods and trip rates are displayed, but in addition there is an additional column showing the percentage of the total trip rate by individual time period, allowing peak periods to be easily identified through observation. Note that the type of count and the selected direction is shown at the top of the graph.

TRIP RATE GRAPH - DEPARTURES 03 - RESIDENTIAL C - FLATS PRIVATELY OWNED TOTAL VEHICLES

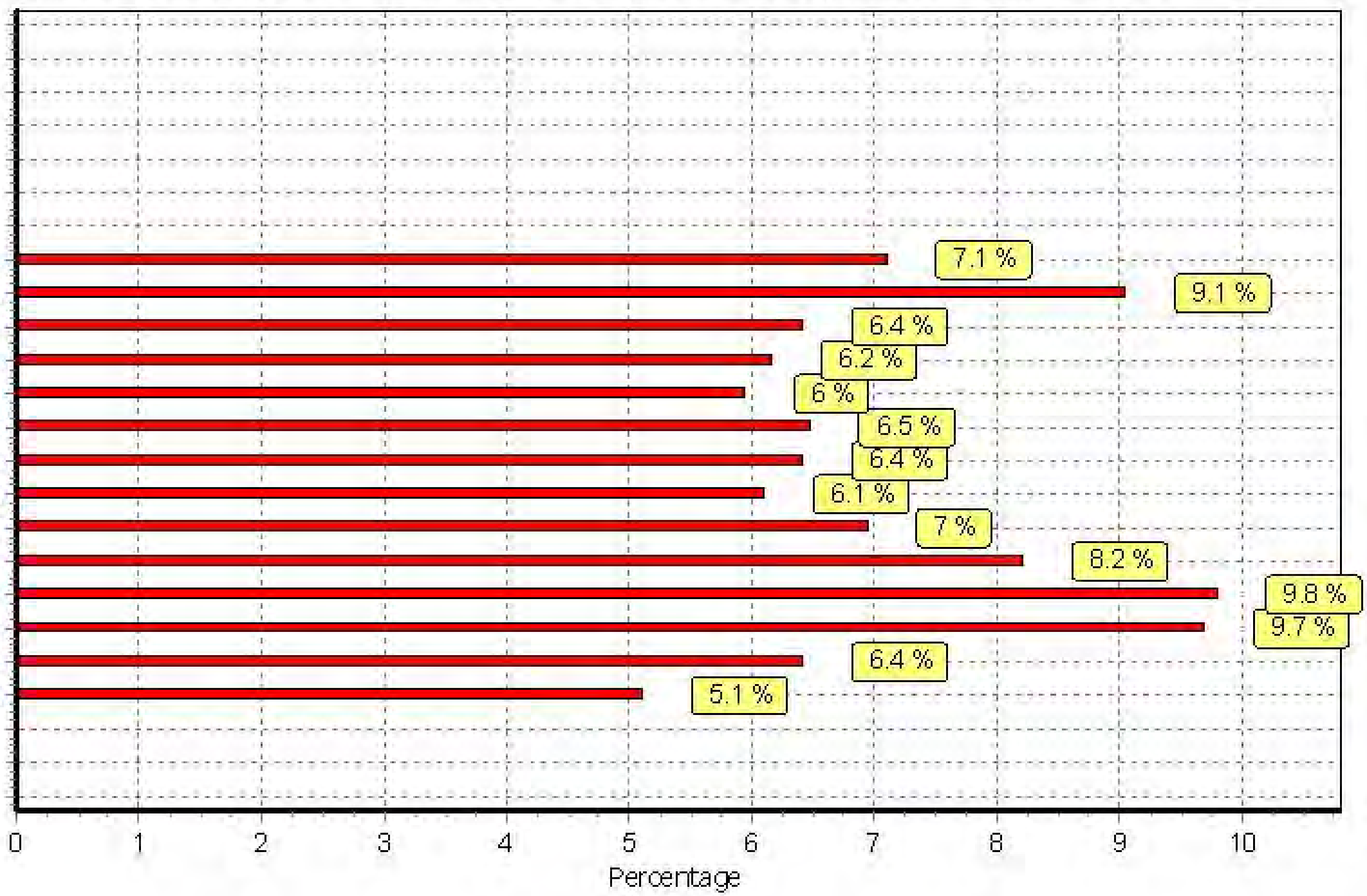
TIME	RATE	%
00:00-01:00		
01:00-02:00		
02:00-03:00		
03:00-04:00		
04:00-05:00		
05:00-06:00		
06:00-07:00		
07:00-08:00	0.104	10.9
08:00-09:00	0.127	13.3
09:00-10:00	0.063	6.6
10:00-11:00	0.063	6.6
11:00-12:00	0.063	6.6
12:00-13:00	0.062	6.5
13:00-14:00	0.066	6.9
14:00-15:00	0.060	6.3
15:00-16:00	0.057	6.0
16:00-17:00	0.063	6.6
17:00-18:00	0.066	6.9
18:00-19:00	0.073	7.6
19:00-20:00	0.049	5.1
20:00-21:00	0.041	4.3
21:00-22:00		
22:00-23:00		
23:00-24:00		



This graph is a visual representation of the trip rate calculation results screen. The same time periods and trip rates are displayed, but in addition there is an additional column showing the percentage of the total trip rate by individual time period, allowing peak periods to be easily identified through observation. Note that the type of count and the selected direction is shown at the top of the graph.

TRIP RATE GRAPH - TOTALS 03 - RESIDENTIAL C - FLATS PRIVATELY OWNED TOTAL VEHICLES

TIME	RATE	%
00:00-01:00		
01:00-02:00		
02:00-03:00		
03:00-04:00		
04:00-05:00		
05:00-06:00		
06:00-07:00		
07:00-08:00	0.135	7.1
08:00-09:00	0.172	9.1
09:00-10:00	0.122	6.4
10:00-11:00	0.117	6.2
11:00-12:00	0.113	6.0
12:00-13:00	0.123	6.5
13:00-14:00	0.122	6.4
14:00-15:00	0.116	6.1
15:00-16:00	0.132	7.0
16:00-17:00	0.156	8.2
17:00-18:00	0.186	9.8
18:00-19:00	0.184	9.7
19:00-20:00	0.122	6.4
20:00-21:00	0.097	5.1
21:00-22:00		
22:00-23:00		
23:00-24:00		



This graph is a visual representation of the trip rate calculation results screen. The same time periods and trip rates are displayed, but in addition there is an additional column showing the percentage of the total trip rate by individual time period, allowing peak periods to be easily identified through observation. Note that the type of count and the selected direction is shown at the top of the graph.

Calculation Reference: AUDIT-357901-220509-0544

TRIP RATE CALCULATION SELECTION PARAMETERS:

Land Use : 04 - EDUCATION
Category : D - NURSERY
TOTAL VEHICLES

Selected regions and areas:

01	GREATER LONDON		
	KI	KINGSTON	1 days
	RB	REDBRIDGE	2 days
02	SOUTH EAST		
	ES	EAST SUSSEX	1 days
03	SOUTH WEST		
	WL	WILTSHIRE	1 days
04	EAST ANGLIA		
	CA	CAMBRIDGESHIRE	1 days
	SF	SUFFOLK	1 days
05	EAST MIDLANDS		
	DS	DERBYSHIRE	1 days
	LE	LEICESTERSHIRE	1 days
	LN	LINCOLNSHIRE	1 days
06	WEST MIDLANDS		
	SH	SHROPSHIRE	1 days
	WK	WARWICKSHIRE	1 days
	WM	WEST MIDLANDS	1 days
08	NORTH WEST		
	CH	CHESHIRE	1 days
09	NORTH		
	TV	TEES VALLEY	1 days
	TW	TYNE & WEAR	1 days
10	WALES		
	BG	BRIDGEND	1 days
	MM	MONMOUTHSHIRE	1 days
	RC	RHONDDA CYNON TAFF	1 days
11	SCOTLAND		
	DU	DUNDEE CITY	1 days
	SR	STIRLING	1 days
12	CONNAUGHT		
	RO	ROSCOMMON	2 days
16	ULSTER (REPUBLIC OF IRELAND)		
	MG	MONAGHAN	1 days

This section displays the number of survey days per TRICS® sub-region in the selected set

Primary Filtering selection:

This data displays the chosen trip rate parameter and its selected range. Only sites that fall within the parameter range are included in the trip rate calculation.

Parameter:	Gross floor area
Actual Range:	129 to 880 (units: sqm)
Range Selected by User:	100 to 900 (units: sqm)

Parking Spaces Range: All Surveys Included

Public Transport Provision:
Selection by: Include all surveys

Date Range: 01/01/14 to 19/11/21

This data displays the range of survey dates selected. Only surveys that were conducted within this date range are included in the trip rate calculation.

Selected survey days:

Monday	4 days
Tuesday	6 days
Wednesday	4 days
Thursday	4 days
Friday	6 days

This data displays the number of selected surveys by day of the week.

Selected survey types:

Manual count	24 days
Directional ATC Count	0 days

This data displays the number of manual classified surveys and the number of unclassified ATC surveys, the total adding up to the overall number of surveys in the selected set. Manual surveys are undertaken using staff, whilst ATC surveys are undertaking using machines.

Selected Locations:

Edge of Town Centre	5
Suburban Area (PPS6 Out of Centre)	7
Edge of Town	9
Neighbourhood Centre (PPS6 Local Centre)	3

This data displays the number of surveys per main location category within the selected set. The main location categories consist of Free Standing, Edge of Town, Suburban Area, Neighbourhood Centre, Edge of Town Centre, Town Centre and Not Known.

Selected Location Sub Categories:

Industrial Zone	1
Commercial Zone	1
Residential Zone	19
Village	1
No Sub Category	2

This data displays the number of surveys per location sub-category within the selected set. The location sub-categories consist of Commercial Zone, Industrial Zone, Development Zone, Residential Zone, Retail Zone, Built-Up Zone, Village, Out of Town, High Street and No Sub Category.

Secondary Filtering selection:

Use Class:

E(f)	24 days

This data displays the number of surveys per Use Class classification within the selected set. The Use Classes Order 2005 has been used for this purpose, which can be found within the Library module of TRICS®.

Population within 500m Range:
All Surveys Included

Secondary Filtering selection (Cont.):

Population within 1 mile:

1,001 to 5,000	3 days
5,001 to 10,000	4 days
10,001 to 15,000	1 days
15,001 to 20,000	4 days
20,001 to 25,000	2 days
25,001 to 50,000	8 days
50,001 to 100,000	2 days

This data displays the number of selected surveys within stated 1-mile radii of population.

Population within 5 miles:

5,001 to 25,000	2 days
50,001 to 75,000	2 days
75,001 to 100,000	6 days
125,001 to 250,000	6 days
250,001 to 500,000	5 days
500,001 or More	3 days

This data displays the number of selected surveys within stated 5-mile radii of population.

Car ownership within 5 miles:

0.5 or Less	1 days
0.6 to 1.0	7 days
1.1 to 1.5	15 days
2.1 to 2.5	1 days

This data displays the number of selected surveys within stated ranges of average cars owned per residential dwelling, within a radius of 5-miles of selected survey sites.

Travel Plan:

No	24 days

This data displays the number of surveys within the selected set that were undertaken at sites with Travel Plans in place, and the number of surveys that were undertaken at sites without Travel Plans.

PTAL Rating:

No PTAL Present	22 days
1b Very poor	1 days
2 Poor	1 days

This data displays the number of selected surveys with PTAL Ratings.

Covid-19 Restrictions	Yes	At least one survey within the selected data set was undertaken at a time of Covid-19 restrictions

LIST OF SITES relevant to selection parameters

1 BG-04-D-01 NURSERY BRIDGEND
GEORGE STREET
BRIDGEND
BRIDGEND IND. ESTATE
Edge of Town
Industrial Zone
Total Gross floor area: 210 sqm
Survey date: MONDAY 13/10/14 Survey Type: MANUAL

2 CA-04-D-02 NURSERY CAMBRIDGESHIRE
EASTFIELD ROAD
PETERBOROUGH

Suburban Area (PPS6 Out of Centre)
Residential Zone
Total Gross floor area: 400 sqm
Survey date: TUESDAY 18/10/16 Survey Type: MANUAL

3 CH-04-D-01 NURSERY CHESHIRE
CHESTER ROAD
MACCLESFIELD

Edge of Town Centre
No Sub Category
Total Gross floor area: 500 sqm
Survey date: MONDAY 24/11/14 Survey Type: MANUAL

4 DS-04-D-02 NURSERY DERBYSHIRE
MAXWELL AVENUE
DERBY
DARLEY ABBEY
Edge of Town
Residential Zone
Total Gross floor area: 415 sqm
Survey date: THURSDAY 12/07/18 Survey Type: MANUAL

5 DU-04-D-01 NURSERY DUNDEE CITY
LONGTOWN TERRACE
DUNDEE

Suburban Area (PPS6 Out of Centre)
Residential Zone
Total Gross floor area: 325 sqm
Survey date: MONDAY 24/04/17 Survey Type: MANUAL

6 ES-04-D-01 NURSERY EAST SUSSEX
CONNAUGHT ROAD
BRIGHTON
HOVE
Neighbourhood Centre (PPS6 Local Centre)
Residential Zone
Total Gross floor area: 185 sqm
Survey date: FRIDAY 22/09/17 Survey Type: MANUAL

7 KI-04-D-01 NURSERY KINGSTON
WINDMILL LANE
SURBITON
LONG DITTON
Suburban Area (PPS6 Out of Centre)
Residential Zone
Total Gross floor area: 149 sqm
Survey date: WEDNESDAY 22/06/16 Survey Type: MANUAL

8 LE-04-D-01 NURSERY LEICESTERSHIRE
WIGSTON ROAD
LEICESTER
OADBY
Edge of Town
Residential Zone
Total Gross floor area: 375 sqm
Survey date: THURSDAY 30/10/14 Survey Type: MANUAL

LIST OF SITES relevant to selection parameters (Cont.)

9 LN-04-D-01 NURSERY LINCOLNSHIRE
NEWARK ROAD
LINCOLN
SWALLOW BECK
Suburban Area (PPS6 Out of Centre)
Residential Zone
Total Gross floor area: 600 sqm
Survey date: TUESDAY 31/10/17 Survey Type: MANUAL

10 MG-04-D-01 NURSERY MONAGHAN
THE GRANGE
MONAGHAN

Edge of Town Centre
Residential Zone
Total Gross floor area: 810 sqm
Survey date: TUESDAY 12/10/21 Survey Type: MANUAL

11 MM-04-D-01 NURSERY MONMOUTHSHIRE
SPOONER CLOSE
NEWPORT
COEDKERNEW
Edge of Town
Commercial Zone
Total Gross floor area: 860 sqm
Survey date: FRIDAY 27/09/19 Survey Type: MANUAL

12 RB-04-D-01 NURSERY REDBRIDGE
CASTLETON ROAD
ILFORD
CHADWELL HEATH
Suburban Area (PPS6 Out of Centre)
Residential Zone
Total Gross floor area: 129 sqm
Survey date: TUESDAY 07/10/14 Survey Type: MANUAL

13 RB-04-D-02 NURSERY REDBRIDGE
RAY LODGE ROAD
WOODFORD GREEN

Edge of Town
Residential Zone
Total Gross floor area: 666 sqm
Survey date: WEDNESDAY 22/11/17 Survey Type: MANUAL

14 RC-04-D-01 NURSERY RHONDDA CYNON TAFF
HEOL Y COLEG
NEAR CARDIFF
NANTGARW
Neighbourhood Centre (PPS6 Local Centre)
Village
Total Gross floor area: 664 sqm
Survey date: THURSDAY 06/05/21 Survey Type: MANUAL

15 RO-04-D-01 NURSERY ROSCOMMON
PARK VIEW
ROSCOMMON
CRUBY HILL
Edge of Town
Residential Zone
Total Gross floor area: 500 sqm
Survey date: FRIDAY 26/09/14 Survey Type: MANUAL

16 RO-04-D-03 NURSERY ROSCOMMON
CIRCULAR ROAD
ROSCOMMON

Edge of Town Centre
Residential Zone
Total Gross floor area: 509 sqm
Survey date: TUESDAY 14/09/21 Survey Type: MANUAL

LIST OF SITES relevant to selection parameters (Cont.)

17 SF-04-D-03 NURSERY SUFFOLK
CAMP ROAD
LOWESTOFT

Edge of Town Centre
Residential Zone
Total Gross floor area: 750 sqm
Survey date: WEDNESDAY 10/12/14 Survey Type: MANUAL

18 SH-04-D-01 NURSERY SHROPSHIRE
OLD COLEHAM
SHREWSBURY

Edge of Town Centre
Residential Zone
Total Gross floor area: 326 sqm
Survey date: WEDNESDAY 28/05/14 Survey Type: MANUAL

19 SR-04-D-01 NURSERY STIRLING
HENDERSON STREET
STIRLING
BRIDGE OF ALLAN
Edge of Town
No Sub Category
Total Gross floor area: 250 sqm
Survey date: MONDAY 16/06/14 Survey Type: MANUAL

20 TV-04-D-01 NURSERY TEES VALLEY
COTSWOLD DRIVE
REDCAR

Edge of Town
Residential Zone
Total Gross floor area: 150 sqm
Survey date: FRIDAY 19/05/17 Survey Type: MANUAL

21 TW-04-D-03 NURSERY TYNE & WEAR
JUBILEE ROAD
NEWCASTLE UPON TYNE
GOSFORTH
Suburban Area (PPS6 Out of Centre)
Residential Zone
Total Gross floor area: 725 sqm
Survey date: TUESDAY 21/05/19 Survey Type: MANUAL

22 WK-04-D-01 NURSERY WARWICKSHIRE
THE RIDGEWAY
STRATFORD UPON AVON

Edge of Town
Residential Zone
Total Gross floor area: 340 sqm
Survey date: FRIDAY 29/06/18 Survey Type: MANUAL

23 WL-04-D-01 NURSERY WILTSHIRE
SHREWSBURY ROAD
SWINDON
WALCOT
Suburban Area (PPS6 Out of Centre)
Residential Zone
Total Gross floor area: 500 sqm
Survey date: THURSDAY 22/09/16 Survey Type: MANUAL

24 WM-04-D-02 NURSERY WEST MIDLANDS
BERTRAM ROAD
BIRMINGHAM
SMALL HEATH
Neighbourhood Centre (PPS6 Local Centre)
Residential Zone
Total Gross floor area: 880 sqm
Survey date: FRIDAY 19/11/21 Survey Type: MANUAL

This section provides a list of all survey sites and days in the selected set. For each individual survey site, it displays a unique site reference code and site address, the selected trip rate calculation parameter and its value, the day of the week and date of each survey, and whether the survey was a manual classified count or an ATC count.

TRIP RATE for Land Use 04 - EDUCATION/D - NURSERY
TOTAL VEHICLES
Calculation factor: 100 sqm
Estimated TRIP rate value per 450 SQM shown in shaded columns
BOLD print indicates peak (busiest) period

	ARRIVALS				DEPARTURES				TOTALS			
Time Range	No. Days	Ave. GFA	Trip Rate	Estimated Trip Rate	No. Days	Ave. GFA	Trip Rate	Estimated Trip Rate	No. Days	Ave. GFA	Trip Rate	Estimated Trip Rate
00:00 - 01:00												
01:00 - 02:00												
02:00 - 03:00												
03:00 - 04:00												
04:00 - 05:00												
05:00 - 06:00												
06:00 - 07:00	3	346	0.000	0.000	3	346	0.000	0.000	3	346	0.000	0.000
07:00 - 08:00	24	467	1.881	8.464	24	467	0.891	4.011	24	467	2.772	12.475
08:00 - 09:00	**24**	**467**	**3.682**	**16.567**	24	467	2.879	12.957	**24**	**467**	**6.561**	**29.524**
09:00 - 10:00	24	467	1.605	7.221	24	467	1.613	7.261	24	467	3.218	14.482
10:00 - 11:00	24	467	0.490	2.206	24	467	0.357	1.605	24	467	0.847	3.811
11:00 - 12:00	24	467	0.686	3.089	24	467	0.437	1.966	24	467	1.123	5.055
12:00 - 13:00	24	467	1.435	6.458	24	467	1.596	7.180	24	467	3.031	13.638
13:00 - 14:00	24	467	0.936	4.212	24	467	1.364	6.137	24	467	2.300	10.349
14:00 - 15:00	24	467	0.713	3.209	24	467	0.597	2.688	24	467	1.310	5.897
15:00 - 16:00	24	467	0.874	3.931	24	467	1.016	4.573	24	467	1.890	8.504
16:00 - 17:00	24	467	1.435	6.458	24	467	1.685	7.582	24	467	3.120	14.040
17:00 - 18:00	24	467	2.398	10.791	**24**	**467**	**3.129**	**14.080**	24	467	5.527	24.871
18:00 - 19:00	23	481	0.154	0.691	23	481	0.669	3.009	23	481	0.823	3.700
19:00 - 20:00	2	265	0.000	0.000	2	265	0.000	0.000	2	265	0.000	0.000
20:00 - 21:00												
21:00 - 22:00												
22:00 - 23:00												
23:00 - 24:00												
Total Rates:			16.289	73.297			16.233	73.049			32.522	146.346

This section displays the trip rate results based on the selected set of surveys and the selected count type (shown just above the table). It is split by three main columns, representing arrivals trips, departures trips, and total trips (arrivals plus departures). Within each of these main columns are three sub-columns. These display the number of survey days where count data is included (per time period), the average value of the selected trip rate calculation parameter (per time period), and the trip rate result (per time period). Total trip rates (the sum of the column) are also displayed at the foot of the table.

*To obtain a trip rate, the average (mean) trip rate parameter value (TRP) is first calculated for all selected survey days that have count data available for the stated time period. The average (mean) number of arrivals, departures or totals (whichever applies) is also calculated (COUNT) for all selected survey days that have count data available for the stated time period. Then, the average count is divided by the average trip rate parameter value, and multiplied by the stated calculation factor (shown just above the table and abbreviated here as FACT). So, the method is: COUNT/TRP*FACT. Trip rates are then rounded to 3 decimal places.*

Parameter summary

Trip rate parameter range selected:	129 - 880 (units: sqm)
Survey date date range:	01/01/14 - 19/11/21
Number of weekdays (Monday-Friday):	24
Number of Saturdays:	0
Number of Sundays:	0
Surveys automatically removed from selection:	1
Surveys manually removed from selection:	0

This section displays a quick summary of some of the data filtering selections made by the TRICS® user. The trip rate calculation parameter range of all selected surveys is displayed first, followed by the range of minimum and maximum survey dates selected by the user. Then, the total number of selected weekdays and weekend days in the selected set of surveys are show. Finally, the number of survey days that have been manually removed from the selected set outside of the standard filtering procedure are displayed.

Calculation Reference: AUDIT-357901-220509-0514

TRIP RATE CALCULATION SELECTION PARAMETERS:

Land Use : 06 - HOTEL, FOOD & DRINK
Category : B - RESTAURANTS
TOTAL VEHICLES

Selected regions and areas:

01	GREATER LONDON		
	BT	BRENT	1 days
	EN	ENFIELD	1 days
	LB	LAMBETH	1 days
02	SOUTH EAST		
	HC	HAMPSHIRE	1 days
	WS	WEST SUSSEX	1 days
04	EAST ANGLIA		
	NF	NORFOLK	1 days
05	EAST MIDLANDS		
	DS	DERBYSHIRE	2 days
06	WEST MIDLANDS		
	WM	WEST MIDLANDS	2 days
08	NORTH WEST		
	CH	CHESHIRE	2 days
09	NORTH		
	CB	CUMBRIA	1 days
10	WALES		
	CF	CARDIFF	1 days
11	SCOTLAND		
	RF	RENFREWSHIRE	1 days
17	ULSTER (NORTHERN IRELAND)		
	AN	ANTRIM	2 days

This section displays the number of survey days per TRICS® sub-region in the selected set

Primary Filtering selection:

This data displays the chosen trip rate parameter and its selected range. Only sites that fall within the parameter range are included in the trip rate calculation.

Parameter: Gross floor area
Actual Range: 75 to 400 (units: sqm)
Range Selected by User: 75 to 400 (units: sqm)

Parking Spaces Range: All Surveys Included

Public Transport Provision:
Selection by: Include all surveys

Date Range: 01/01/14 to 25/09/19

This data displays the range of survey dates selected. Only surveys that were conducted within this date range are included in the trip rate calculation.

Selected survey days:

Monday	3 days
Tuesday	2 days
Wednesday	1 days
Thursday	3 days
Friday	3 days
Saturday	4 days
Sunday	1 days

This data displays the number of selected surveys by day of the week.

Selected survey types:

Manual count	17 days
Directional ATC Count	0 days

This data displays the number of manual classified surveys and the number of unclassified ATC surveys, the total adding up to the overall number of surveys in the selected set. Manual surveys are undertaken using staff, whilst ATC surveys are undertaking using machines.

Selected Locations:

Town Centre	5
Edge of Town Centre	1
Suburban Area (PPS6 Out of Centre)	3

This data displays the number of surveys per main location category within the selected set. The main location categories consist of Free Standing, Edge of Town, Suburban Area, Neighbourhood Centre, Edge of Town Centre, Town Centre and Not Known.

Selected Location Sub Categories:

Development Zone	3
Residential Zone	2
Retail Zone	1
Built-Up Zone	3
Village	1
High Street	5
No Sub Category	2

This data displays the number of surveys per location sub-category within the selected set. The location sub-categories consist of Commercial Zone, Industrial Zone, Development Zone, Residential Zone, Retail Zone, Built-Up Zone, Village, Out of Town, High Street and No Sub Category.

Secondary Filtering selection:

Use Class:

E(b)	17 days

This data displays the number of surveys per Use Class classification within the selected set. The Use Classes Order 2005 has been used for this purpose, which can be found within the Library module of TRICS®.

Population within 500m Range:
All Surveys Included

Population within 1 mile:

1,001 to 5,000	2 days
5,001 to 10,000	1 days
10,001 to 15,000	1 days
15,001 to 20,000	2 days
20,001 to 25,000	2 days
25,001 to 50,000	6 days
50,001 to 100,000	2 days
100,001 or More	1 days

This data displays the number of selected surveys within stated 1-mile radii of population.

Population within 5 miles:

25,001 to 50,000	1 days
75,001 to 100,000	6 days
125,001 to 250,000	1 days
250,001 to 500,000	7 days
500,001 or More	2 days

This data displays the number of selected surveys within stated 5-mile radii of population.

Car ownership within 5 miles:

0.6 to 1.0	9 days
1.1 to 1.5	8 days

This data displays the number of selected surveys within stated ranges of average cars owned per residential dwelling, within a radius of 5-miles of selected survey sites.

Travel Plan:

Yes	1 days
No	16 days

This data displays the number of surveys within the selected set that were undertaken at sites with Travel Plans in place, and the number of surveys that were undertaken at sites without Travel Plans.

PTAL Rating:

No PTAL Present	14 days
3 Moderate	1 days
5 Very Good	1 days
6b (High) Excellent	1 days

This data displays the number of selected surveys with PTAL Ratings.

LIST OF SITES relevant to selection parameters

1 AN-06-B-02 FRANKIE & BENNY'S ANTRIM
HILSBOROUGH ROAD
LISBURN

Edge of Town
Retail Zone
Total Gross floor area: 275 sqm
Survey date: FRIDAY 19/06/15 Survey Type: MANUAL

2 AN-06-B-03 MODERN CUISINE ANTRIM
LISBURN ROAD
BELFAST

Suburban Area (PPS6 Out of Centre)
High Street
Total Gross floor area: 320 sqm
Survey date: FRIDAY 25/09/15 Survey Type: MANUAL

3 BT-06-B-01 COFFEE SHOP & RESTAURANT BRENT
EMPIRE WAY
WEMBLEY

Suburban Area (PPS6 Out of Centre)
Development Zone
Total Gross floor area: 150 sqm
Survey date: MONDAY 18/05/15 Survey Type: MANUAL

4 CB-06-B-01 ITALIAN RESTAURANT CUMBRIA
MARKET STREET
CARLISLE

Town Centre
Built-Up Zone
Total Gross floor area: 150 sqm
Survey date: SATURDAY 25/06/16 Survey Type: MANUAL

5 CF-06-B-02 FRANKIE & BENNY'S CARDIFF
NEWPORT ROAD
CARDIFF

Edge of Town
Development Zone
Total Gross floor area: 400 sqm
Survey date: SUNDAY 19/10/14 Survey Type: MANUAL

6 CH-06-B-02 ITALIAN RESTAURANT CHESHIRE
MILL STREET
MACCLESFIELD

Town Centre
Built-Up Zone
Total Gross floor area: 75 sqm
Survey date: SATURDAY 17/09/16 Survey Type: MANUAL

7 CH-06-B-03 PIZZA EXPRESS CHESHIRE
MARKET PLACE
MACCLESFIELD

Town Centre
Built-Up Zone
Total Gross floor area: 321 sqm
Survey date: SATURDAY 11/11/17 Survey Type: MANUAL

8 DS-06-B-03 BRITISH RESTAURANT DERBYSHIRE
THORNHILL ROAD
DERBY
LITTLEOVER
Neighbourhood Centre (PPS6 Local Centre)
Residential Zone
Total Gross floor area: 350 sqm
Survey date: THURSDAY 12/07/18 Survey Type: MANUAL

LIST OF SITES relevant to selection parameters (Cont.)

9 DS-06-B-04 FRENCH RESTAURANT DERBYSHIRE
FRIAR GATE
DERBY

Town Centre
High Street
Total Gross floor area: 180 sqm
Survey date: WEDNESDAY 25/09/19 Survey Type: MANUAL

10 EN-06-B-01 ITALIAN RESTAURANT ENFIELD
CHASE SIDE
ENFIELD

Neighbourhood Centre (PPS6 Local Centre)
Residential Zone
Total Gross floor area: 370 sqm
Survey date: TUESDAY 17/11/15 Survey Type: MANUAL

11 HC-06-B-01 PIZZA HUT HAMPSHIRE
BINNACLE WAY
PORTSMOUTH
COSHAM
Suburban Area (PPS6 Out of Centre)
Development Zone
Total Gross floor area: 325 sqm
Survey date: MONDAY 23/11/15 Survey Type: MANUAL

12 LB-06-B-01 PORTUGUESE RESTAURANT LAMBETH
STOCKWELL ROAD
STOCKWELL

Edge of Town Centre
No Sub Category
Total Gross floor area: 194 sqm
Survey date: MONDAY 24/06/19 Survey Type: MANUAL

13 NF-06-B-01 INDIAN RESTAURANT NORFOLK
KING STREET
GREAT YARMOUTH

Town Centre
High Street
Total Gross floor area: 160 sqm
Survey date: THURSDAY 14/09/17 Survey Type: MANUAL

14 RF-06-B-01 INDIAN RESTAURANT RENFREWSHIRE
LINWOOD ROAD
PAISLEY
PHOENIX LEISURE PARK
Neighbourhood Centre (PPS6 Local Centre)
No Sub Category
Total Gross floor area: 175 sqm
Survey date: FRIDAY 20/06/14 Survey Type: MANUAL

15 WM-06-B-06 ITALIAN RESTAURANT WEST MIDLANDS
EARLSDON STREET
COVENTRY

Neighbourhood Centre (PPS6 Local Centre)
High Street
Total Gross floor area: 175 sqm
Survey date: THURSDAY 24/11/16 Survey Type: MANUAL

16 WM-06-B-07 INDIAN RESTAURANT WEST MIDLANDS
AUDNAM
STOURBRIDGE
AUDNAM
Neighbourhood Centre (PPS6 Local Centre)
High Street
Total Gross floor area: 370 sqm
Survey date: TUESDAY 28/11/17 Survey Type: MANUAL

LIST OF SITES relevant to selection parameters (Cont.)

17 WS-06-B-02 BRITISH FINE DINING WEST SUSSEX
ARUNDEL ROAD
NEAR CHICHESTER
TANGMERE
Neighbourhood Centre (PPS6 Local Centre)
Village
Total Gross floor area: 130 sqm
Survey date: SATURDAY 04/10/14 Survey Type: MANUAL

This section provides a list of all survey sites and days in the selected set. For each individual survey site, it displays a unique site reference code and site address, the selected trip rate calculation parameter and its value, the day of the week and date of each survey, and whether the survey was a manual classified count or an ATC count.

TRIP RATE for Land Use 06 - HOTEL, FOOD & DRINK/B - RESTAURANTS

TOTAL VEHICLES

Calculation factor: 100 sqm

Estimated TRIP rate value per 201 SQM shown in shaded columns
BOLD print indicates peak (busiest) period

	ARRIVALS				DEPARTURES				TOTALS			
Time Range	No. Days	Ave. GFA	Trip Rate	Estimated Trip Rate	No. Days	Ave. GFA	Trip Rate	Estimated Trip Rate	No. Days	Ave. GFA	Trip Rate	Estimated Trip Rate
00:00 - 01:00	1	370	0.000	0.000	1	370	0.270	0.543	1	370	0.270	0.543
01:00 - 02:00												
02:00 - 03:00												
03:00 - 04:00												
04:00 - 05:00												
05:00 - 06:00												
06:00 - 07:00												
07:00 - 08:00	1	194	0.000	0.000	1	194	0.000	0.000	1	194	0.000	0.000
08:00 - 09:00	2	297	0.673	1.354	2	297	0.505	1.015	2	297	1.178	2.369
09:00 - 10:00	3	256	1.691	3.398	3	256	0.520	1.046	3	256	2.211	4.444
10:00 - 11:00	13	222	1.944	3.908	13	222	0.833	1.675	13	222	2.777	5.583
11:00 - 12:00	16	234	1.760	3.538	16	234	1.227	2.466	16	234	2.987	6.004
12:00 - 13:00	16	234	3.147	6.325	16	234	1.600	3.216	16	234	4.747	9.541
13:00 - 14:00	16	234	2.107	4.234	16	234	2.773	5.574	16	234	4.880	9.808
14:00 - 15:00	16	234	1.093	2.198	16	234	1.520	3.055	16	234	2.613	5.253
15:00 - 16:00	17	242	0.971	1.951	17	242	1.383	2.781	17	242	2.354	4.732
16:00 - 17:00	17	242	1.481	2.976	17	242	1.214	2.439	17	242	2.695	5.415
17:00 - 18:00	17	242	2.670	5.367	17	242	1.481	2.976	17	242	4.151	8.343
18:00 - 19:00	17	242	3.058	6.147	17	242	2.597	5.220	17	242	5.655	11.367
19:00 - 20:00	**17**	**242**	**3.301**	**6.635**	**17**	**242**	**2.791**	**5.610**	**17**	**242**	**6.092**	**12.245**
20:00 - 21:00	17	242	1.650	3.317	17	242	2.524	5.074	17	242	4.174	8.391
21:00 - 22:00	17	242	1.335	2.683	17	242	2.112	4.244	17	242	3.447	6.927
22:00 - 23:00	17	242	0.485	0.976	17	242	1.723	3.464	17	242	2.208	4.440
23:00 - 24:00	13	248	0.093	0.187	13	248	1.084	2.178	13	248	1.177	2.365
Total Rates:			27.459	55.194			26.157	52.576			53.616	107.770

This section displays the trip rate results based on the selected set of surveys and the selected count type (shown just above the table). It is split by three main columns, representing arrivals trips, departures trips, and total trips (arrivals plus departures). Within each of these main columns are three sub-columns. These display the number of survey days where count data is included (per time period), the average value of the selected trip rate calculation parameter (per time period), and the trip rate result (per time period). Total trip rates (the sum of the column) are also displayed at the foot of the table.

*To obtain a trip rate, the average (mean) trip rate parameter value (TRP) is first calculated for all selected survey days that have count data available for the stated time period. The average (mean) number of arrivals, departures or totals (whichever applies) is also calculated (COUNT) for all selected survey days that have count data available for the stated time period. Then, the average count is divided by the average trip rate parameter value, and multiplied by the stated calculation factor (shown just above the table and abbreviated here as FACT). So, the method is: COUNT/TRP*FACT. Trip rates are then rounded to 3 decimal places.*

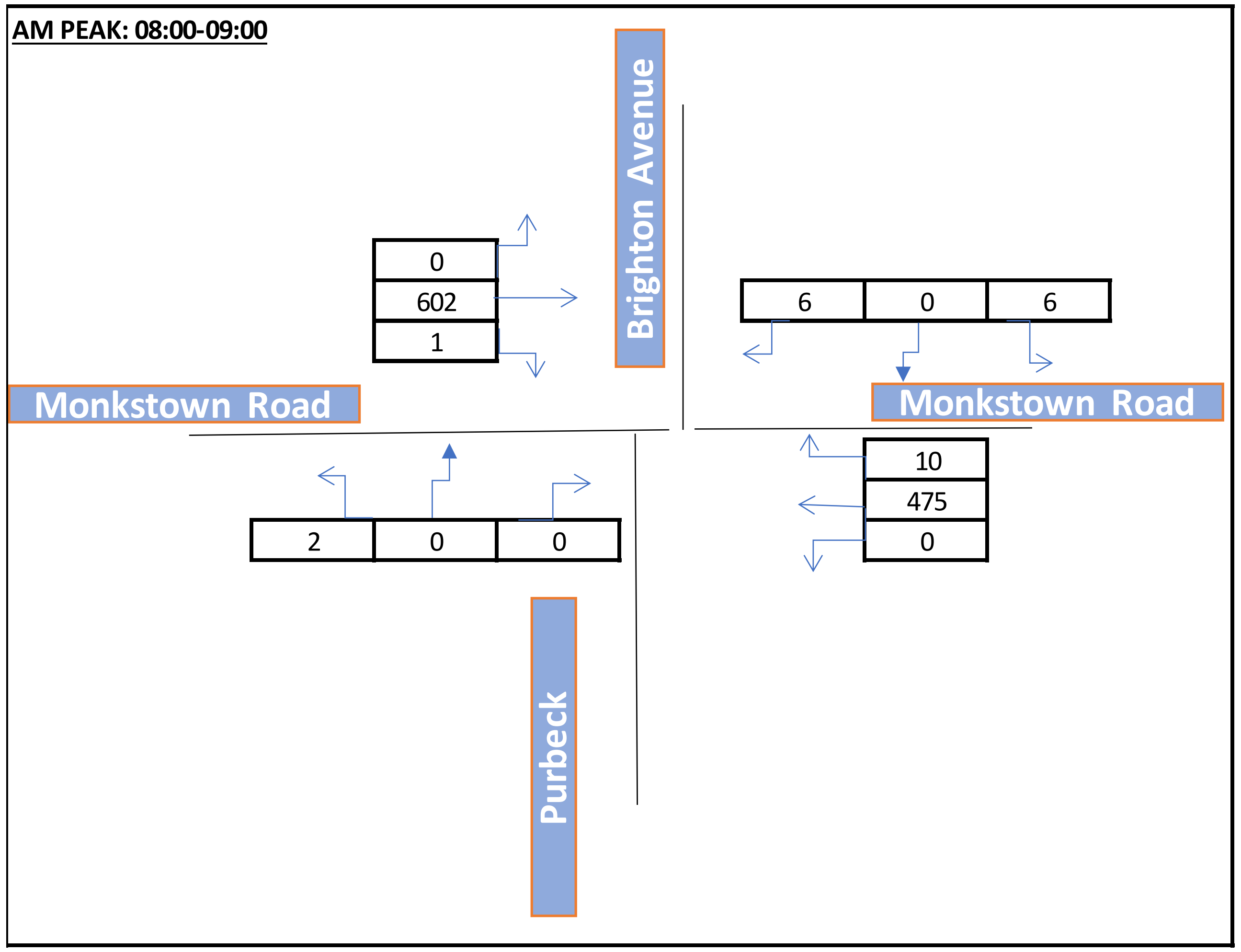
Parameter summary

Trip rate parameter range selected:	75 - 400 (units: sqm)
Survey date date range:	01/01/14 - 25/09/19
Number of weekdays (Monday-Friday):	12
Number of Saturdays:	4
Number of Sundays:	1
Surveys automatically removed from selection:	0
Surveys manually removed from selection:	0

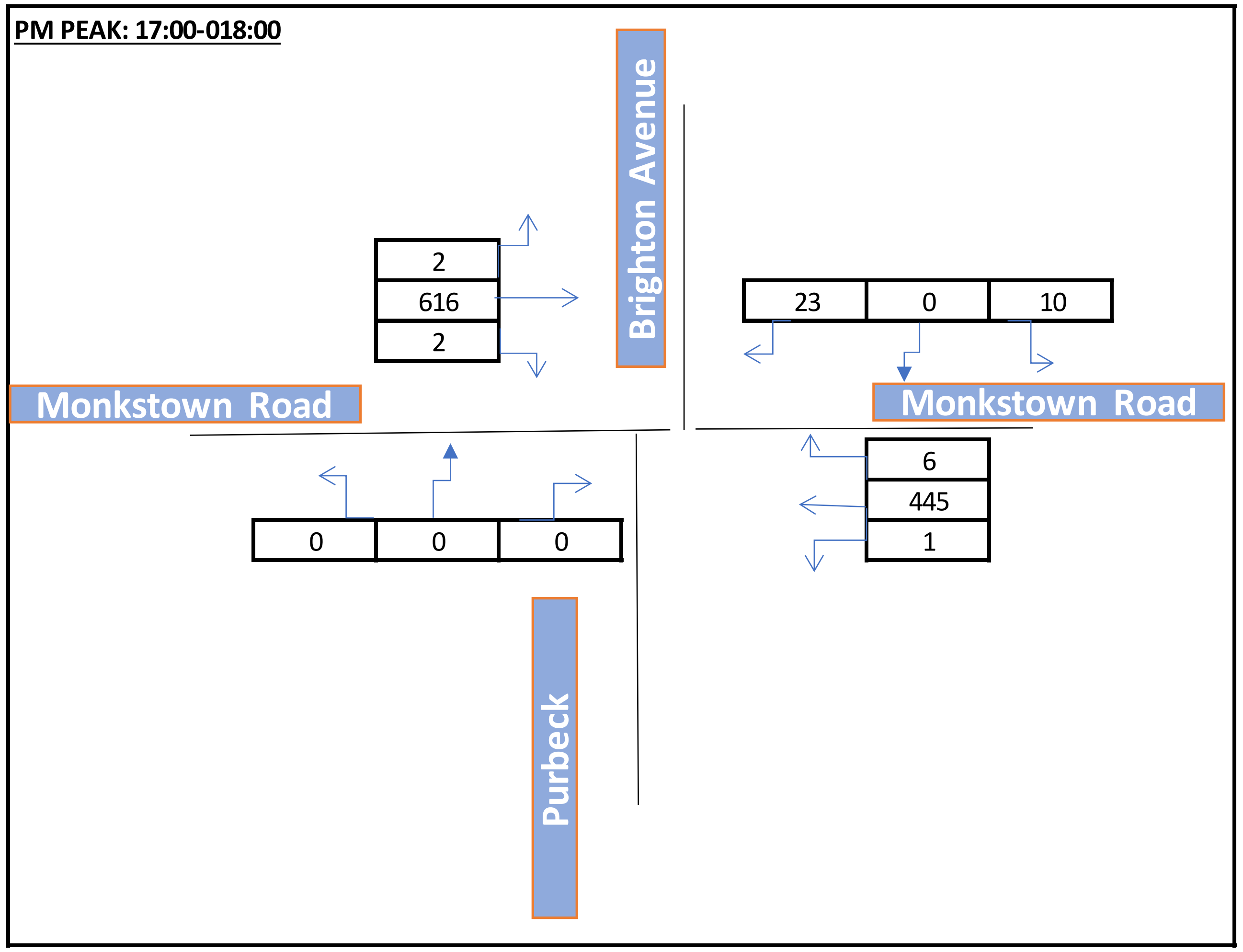
This section displays a quick summary of some of the data filtering selections made by the TRICS® user. The trip rate calculation parameter range of all selected surveys is displayed first, followed by the range of minimum and maximum survey dates selected by the user. Then, the total number of selected weekdays and weekend days in the selected set of surveys are show. Finally, the number of survey days that have been manually removed from the selected set outside of the standard filtering procedure are displayed.

APPENDIX C
TRAFFIC GROWTH

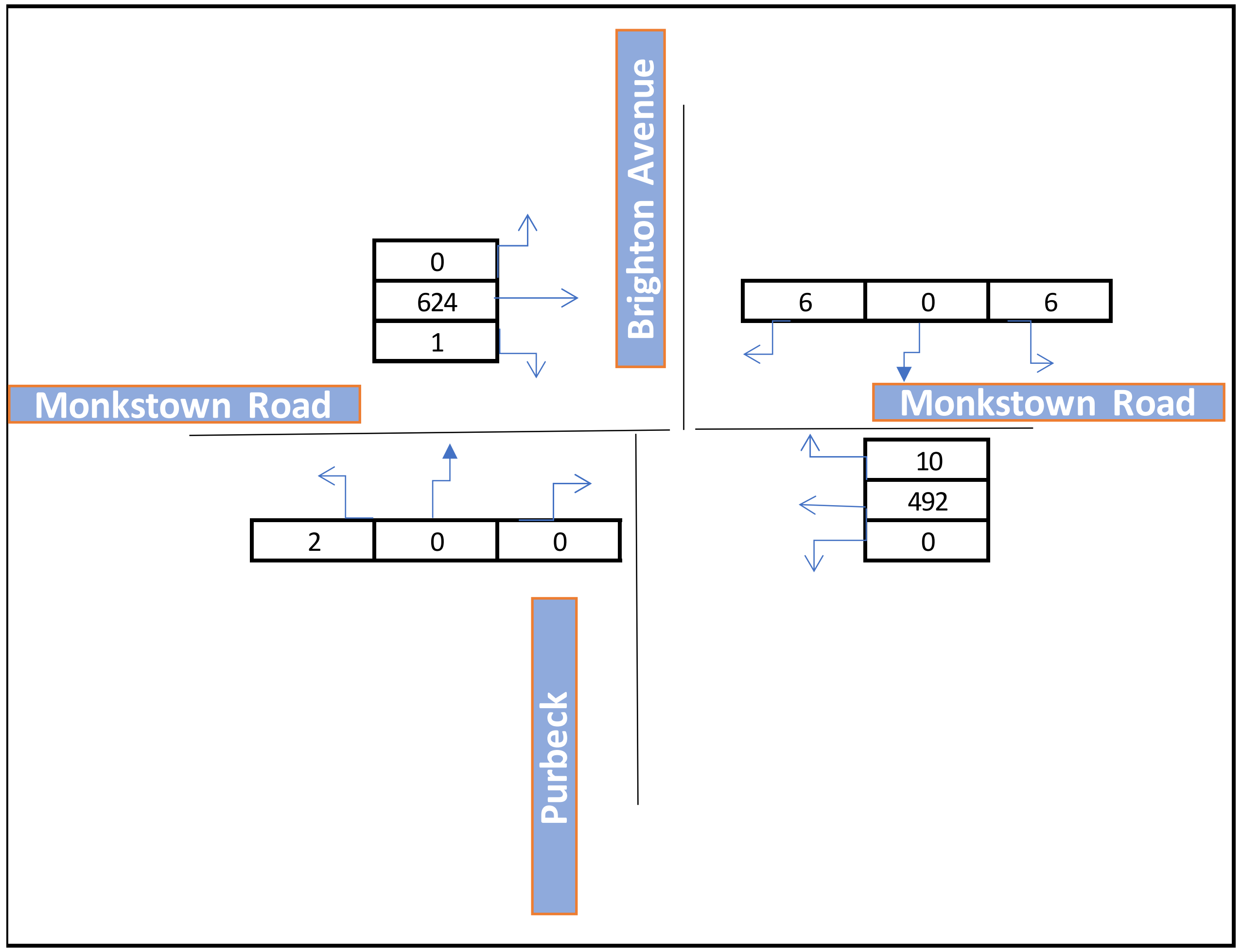
AM Peak Baseline (Existing 2022)



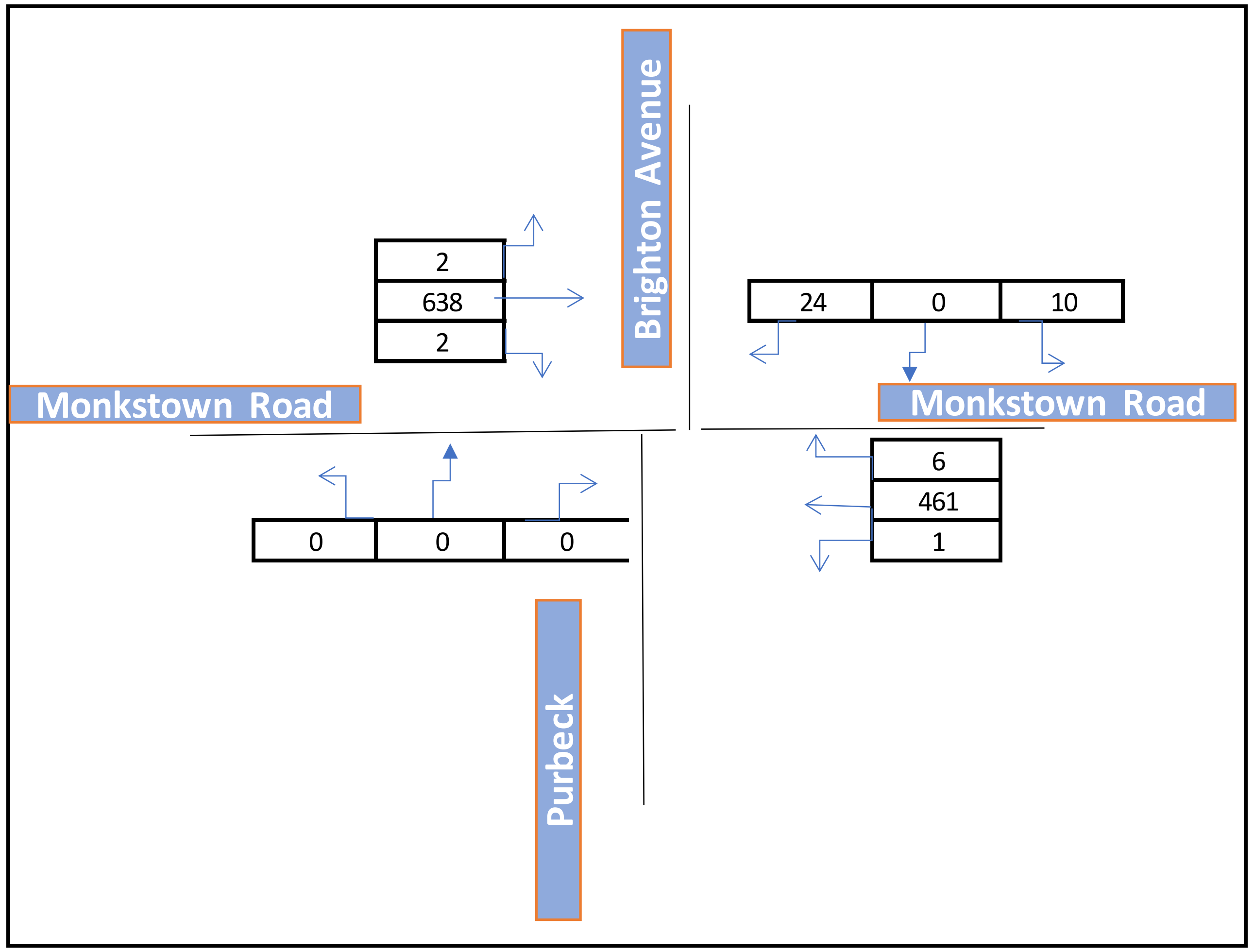
PM Peak Baseline (Existing 2022)



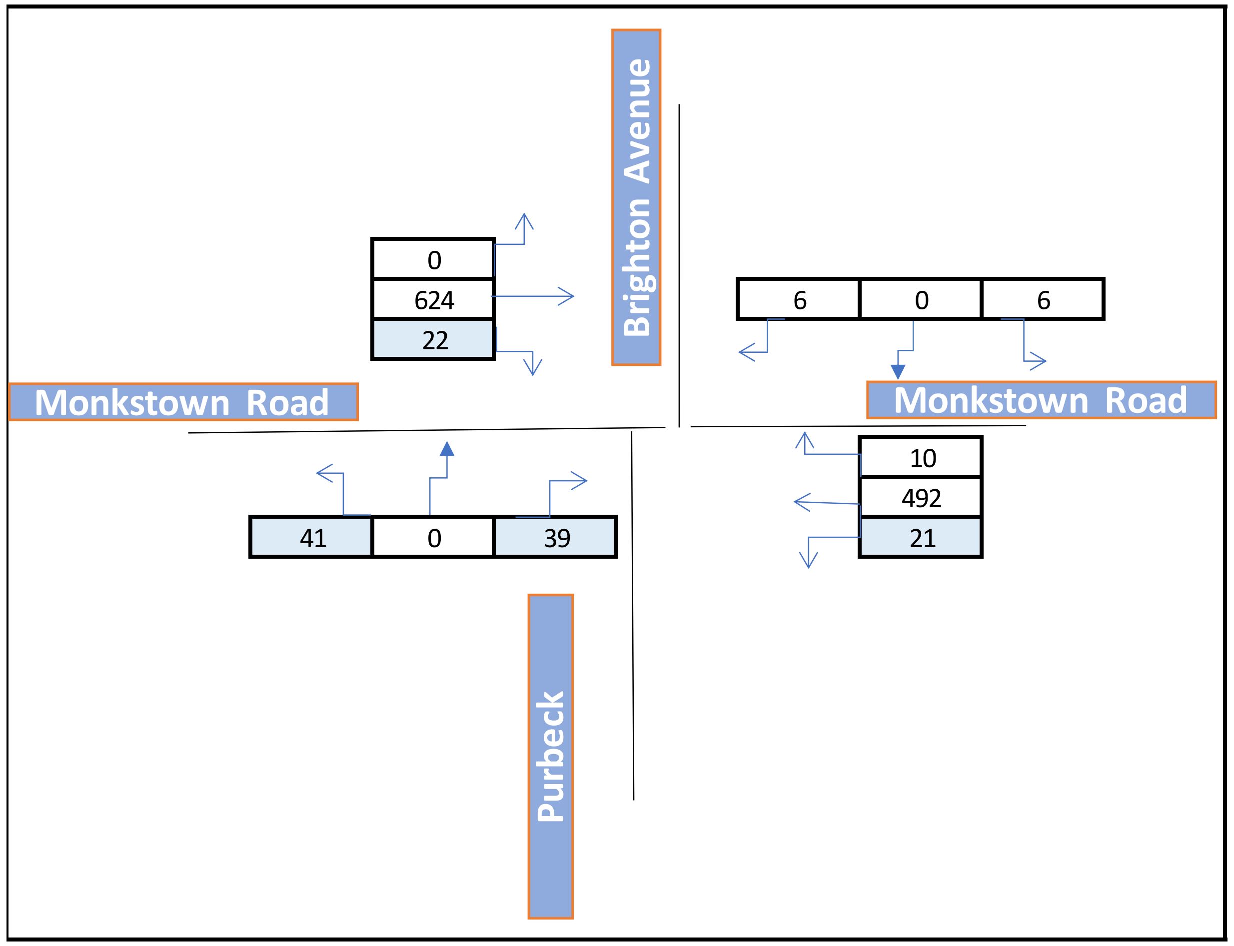
AM Peak Opening 2024
No Development



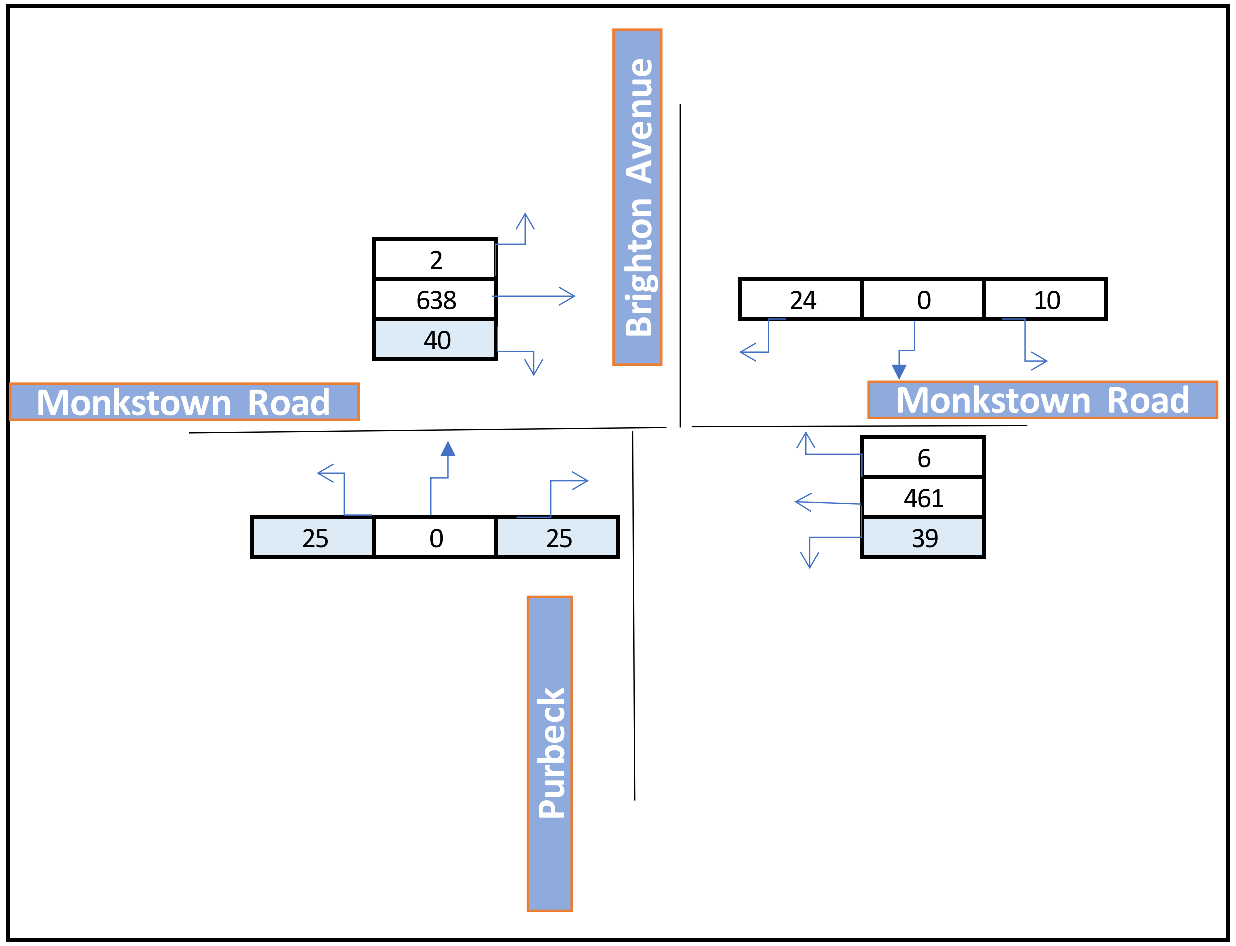
PM Peak Opening 2024
No Development



AM Peak Opening 2024 With Development



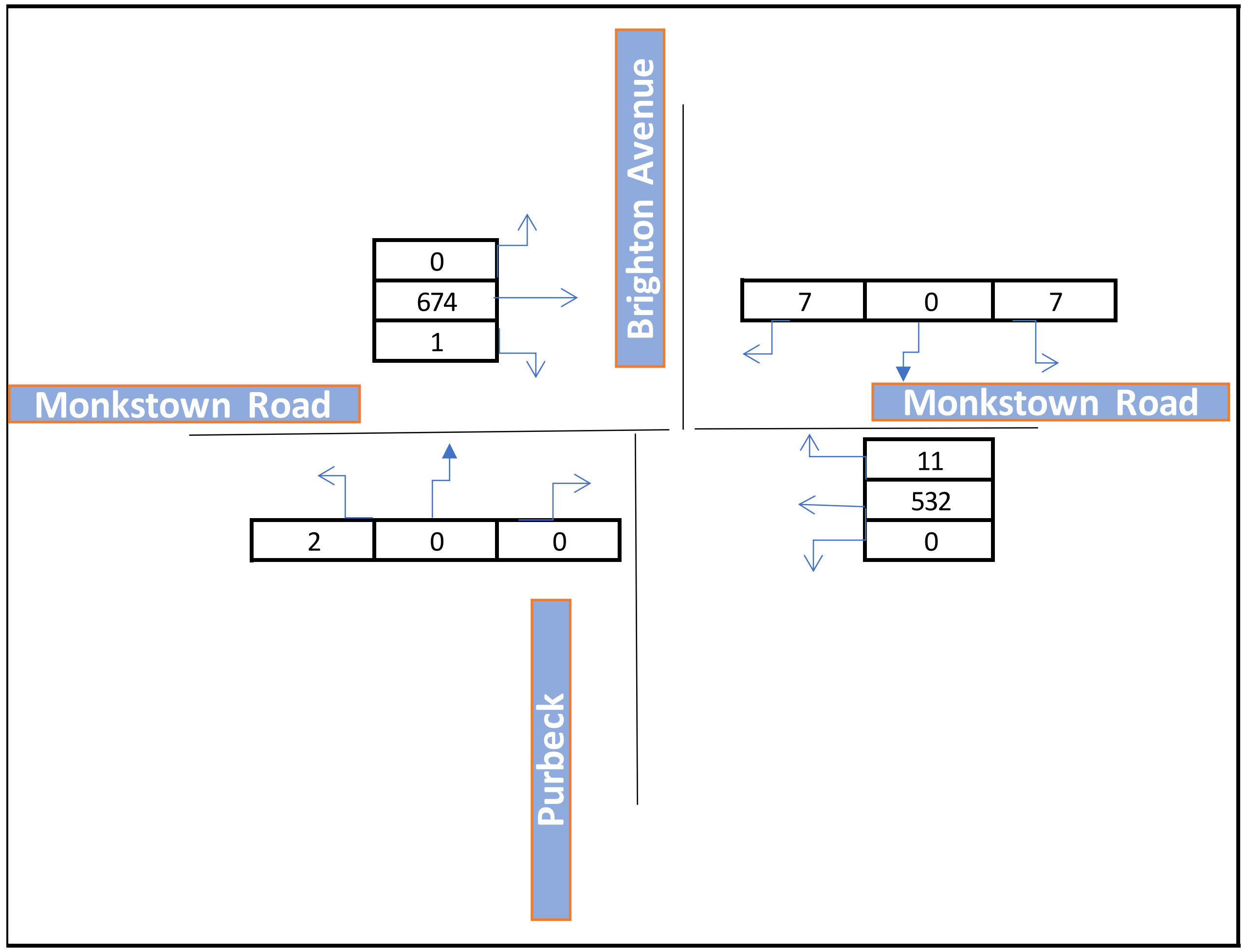
PM Peak Opening 2024 With Development



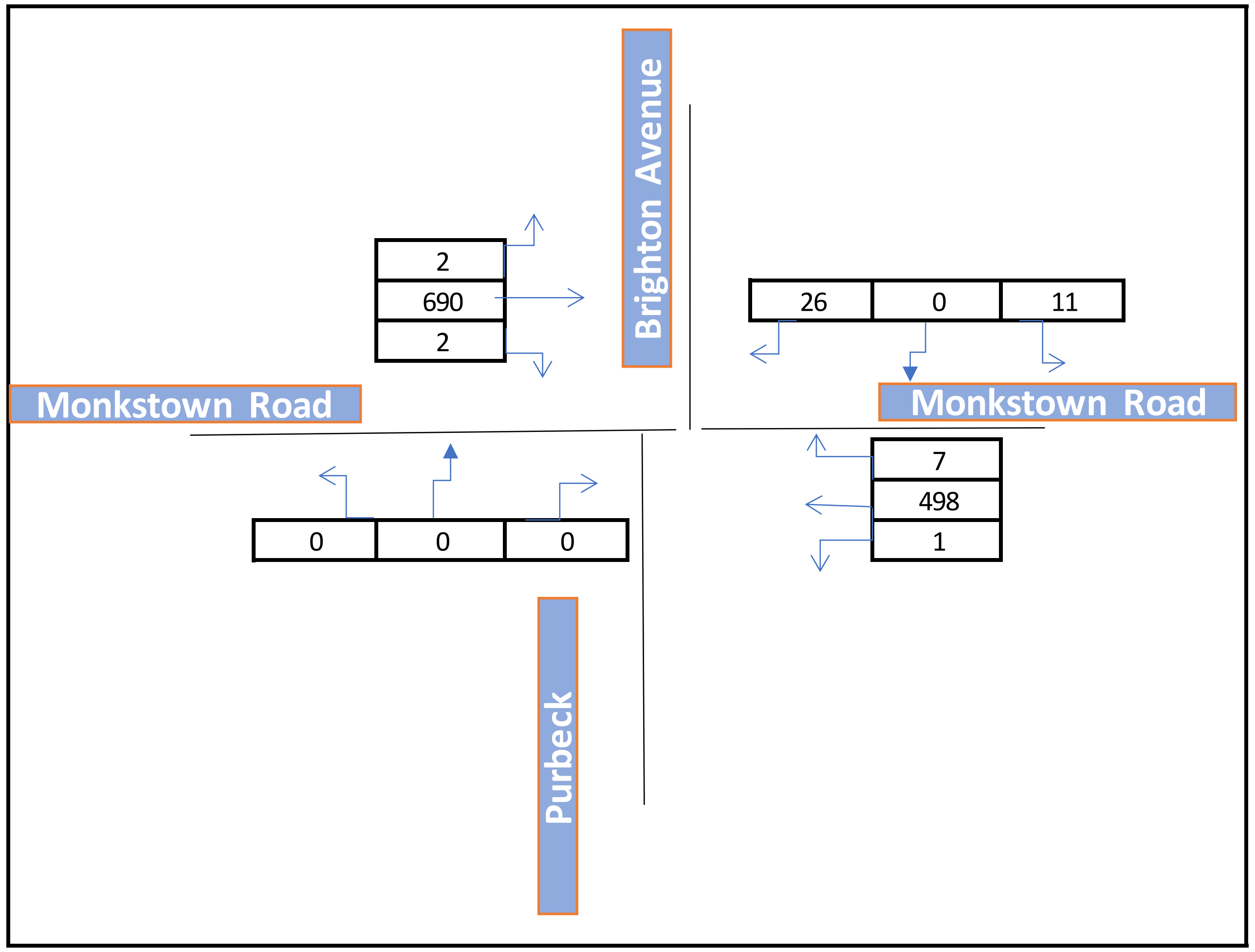
Traffic Generated by Development (494 Apartments)		
AM Peak	Arrivals	42
	Departures	77
PM Peak	Arrivals	75
	Departures	50

Traffic Assignment				
AM Peak	Arrival	Monkstown Road via East	50%	21
		Monkstown Road via West	50%	21
	Departure	Purbeck going East	50%	39
		Purbeck going West	50%	39
PM Peak	Arrival	Monkstown Road via East	50%	38
		Monkstown Road via West	50%	38
	Departure	Purbeck going East	50%	25
		Purbeck going West	50%	25

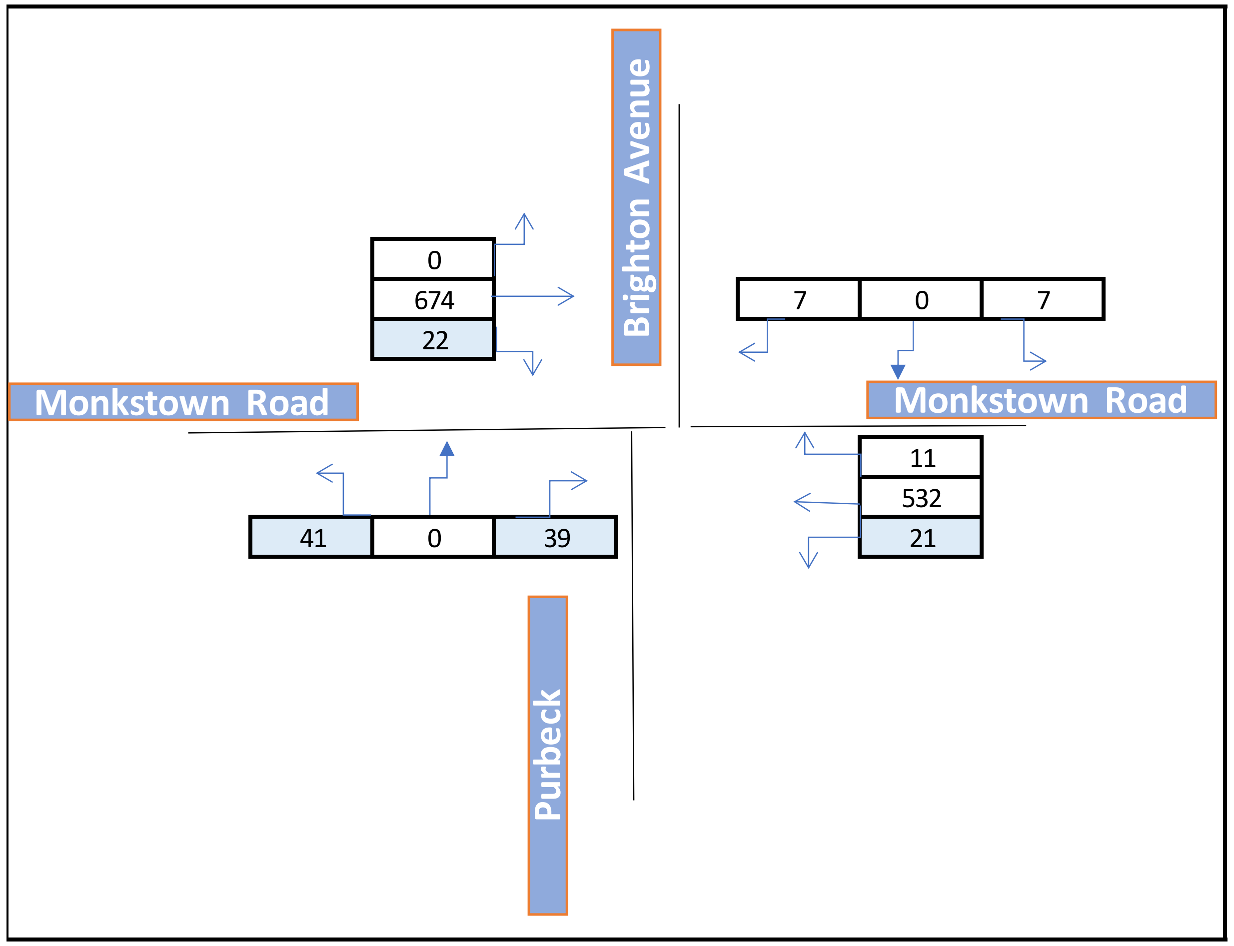
AM Peak Opening +5 2029 No Development



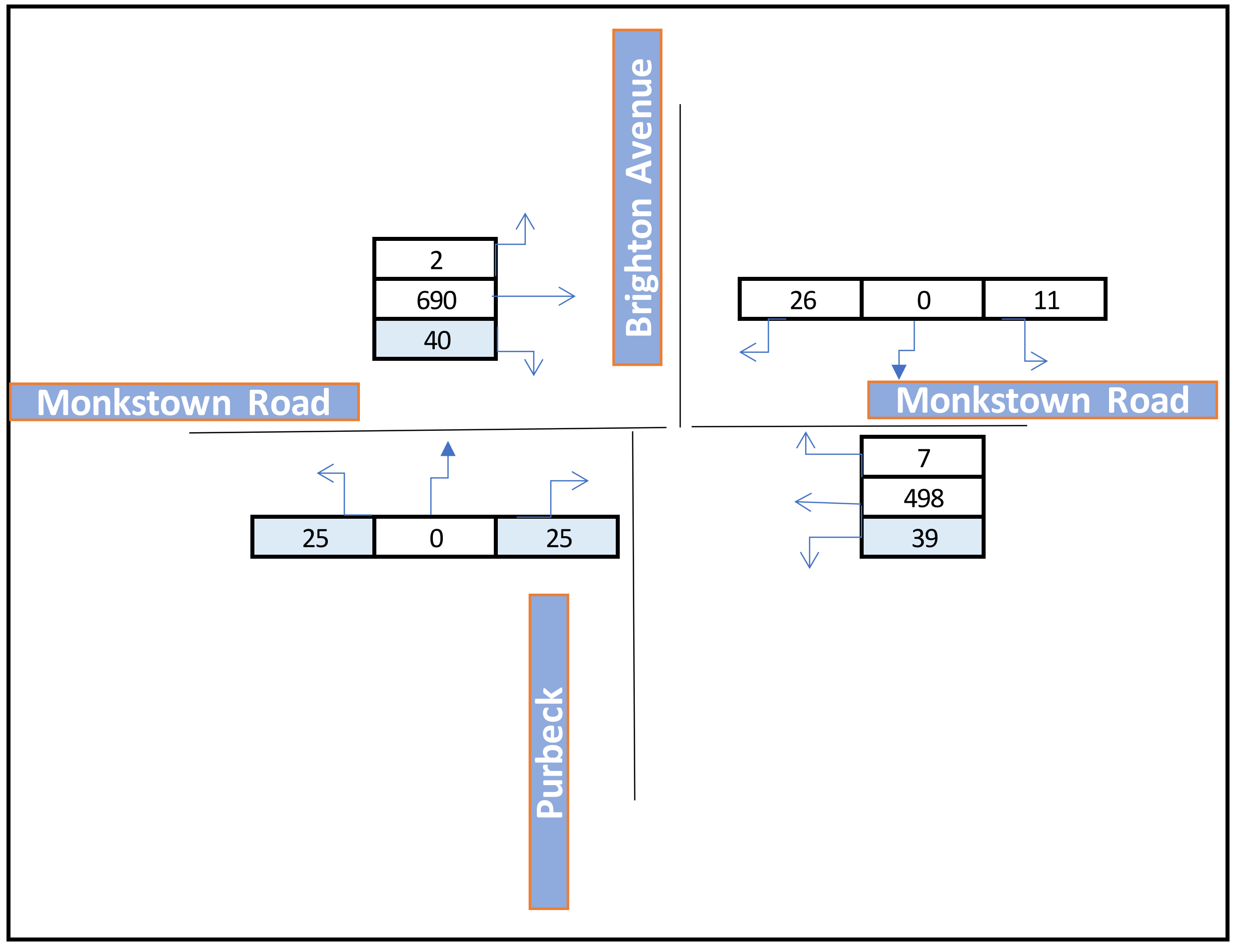
PM Peak Opening +5 2029 No Development



AM Peak Opening +5 2029 With Development



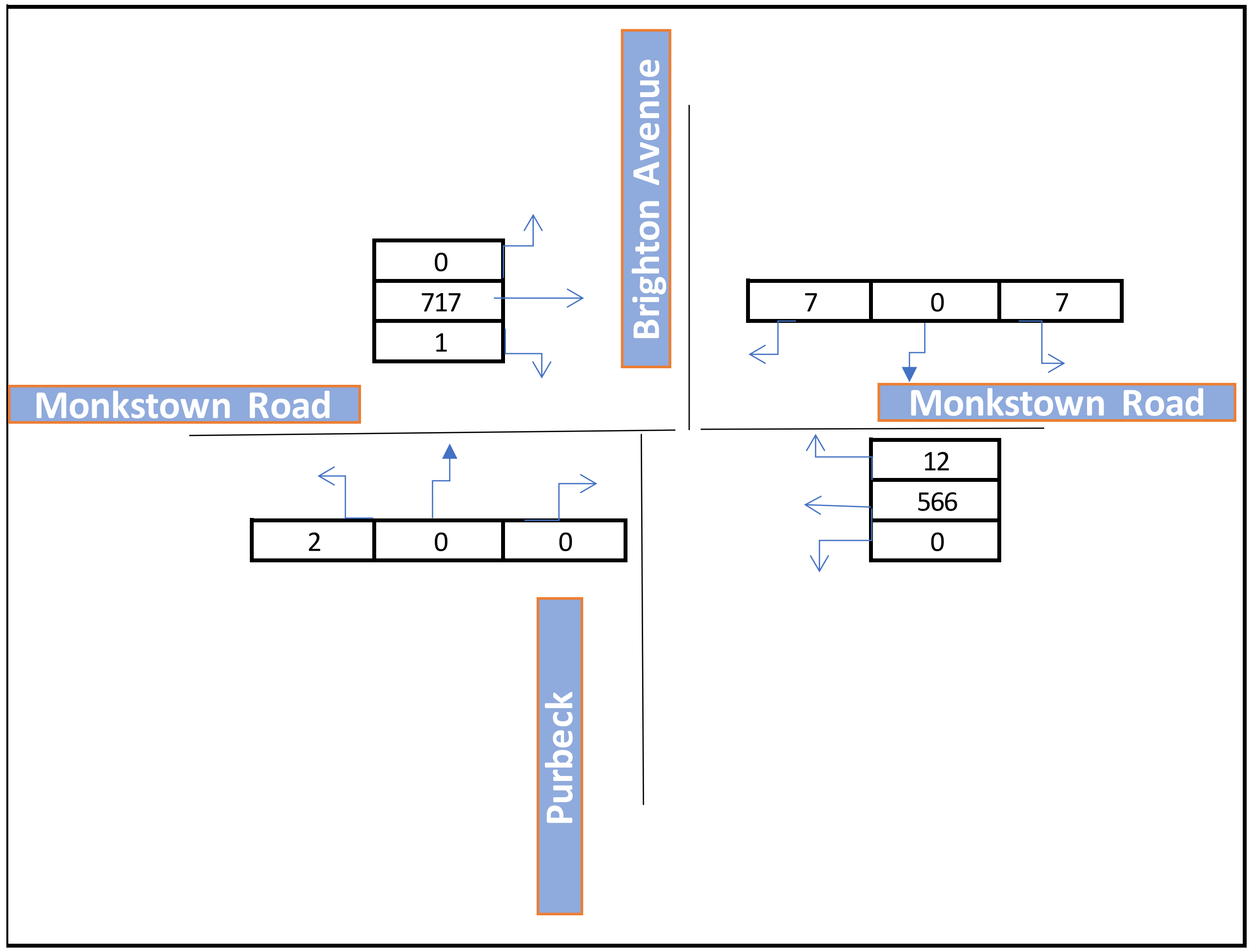
PM Peak Opening +5 2029 With Development



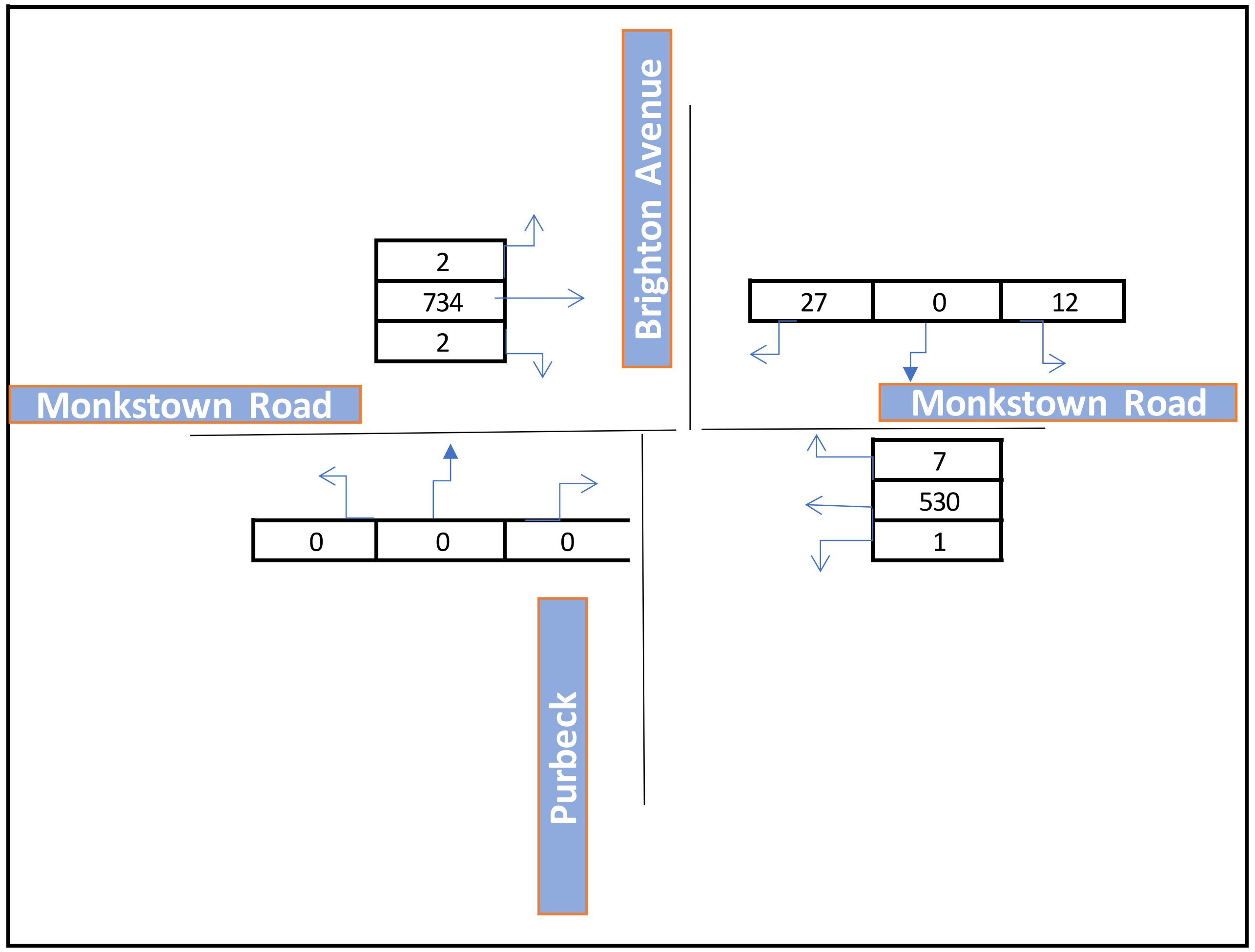
Traffic Generated by Development (494 Apartments)		
AM Peak	Arrivals	42
	Departures	77
PM Peak	Arrivals	75
	Departures	50

Traffic Assignment				
AM Peak	Arrival	Monkstown Road via East	50%	21
		Monkstown Road via West	50%	21
	Departure	Purbeck going East	50%	39
		Purbeck going West	50%	39
PM Peak	Arrival	Monkstown Road via East	50%	38
		Monkstown Road via West	50%	38
	Departure	Purbeck going East	50%	25
		Purbeck going West	50%	25

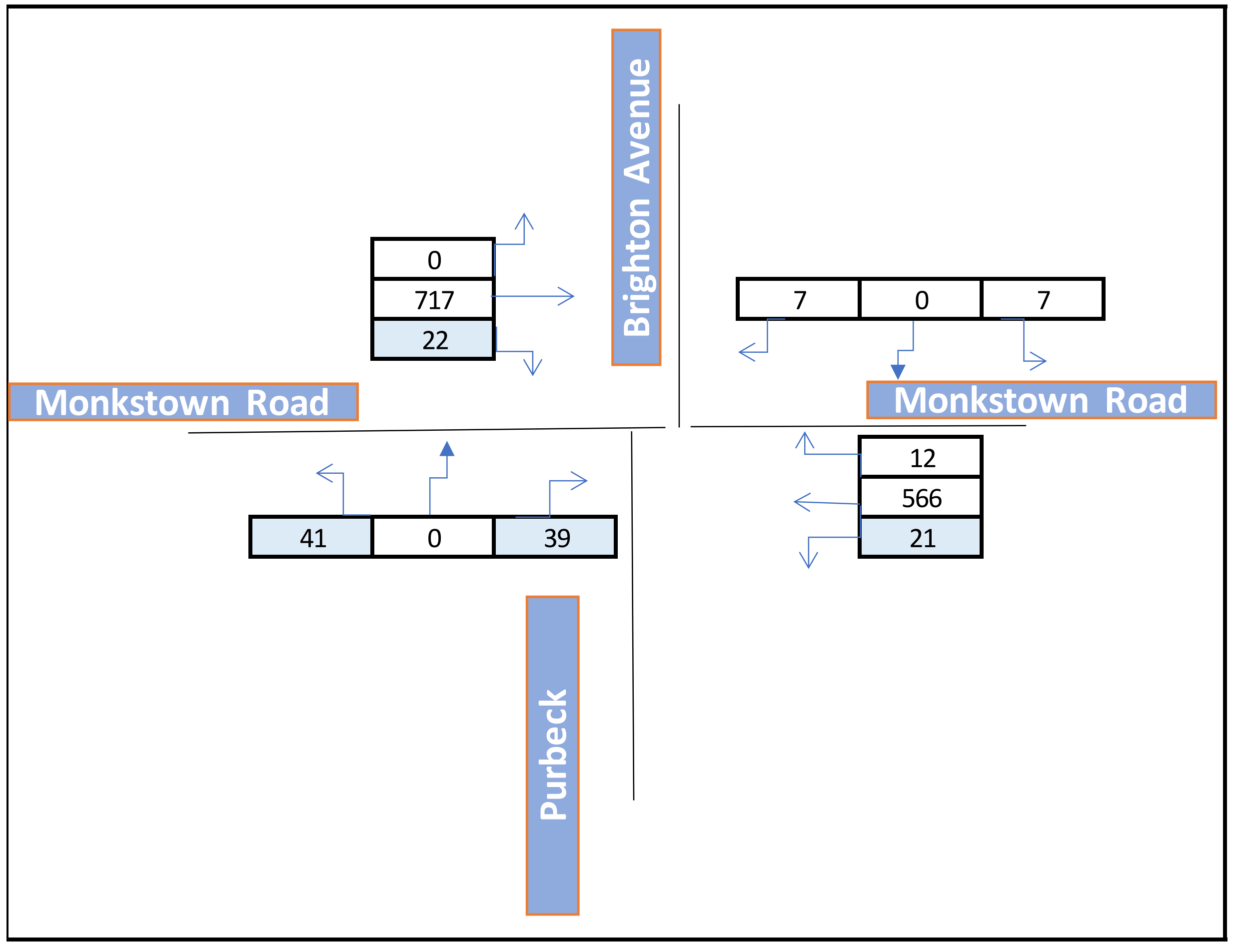
AM Peak Opening +15 2039 No Development



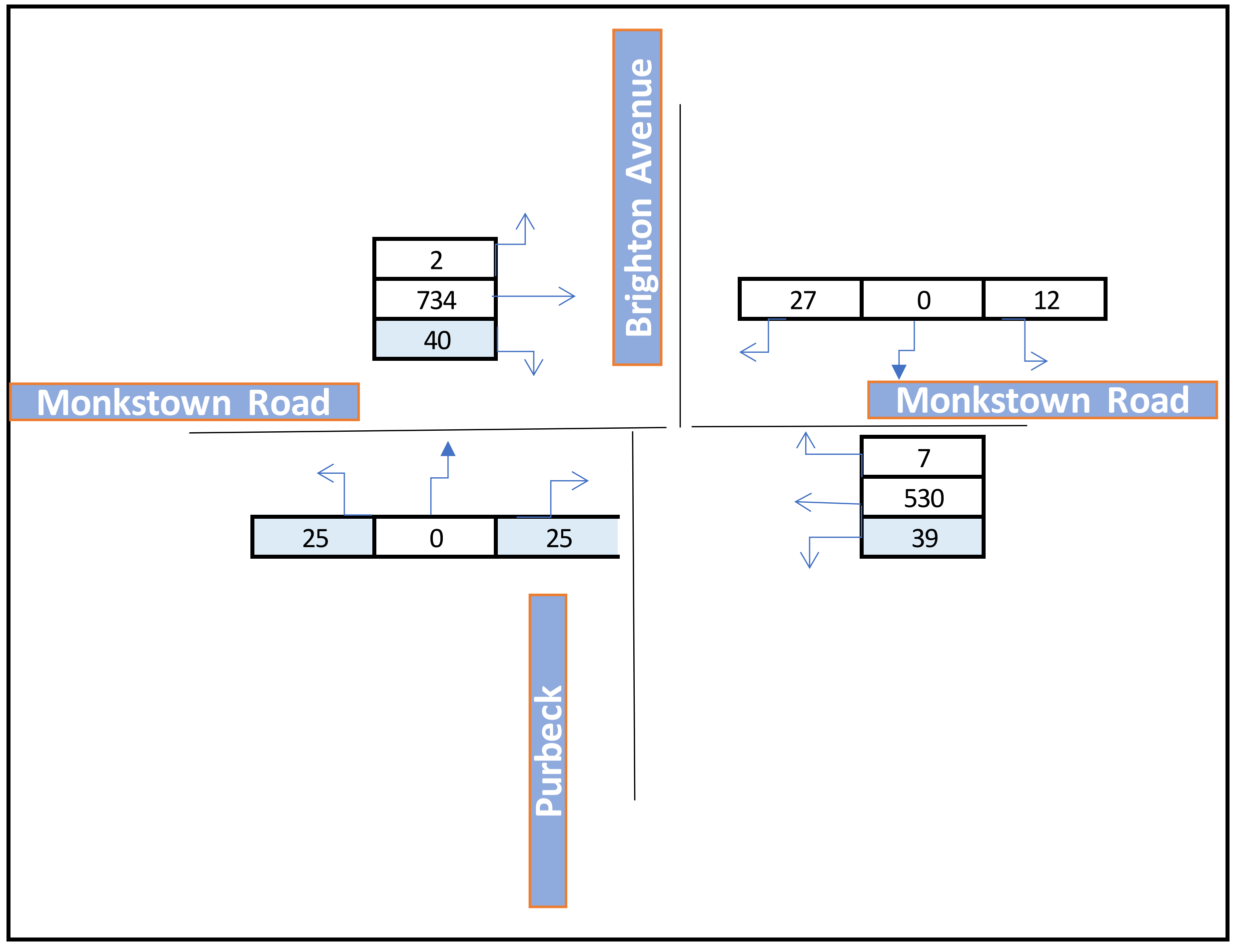
PM Peak Opening +15 2039 No Development



AM Peak Opening +15 2039 With Development



PM Peak Opening +15 2039 With Development



Traffic Generated by Development (494 Apartments)		
AM Peak	Arrivals	42
	Departures	77
PM Peak	Arrivals	75
	Departures	50

Traffic Assignment				
AM Peak	Arrival	Monkstown Road via East	50%	21
		Monkstown Road via West	50%	21
	Departure	Purbeck going East	50%	39
		Purbeck going West	50%	39
PM Peak	Arrival	Monkstown Road via East	50%	38
		Monkstown Road via West	50%	38
	Departure	Purbeck going East	50%	25
		Purbeck going West	50%	25

APPENDIX D
TRAFFIC ANALYSIS

Junctions 10

PICADY 10 - Priority Intersection Module

Filename: 2022 Baseline.j10
Path: J:\2021\21120\21120-02_WIP\05 CALCS\Traffic\Junctions 10 Analysis
Report generation date: 5/11/2022 3:59:05 PM

Summary of junction performance

	AM					PM				
	Set ID	Queue (PCU)	Delay (s)	RFC	LOS	Set ID	Queue (PCU)	Delay (s)	RFC	LOS
	2022 Baseline									
Stream B-ACD	D1	0.0	0.00	0.00	A	D2	0.0	0.00	0.00	A
Stream A-BCD		0.0	8.03	0.02	A		0.0	8.19	0.01	A
Stream D-ABC		0.0	11.38	0.04	B		0.1	13.79	0.12	B
Stream C-ABD		0.0	7.58	0.00	A		0.0	7.60	0.00	A

There are warnings associated with one or more model runs - see the 'Data Errors and Warnings' tables for each Analysis or Demand Set.

Values shown are the highest values encountered over all time segments. Delay is the maximum value of average delay per arriving vehicle.

File summary

File Description

Title	
Location	
Site number	
Date	4/20/2022
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	
Enumerator	ROD\Rico.Raymundo
Description	

Units

Distance units	Speed units	Traffic units input	Traffic units results	Flow units	Average delay units	Total delay units	Rate of delay units
m	kph	PCU	PCU	perHour	s	-Min	perMin

Analysis Options

Calculate Queue Percentiles	Calculate residual capacity	RFC Threshold	Average Delay threshold (s)	Queue threshold (PCU)
		0.85	36.00	20.00

Demand Set Summary

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D1	2022 Baseline	AM	PHF	08:00	09:00	15
D2	2022 Baseline	PM	PHF	08:00	09:00	15

Analysis Set Details

ID	Network flow scaling factor (%)
A1	100.000

2022 Baseline, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Vehicle Mix		HV% is zero for all movements / time segments. Vehicle Mix matrix should be completed whether working in PCUs or Vehs. If HV% at the junction is genuinely zero, please ignore this warning.

Junction Network

Junctions

Junction	Name	Junction type	Arm A Direction	Arm B Direction	Arm C Direction	Arm D Direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	Right-Left Stagger	Two-way	Two-way	Two-way	Two-way		0.21	A

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	0.21	A

Arms

Arms

Arm	Name	Description	Arm type
A	untitled		Major
B	untitled		Minor
C	untitled		Major
D	untitled		Minor

Major Arm Geometry

Arm	Width of carriageway (m)	Has kerbed central reserve	Has right-turn storage	Width for right-turn storage (m)	Visibility for right turn (m)	Blocks?	Blocking queue (PCU)
A	7.50		✓	2.20	20.0	✓	1.00
C	7.50		✓	2.20	20.0	✓	1.00

Geometries for Arm C are measured opposite Arm B. Geometries for Arm A (if relevant) are measured opposite Arm D.

Minor Arm Geometry

Arm	Minor arm type	Lane width (m)	Visibility to left (m)	Visibility to right (m)
B	One lane	2.25	16	14
D	One lane	2.25	17	18

Slope / Intercept / Capacity

Priority Intersection Slopes and Intercepts

Stream	Intercept (PCU/hr)	Slope for A-B	Slope for A-C	Slope for A-D	Slope for B-A	Slope for B-D	Slope for C-A	Slope for C-B	Slope for C-D	Slope for D-B	Slope for D-C
A-D	586	-	-	-	0.212	0.212	0.212	-	0.212	-	-
B-AD	453	0.077	0.195	-	-	-	0.123	0.278	0.123	0.077	0.195
B-C	585	0.084	0.212	-	-	-	-	-	-	0.084	0.212
C-B	586	0.212	0.212	-	-	-	-	-	-	0.212	0.212
D-A	588	-	-	-	0.213	0.084	0.213	-	0.084	-	-
D-BC	455	0.123	0.123	0.280	0.196	0.077	0.196	-	0.077	-	-

The slopes and intercepts shown above include custom intercept adjustments only.

Streams may be combined, in which case capacity will be adjusted.

Values are shown for the first time segment only; they may differ for subsequent time segments.

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D1	2022 Baseline	AM	PHF	08:00	09:00	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A		✓	485	100.000
B		✓	2	100.000
C		✓	603	100.000
D		✓	12	100.000

Peak Hour Factor Data (Traffic)

Arm	Hourly volume (PCU/hr)	Peak hour factor	Peak time segment
A	485	0.92	SecondQuarter
B	2	0.92	SecondQuarter
C	603	0.92	SecondQuarter
D	12	0.92	SecondQuarter

Origin-Destination Data

Demand (PCU/hr)

		To			
		A	B	C	D
From	A	0	0	475	10
	B	0	0	2	0
	C	602	1	0	0
	D	6	0	6	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		A	B	C	D
From	A	0	0	0	0
	B	0	0	0	0
	C	0	0	0	0
	D	0	0	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
B-ACD	0.00	0.00	0.0	A
A-BCD	0.02	8.03	0.0	A
A-B				
A-C				
D-ABC	0.04	11.38	0.0	B
C-ABD	0.00	7.58	0.0	A
C-D				
C-A				

Main Results for each time segment

08:00 - 08:15

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-ACD	0	368	0.000	0	0.0	0.000	A
A-BCD	10	474	0.020	10	0.0	7.744	A
A-B	0			0			
A-C	447			447			
D-ABC	11	355	0.032	11	0.0	10.473	B
C-ABD	0.94	491	0.002	0.94	0.0	7.351	A
C-D	0			0			
C-A	567			567			

08:15 - 08:30

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-ACD	0	345	0.000	0	0.0	0.000	A
A-BCD	11	459	0.024	11	0.0	8.032	A
A-B	0			0			
A-C	516			516			
D-ABC	13	329	0.040	13	0.0	11.382	B
C-ABD	1	476	0.002	1	0.0	7.576	A
C-D	0			0			
C-A	654			654			

08:30 - 08:45

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-ACD	0	354	0.000	0	0.0	0.000	A
A-BCD	11	465	0.023	11	0.0	7.917	A
A-B	0			0			
A-C	489			489			
D-ABC	12	340	0.036	12	0.0	11.005	B
C-ABD	1	482	0.002	1	0.0	7.488	A
C-D	0			0			
C-A	619			619			

08:45 - 09:00

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-ACD	0	368	0.000	0	0.0	0.000	A
A-BCD	10	474	0.020	10	0.0	7.746	A
A-B	0			0			
A-C	447			447			
D-ABC	11	355	0.032	11	0.0	10.481	B
C-ABD	0.94	491	0.002	0.95	0.0	7.355	A
C-D	0			0			
C-A	567			567			

2022 Baseline, PM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Arm A Direction	Arm B Direction	Arm C Direction	Arm D Direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	Right-Left Stagger	Two-way	Two-way	Two-way	Two-way		0.47	A

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	0.47	A

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D2	2022 Baseline	PM	PHF	08:00	09:00	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A		✓	452	100.000
B		✓	0	100.000
C		✓	620	100.000
D		✓	33	100.000

Peak Hour Factor Data (Traffic)

Arm	Hourly volume (PCU/hr)	Peak hour factor	Peak time segment
A	452	0.92	SecondQuarter
B	0	0.92	SecondQuarter
C	620	0.92	SecondQuarter
D	33	0.92	SecondQuarter

Origin-Destination Data

Demand (PCU/hr)

		To			
		A	B	C	D
From	A	0	1	445	6
	B	0	0	0	0
	C	616	2	0	2
	D	10	0	23	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		A	B	C	D
From	A	0	1	1	1
	B	1	0	1	1
	C	1	1	0	1
	D	1	1	1	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
B-ACD	0.00	0.00	0.0	A
A-BCD	0.01	8.19	0.0	A
A-B				
A-C				
D-ABC	0.12	13.79	0.1	B
C-ABD	0.00	7.60	0.0	A
C-D				
C-A				

Main Results for each time segment

08:00 - 08:15

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-ACD	0	369	0.000	0	0.0	0.000	A
A-BCD	6	467	0.012	6	0.0	7.872	A
A-B	0.94			0.94			
A-C	419			419			
D-ABC	31	325	0.096	31	0.1	12.326	B
C-ABD	2	494	0.004	2	0.0	7.384	A
C-D	2			2			
C-A	580			580			

08:15 - 08:30

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-ACD	0	345	0.000	0	0.0	0.000	A
A-BCD	7	451	0.015	7	0.0	8.190	A
A-B	1			1			
A-C	484			484			
D-ABC	36	299	0.120	36	0.1	13.786	B
C-ABD	2	481	0.005	2	0.0	7.599	A
C-D	2			2			
C-A	670			670			

08:30 - 08:45

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-ACD	0	355	0.000	0	0.0	0.000	A
A-BCD	6	457	0.014	6	0.0	8.062	A
A-B	1			1			
A-C	458			458			
D-ABC	34	310	0.110	34	0.1	13.189	B
C-ABD	2	486	0.004	2	0.0	7.512	A
C-D	2			2			
C-A	634			634			

08:45 - 09:00

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-ACD	0	369	0.000	0	0.0	0.000	A
A-BCD	6	467	0.012	6	0.0	7.876	A
A-B	0.94			0.94			
A-C	419			419			
D-ABC	31	325	0.096	31	0.1	12.369	B
C-ABD	2	494	0.004	2	0.0	7.388	A
C-D	2			2			
C-A	580			580			

Junctions 10

PICADY 10 - Priority Intersection Module

Filename: 2024 Opening Year No Development.j10
Path: J:\2021\21120\21120-02_WIP\05 CALCS\Traffic\Junctions 10 Analysis
Report generation date: 5/11/2022 4:02:20 PM

»2024 Opening Year No Development, AM
»2024 Opening Year No Development, PM

Summary of junction performance

	AM					PM				
	Set ID	Queue (PCU)	Delay (s)	RFC	LOS	Set ID	Queue (PCU)	Delay (s)	RFC	LOS
	2024 Opening Year No Development									
Stream B-ACD	D1	0.0	0.00	0.00	A	D2	0.0	0.00	0.00	A
Stream A-BCD		0.0	8.11	0.02	A		0.0	8.28	0.01	A
Stream D-ABC		0.0	11.64	0.04	B		0.1	14.28	0.13	B
Stream C-ABD		0.0	7.64	0.00	A		0.0	7.66	0.00	A

There are warnings associated with one or more model runs - see the 'Data Errors and Warnings' tables for each Analysis or Demand Set.

Values shown are the highest values encountered over all time segments. Delay is the maximum value of average delay per arriving vehicle.

File summary

File Description

Title	
Location	
Site number	
Date	4/20/2022
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	
Enumerator	ROD\Rico.Raymundo
Description	

Units

Distance units	Speed units	Traffic units input	Traffic units results	Flow units	Average delay units	Total delay units	Rate of delay units
m	kph	PCU	PCU	perHour	s	-Min	perMin

Analysis Options

Calculate Queue Percentiles	Calculate residual capacity	RFC Threshold	Average Delay threshold (s)	Queue threshold (PCU)
		0.85	36.00	20.00

Demand Set Summary

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D1	2024 Opening Year No Development	AM	PHF	08:00	09:00	15
D2	2024 Opening Year No Development	PM	PHF	08:00	09:00	15

Analysis Set Details

ID	Network flow scaling factor (%)
A1	100.000

2024 Opening Year No Development, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Vehicle Mix		HV% is zero for all movements / time segments. Vehicle Mix matrix should be completed whether working in PCUs or Vehs. If HV% at the junction is genuinely zero, please ignore this warning.

Junction Network

Junctions

Junction	Name	Junction type	Arm A Direction	Arm B Direction	Arm C Direction	Arm D Direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	Right-Left Stagger	Two-way	Two-way	Two-way	Two-way		0.20	A

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	0.20	A

Arms

Arms

Arm	Name	Description	Arm type
A	untitled		Major
B	untitled		Minor
C	untitled		Major
D	untitled		Minor

Major Arm Geometry

Arm	Width of carriageway (m)	Has kerbed central reserve	Has right-turn storage	Width for right-turn storage (m)	Visibility for right turn (m)	Blocks?	Blocking queue (PCU)
A	7.50		✓	2.20	20.0	✓	1.00
C	7.50		✓	2.20	20.0	✓	1.00

Geometries for Arm C are measured opposite Arm B. Geometries for Arm A (if relevant) are measured opposite Arm D.

Minor Arm Geometry

Arm	Minor arm type	Lane width (m)	Visibility to left (m)	Visibility to right (m)
B	One lane	2.25	16	14
D	One lane	2.25	17	18

Slope / Intercept / Capacity

Priority Intersection Slopes and Intercepts

Stream	Intercept (PCU/hr)	Slope for A-B	Slope for A-C	Slope for A-D	Slope for B-A	Slope for B-D	Slope for C-A	Slope for C-B	Slope for C-D	Slope for D-B	Slope for D-C
A-D	586	-	-	-	0.212	0.212	0.212	-	0.212	-	-
B-AD	453	0.077	0.195	-	-	-	0.123	0.278	0.123	0.077	0.195
B-C	585	0.084	0.212	-	-	-	-	-	-	0.084	0.212
C-B	586	0.212	0.212	-	-	-	-	-	-	0.212	0.212
D-A	588	-	-	-	0.213	0.084	0.213	-	0.084	-	-
D-BC	455	0.123	0.123	0.280	0.196	0.077	0.196	-	0.077	-	-

The slopes and intercepts shown above include custom intercept adjustments only.

Streams may be combined, in which case capacity will be adjusted.

Values are shown for the first time segment only; they may differ for subsequent time segments.

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D1	2024 Opening Year No Development	AM	PHF	08:00	09:00	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A		✓	502	100.000
B		✓	2	100.000
C		✓	625	100.000
D		✓	12	100.000

Peak Hour Factor Data (Traffic)

Arm	Hourly volume (PCU/hr)	Peak hour factor	Peak time segment
A	502	0.92	SecondQuarter
B	2	0.92	SecondQuarter
C	625	0.92	SecondQuarter
D	12	0.92	SecondQuarter

Origin-Destination Data

Demand (PCU/hr)

		To			
		A	B	C	D
From	A	0	0	492	10
	B	0	0	2	0
	C	624	1	0	0
	D	6	0	6	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		A	B	C	D
From	A	0	0	0	0
	B	0	0	0	0
	C	0	0	0	0
	D	0	0	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
B-ACD	0.00	0.00	0.0	A
A-BCD	0.02	8.11	0.0	A
A-B				
A-C				
D-ABC	0.04	11.64	0.0	B
C-ABD	0.00	7.64	0.0	A
C-D				
C-A				

Main Results for each time segment

08:00 - 08:15

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-ACD	0	363	0.000	0	0.0	0.000	A
A-BCD	10	470	0.020	10	0.0	7.811	A
A-B	0			0			
A-C	463			463			
D-ABC	11	349	0.032	11	0.0	10.659	B
C-ABD	0.94	487	0.002	0.94	0.0	7.402	A
C-D	0			0			
C-A	588			588			

08:15 - 08:30

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-ACD	0	338	0.000	0	0.0	0.000	A
A-BCD	11	455	0.025	11	0.0	8.113	A
A-B	0			0			
A-C	534			534			
D-ABC	13	322	0.040	13	0.0	11.638	B
C-ABD	1	472	0.002	1	0.0	7.638	A
C-D	0			0			
C-A	678			678			

08:30 - 08:45

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-ACD	0	348	0.000	0	0.0	0.000	A
A-BCD	11	461	0.023	11	0.0	7.994	A
A-B	0			0			
A-C	506			506			
D-ABC	12	333	0.037	12	0.0	11.229	B
C-ABD	1	478	0.002	1	0.0	7.542	A
C-D	0			0			
C-A	642			642			

08:45 - 09:00

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-ACD	0	363	0.000	0	0.0	0.000	A
A-BCD	10	470	0.020	10	0.0	7.815	A
A-B	0			0			
A-C	463			463			
D-ABC	11	349	0.032	11	0.0	10.665	B
C-ABD	0.94	487	0.002	0.95	0.0	7.405	A
C-D	0			0			
C-A	588			588			

2024 Opening Year No Development, PM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Arm A Direction	Arm B Direction	Arm C Direction	Arm D Direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	Right-Left Stagger	Two-way	Two-way	Two-way	Two-way		0.48	A

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	0.48	A

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D2	2024 Opening Year No Development	PM	PHF	08:00	09:00	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A		✓	468	100.000
B		✓	0	100.000
C		✓	642	100.000
D		✓	34	100.000

Peak Hour Factor Data (Traffic)

Arm	Hourly volume (PCU/hr)	Peak hour factor	Peak time segment
A	468	0.92	SecondQuarter
B	0	0.92	SecondQuarter
C	642	0.92	SecondQuarter
D	34	0.92	SecondQuarter

Origin-Destination Data

Demand (PCU/hr)

		To			
		A	B	C	D
From	A	0	1	461	6
	B	0	0	0	0
	C	638	2	0	2
	D	10	0	24	0

Vehicle Mix

Heavy Vehicle Percentages

	To				
		A	B	C	D
From	A	0	1	1	1
	B	1	0	1	1
	C	1	1	0	1
	D	1	1	1	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
B-ACD	0.00	0.00	0.0	A
A-BCD	0.01	8.28	0.0	A
A-B				
A-C				
D-ABC	0.13	14.28	0.1	B
C-ABD	0.00	7.66	0.0	A
C-D				
C-A				

Main Results for each time segment

08:00 - 08:15

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-ACD	0	363	0.000	0	0.0	0.000	A
A-BCD	6	463	0.012	6	0.0	7.944	A
A-B	0.94			0.94			
A-C	434			434			
D-ABC	32	318	0.101	32	0.1	12.673	B
C-ABD	2	491	0.004	2	0.0	7.434	A
C-D	2			2			
C-A	601			601			

08:15 - 08:30

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-ACD	0	339	0.000	0	0.0	0.000	A
A-BCD	7	446	0.015	7	0.0	8.278	A
A-B	1			1			
A-C	501			501			
D-ABC	37	291	0.127	37	0.1	14.284	B
C-ABD	2	477	0.005	2	0.0	7.659	A
C-D	2			2			
C-A	693			693			

08:30 - 08:45

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-ACD	0	349	0.000	0	0.0	0.000	A
A-BCD	6	453	0.014	6	0.0	8.143	A
A-B	1			1			
A-C	474			474			
D-ABC	35	302	0.116	35	0.1	13.623	B
C-ABD	2	482	0.004	2	0.0	7.569	A
C-D	2			2			
C-A	656			656			

08:45 - 09:00

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-ACD	0	363	0.000	0	0.0	0.000	A
A-BCD	6	463	0.012	6	0.0	7.947	A
A-B	0.94			0.94			
A-C	434			434			
D-ABC	32	318	0.101	32	0.1	12.720	B
C-ABD	2	491	0.004	2	0.0	7.435	A
C-D	2			2			
C-A	601			601			

Junctions 10

PICADY 10 - Priority Intersection Module

Version: 10.0.2.1574

Filename: 2024 Opening Year With Development.j10
Path: J:\2021\21120\21120-02_WIP\05 CALCS\Traffic\Junctions 10 Analysis
Report generation date: 5/18/2022 9:20:41 AM

»2024 Opening Year With Development, AM
»2024 Opening Year With Development, PM

Summary of junction performance

	AM					PM				
	Set ID	Queue (PCU)	Delay (s)	RFC	LOS	Set ID	Queue (PCU)	Delay (s)	RFC	LOS
	2024 Opening Year With Development									
Stream B-ACD	D1	0.3	14.71	0.26	B	D2	0.2	13.37	0.17	B
Stream A-BCD		0.0	8.34	0.03	A		0.0	8.38	0.02	A
Stream D-ABC		0.0	12.21	0.04	B		0.2	14.89	0.13	B
Stream C-ABD		0.1	7.89	0.05	A		0.1	7.92	0.09	A

Values shown are the highest values encountered over all time segments. Delay is the maximum value of average delay per arriving vehicle.

File summary

File Description

Title	
Location	
Site number	
Date	4/20/2022
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	
Enumerator	ROD\Rico.Raymundo
Description	

Units

Distance units	Speed units	Traffic units input	Traffic units results	Flow units	Average delay units	Total delay units	Rate of delay units
m	kph	PCU	PCU	perHour	s	-Min	perMin

Analysis Options

Calculate Queue Percentiles	Calculate residual capacity	RFC Threshold	Average Delay threshold (s)	Queue threshold (PCU)
		0.85	36.00	20.00

Demand Set Summary

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D1	2024 Opening Year With Development	AM	PHF	08:00	09:00	15
D2	2024 Opening Year With Development	PM	PHF	08:00	09:00	15

Analysis Set Details

ID	Network flow scaling factor (%)
A1	100.000

2024 Opening Year With Development, AM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Arm A Direction	Arm B Direction	Arm C Direction	Arm D Direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	Right-Left Stagger	Two-way	Two-way	Two-way	Two-way		1.26	A

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	1.26	A

Arms

Arms

Arm	Name	Description	Arm type
A	untitled		Major
B	untitled		Minor
C	untitled		Major
D	untitled		Minor

Major Arm Geometry

Arm	Width of carriageway (m)	Has kerbed central reserve	Has right-turn storage	Width for right-turn storage (m)	Visibility for right turn (m)	Blocks?	Blocking queue (PCU)
A	7.50		✓	2.20	20.0	✓	1.00
C	7.50		✓	2.20	20.0	✓	1.20

Geometries for Arm C are measured opposite Arm B. Geometries for Arm A (if relevant) are measured opposite Arm D.

Minor Arm Geometry

Arm	Minor arm type	Lane width (m)	Visibility to left (m)	Visibility to right (m)
B	One lane	2.25	16	14
D	One lane	2.25	17	18

Slope / Intercept / Capacity

Priority Intersection Slopes and Intercepts

Stream	Intercept (PCU/hr)	Slope for A-B	Slope for A-C	Slope for A-D	Slope for B-A	Slope for B-D	Slope for C-A	Slope for C-B	Slope for C-D	Slope for D-B	Slope for D-C
A-D	586	-	-	-	0.212	0.212	0.212	-	0.212	-	-
B-AD	453	0.077	0.195	-	-	-	0.123	0.278	0.123	0.077	0.195
B-C	585	0.084	0.212	-	-	-	-	-	-	0.084	0.212
C-B	586	0.212	0.212	-	-	-	-	-	-	0.212	0.212
D-A	588	-	-	-	0.213	0.084	0.213	-	0.084	-	-
D-BC	455	0.123	0.123	0.280	0.196	0.077	0.196	-	0.077	-	-

The slopes and intercepts shown above include custom intercept adjustments only.

Streams may be combined, in which case capacity will be adjusted.

Values are shown for the first time segment only; they may differ for subsequent time segments.

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D1	2024 Opening Year With Development	AM	PHF	08:00	09:00	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A		✓	523	100.000
B		✓	80	100.000
C		✓	646	100.000
D		✓	12	100.000

Peak Hour Factor Data (Traffic)

Arm	Hourly volume (PCU/hr)	Peak hour factor	Peak time segment
A	523	0.92	SecondQuarter
B	80	0.92	SecondQuarter
C	646	0.92	SecondQuarter
D	12	0.92	SecondQuarter

Origin-Destination Data

Demand (PCU/hr)

		To			
		A	B	C	D
From	A	0	21	492	10
	B	39	0	41	0
	C	624	22	0	0
	D	6	0	6	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		A	B	C	D
From	A	0	1	1	1
	B	1	0	1	1
	C	1	1	0	1
	D	1	1	1	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
B-ACD	0.26	14.71	0.3	B
A-BCD	0.03	8.34	0.0	A
A-B				
A-C				
D-ABC	0.04	12.21	0.0	B
C-ABD	0.05	7.89	0.1	A
C-D				
C-A				

Main Results for each time segment

08:00 - 08:15

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-ACD	75	359	0.210	74	0.3	12.731	B
A-BCD	10	464	0.021	10	0.0	8.009	A
A-B	20			20			
A-C	463			463			
D-ABC	11	339	0.033	11	0.0	11.080	B
C-ABD	21	496	0.043	21	0.0	7.658	A
C-D	0			0			
C-A	587			587			

08:15 - 08:30

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-ACD	87	333	0.261	87	0.3	14.714	B
A-BCD	11	447	0.025	11	0.0	8.340	A
A-B	23			23			
A-C	534			534			
D-ABC	13	311	0.042	13	0.0	12.210	B
C-ABD	25	486	0.051	25	0.1	7.889	A
C-D	0			0			
C-A	677			677			

08:30 - 08:45

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-ACD	82	344	0.240	82	0.3	13.926	B
A-BCD	11	454	0.023	11	0.0	8.209	A
A-B	22			22			
A-C	506			506			
D-ABC	12	322	0.038	12	0.0	11.738	B
C-ABD	23	490	0.048	23	0.1	7.801	A
C-D	0			0			
C-A	641			641			

08:45 - 09:00

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-ACD	75	359	0.210	76	0.3	12.846	B
A-BCD	10	463	0.021	10	0.0	8.014	A
A-B	20			20			
A-C	463			463			
D-ABC	11	339	0.033	11	0.0	11.097	B
C-ABD	21	496	0.043	21	0.0	7.662	A
C-D	0			0			
C-A	587			587			

2024 Opening Year With Development, PM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Arm A Direction	Arm B Direction	Arm C Direction	Arm D Direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	Right-Left Stagger	Two-way	Two-way	Two-way	Two-way		1.23	A

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	1.23	A

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D2	2024 Opening Year With Development	PM	PHF	08:00	09:00	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A		✓	506	100.000
B		✓	50	100.000
C		✓	680	100.000
D		✓	34	100.000

Peak Hour Factor Data (Traffic)

Arm	Hourly volume (PCU/hr)	Peak hour factor	Peak time segment
A	506	0.92	SecondQuarter
B	50	0.92	SecondQuarter
C	680	0.92	SecondQuarter
D	34	0.92	SecondQuarter

Origin-Destination Data

Demand (PCU/hr)

		To			
		A	B	C	D
From	A	0	39	461	6
	B	25	0	25	0
	C	638	40	0	2
	D	10	0	24	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		A	B	C	D
From	A	0	1	1	1
	B	1	0	1	1
	C	1	1	0	1
	D	1	1	1	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
B-ACD	0.17	13.37	0.2	B
A-BCD	0.02	8.38	0.0	A
A-B				
A-C				
D-ABC	0.13	14.89	0.2	B
C-ABD	0.09	7.92	0.1	A
C-D				
C-A				

Main Results for each time segment

08:00 - 08:15

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-ACD	47	352	0.134	46	0.2	11.862	B
A-BCD	6	459	0.012	6	0.0	8.022	A
A-B	37			37			
A-C	434			434			
D-ABC	32	309	0.104	32	0.1	13.074	B
C-ABD	40	510	0.078	40	0.1	7.722	A
C-D	2			2			
C-A	599			599			

08:15 - 08:30

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-ACD	54	326	0.167	54	0.2	13.375	B
A-BCD	7	441	0.015	7	0.0	8.375	A
A-B	42			42			
A-C	501			501			
D-ABC	37	281	0.132	37	0.2	14.891	B
C-ABD	47	506	0.094	47	0.1	7.919	A
C-D	2			2			
C-A	690			690			

08:30 - 08:45

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-ACD	51	336	0.153	52	0.2	12.765	B
A-BCD	6	448	0.014	6	0.0	8.233	A
A-B	40			40			
A-C	474			474			
D-ABC	35	292	0.120	35	0.1	14.142	B
C-ABD	44	507	0.087	44	0.1	7.853	A
C-D	2			2			
C-A	653			653			

08:45 - 09:00

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-ACD	47	352	0.134	47	0.2	11.924	B
A-BCD	6	459	0.012	6	0.0	8.026	A
A-B	37			37			
A-C	434			434			
D-ABC	32	309	0.104	32	0.1	13.128	B
C-ABD	40	510	0.078	40	0.1	7.737	A
C-D	2			2			
C-A	599			599			

Junctions 10

PICADY 10 - Priority Intersection Module

Filename: 2029 Opening Yr + 5 No Development.j10
Path: J:\2021\21120\21120-02_WIP\05 CALCS\Traffic\Junctions 10 Analysis
Report generation date: 5/11/2022 4:06:09 PM

»2029 Opening Yr + 5 No Development, AM
»2029 Opening Yr + 5 No Development, PM

Summary of junction performance

	AM					PM				
	Set ID	Queue (PCU)	Delay (s)	RFC	LOS	Set ID	Queue (PCU)	Delay (s)	RFC	LOS
	2029 Opening Yr + 5 No Development									
Stream B-ACD	D1	0.0	0.00	0.00	A	D2	0.0	0.00	0.00	A
Stream A-BCD		0.0	8.37	0.03	A		0.0	8.41	0.02	A
Stream D-ABC		0.1	12.38	0.05	B		0.2	15.31	0.15	C
Stream C-ABD		0.0	7.79	0.00	A		0.0	7.73	0.00	A

There are warnings associated with one or more model runs - see the 'Data Errors and Warnings' tables for each Analysis or Demand Set.

Values shown are the highest values encountered over all time segments. Delay is the maximum value of average delay per arriving vehicle.

File summary

File Description

Title	
Location	
Site number	
Date	4/20/2022
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	
Enumerator	ROD\Rico.Raymundo
Description	

Units

Distance units	Speed units	Traffic units input	Traffic units results	Flow units	Average delay units	Total delay units	Rate of delay units
m	kph	PCU	PCU	perHour	s	-Min	perMin

Analysis Options

Calculate Queue Percentiles	Calculate residual capacity	RFC Threshold	Average Delay threshold (s)	Queue threshold (PCU)
		0.85	36.00	20.00

Demand Set Summary

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D1	2029 Opening Yr + 5 No Development	AM	PHF	08:00	09:00	15
D2	2029 Opening Yr + 5 No Development	PM	PHF	08:00	09:00	15

Analysis Set Details

ID	Network flow scaling factor (%)
A1	100.000

2029 Opening Yr + 5 No Development, AM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Arm A Direction	Arm B Direction	Arm C Direction	Arm D Direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	Right-Left Stagger	Two-way	Two-way	Two-way	Two-way		0.22	A

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	0.22	A

Arms

Arms

Arm	Name	Description	Arm type
A	untitled		Major
B	untitled		Minor
C	untitled		Major
D	untitled		Minor

Major Arm Geometry

Arm	Width of carriageway (m)	Has kerbed central reserve	Has right-turn storage	Width for right-turn storage (m)	Visibility for right turn (m)	Blocks?	Blocking queue (PCU)
A	7.50		✓	2.20	20.0	✓	1.00
C	7.50		✓	2.20	20.0	✓	1.00

Geometries for Arm C are measured opposite Arm B. Geometries for Arm A (if relevant) are measured opposite Arm D.

Minor Arm Geometry

Arm	Minor arm type	Lane width (m)	Visibility to left (m)	Visibility to right (m)
B	One lane	2.25	16	14
D	One lane	2.25	17	18

Slope / Intercept / Capacity

Priority Intersection Slopes and Intercepts

Stream	Intercept (PCU/hr)	Slope for A-B	Slope for A-C	Slope for A-D	Slope for B-A	Slope for B-D	Slope for C-A	Slope for C-B	Slope for C-D	Slope for D-B	Slope for D-C
A-D	586	-	-	-	0.212	0.212	0.212	-	0.212	-	-
B-AD	453	0.077	0.195	-	-	-	0.123	0.278	0.123	0.077	0.195
B-C	585	0.084	0.212	-	-	-	-	-	-	0.084	0.212
C-B	586	0.212	0.212	-	-	-	-	-	-	0.212	0.212
D-A	588	-	-	-	0.213	0.084	0.213	-	0.084	-	-
D-BC	455	0.123	0.123	0.280	0.196	0.077	0.196	-	0.077	-	-

The slopes and intercepts shown above include custom intercept adjustments only.

Streams may be combined, in which case capacity will be adjusted.

Values are shown for the first time segment only; they may differ for subsequent time segments.

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D1	2029 Opening Yr + 5 No Development	AM	PHF	08:00	09:00	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A		✓	543	100.000
B		✓	2	100.000
C		✓	675	100.000
D		✓	14	100.000

Peak Hour Factor Data (Traffic)

Arm	Hourly volume (PCU/hr)	Peak hour factor	Peak time segment
A	543	0.92	SecondQuarter
B	2	0.92	SecondQuarter
C	675	0.92	SecondQuarter
D	14	0.92	SecondQuarter

Origin-Destination Data

Demand (PCU/hr)

		To			
		A	B	C	D
From	A	0	0	532	11
	B	0	0	2	0
	C	674	1	0	0
	D	7	0	7	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		A	B	C	D
From	A	0	0	0	1
	B	0	0	0	0
	C	0	0	0	0
	D	0	0	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
B-ACD	0.00	0.00	0.0	A
A-BCD	0.03	8.37	0.0	A
A-B				
A-C				
D-ABC	0.05	12.38	0.1	B
C-ABD	0.00	7.79	0.0	A
C-D				
C-A				

Main Results for each time segment

08:00 - 08:15

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-ACD	0	350	0.000	0	0.0	0.000	A
A-BCD	11	463	0.023	11	0.0	8.034	A
A-B	0			0			
A-C	501			501			
D-ABC	13	335	0.039	13	0.0	11.174	B
C-ABD	0.94	479	0.002	0.94	0.0	7.527	A
C-D	0			0			
C-A	635			635			

08:15 - 08:30

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-ACD	0	323	0.000	0	0.0	0.000	A
A-BCD	12	447	0.028	12	0.0	8.366	A
A-B	0			0			
A-C	578			578			
D-ABC	15	306	0.050	15	0.1	12.380	B
C-ABD	1	463	0.002	1	0.0	7.793	A
C-D	0			0			
C-A	733			733			

08:30 - 08:45

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-ACD	0	334	0.000	0	0.0	0.000	A
A-BCD	12	453	0.026	12	0.0	8.234	A
A-B	0			0			
A-C	547			547			
D-ABC	14	318	0.045	14	0.0	11.875	B
C-ABD	1	469	0.002	1	0.0	7.687	A
C-D	0			0			
C-A	694			694			

08:45 - 09:00

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-ACD	0	350	0.000	0	0.0	0.000	A
A-BCD	11	463	0.023	11	0.0	8.038	A
A-B	0			0			
A-C	501			501			
D-ABC	13	335	0.039	13	0.0	11.188	B
C-ABD	0.94	479	0.002	0.95	0.0	7.530	A
C-D	0			0			
C-A	635			635			

2029 Opening Yr + 5 No Development, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Vehicle Mix		HV% is zero for all movements / time segments. Vehicle Mix matrix should be completed whether working in PCUs or Vehs. If HV% at the junction is genuinely zero, please ignore this warning.

Junction Network

Junctions

Junction	Name	Junction type	Arm A Direction	Arm B Direction	Arm C Direction	Arm D Direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	Right-Left Stagger	Two-way	Two-way	Two-way	Two-way		0.52	A

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	0.52	A

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D2	2029 Opening Yr + 5 No Development	PM	PHF	08:00	09:00	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A		✓	506	100.000
B		✓	0	100.000
C		✓	694	100.000
D		✓	37	100.000

Peak Hour Factor Data (Traffic)

Arm	Hourly volume (PCU/hr)	Peak hour factor	Peak time segment
A	506	0.92	SecondQuarter
B	0	0.92	SecondQuarter
C	694	0.92	SecondQuarter
D	37	0.92	SecondQuarter

Origin-Destination Data

Demand (PCU/hr)

		To			
		A	B	C	D
From	A	0	1	498	7
	B	0	0	0	0
	C	690	2	0	2
	D	11	0	26	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		A	B	C	D
From	A	0	0	0	0
	B	0	0	0	0
	C	0	0	0	0
	D	0	0	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
B-ACD	0.00	0.00	0.0	A
A-BCD	0.02	8.41	0.0	A
A-B				
A-C				
D-ABC	0.15	15.31	0.2	C
C-ABD	0.00	7.73	0.0	A
C-D				
C-A				

Main Results for each time segment

08:00 - 08:15

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-ACD	0	351	0.000	0	0.0	0.000	A
A-BCD	7	454	0.015	7	0.0	8.042	A
A-B	0.94			0.94			
A-C	469			469			
D-ABC	35	304	0.115	34	0.1	13.313	B
C-ABD	2	483	0.004	2	0.0	7.478	A
C-D	2			2			
C-A	650			650			

08:15 - 08:30

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-ACD	0	324	0.000	0	0.0	0.000	A
A-BCD	8	436	0.018	8	0.0	8.412	A
A-B	1			1			
A-C	541			541			
D-ABC	40	275	0.146	40	0.2	15.307	C
C-ABD	2	468	0.005	2	0.0	7.728	A
C-D	2			2			
C-A	750			750			

08:30 - 08:45

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-ACD	0	335	0.000	0	0.0	0.000	A
A-BCD	7	443	0.017	7	0.0	8.263	A
A-B	1			1			
A-C	512			512			
D-ABC	38	287	0.133	38	0.2	14.482	B
C-ABD	2	474	0.004	2	0.0	7.627	A
C-D	2			2			
C-A	710			710			

08:45 - 09:00

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-ACD	0	351	0.000	0	0.0	0.000	A
A-BCD	7	454	0.015	7	0.0	8.044	A
A-B	0.94			0.94			
A-C	469			469			
D-ABC	35	304	0.115	35	0.1	13.373	B
C-ABD	2	483	0.004	2	0.0	7.479	A
C-D	2			2			
C-A	650			650			

Junctions 10

PICADY 10 - Priority Intersection Module

For sales and distribution information, program advice and maintenance, contact TRL Software:
+44 (0)1344 379777 software@trl.co.uk trlsoftware.com

Filename: 2029 Opening Yr + 5 With Development.j10
Path: J:\2021\21120\21120-02_WIP\05 CALCS\Traffic\Junctions 10 Analysis
Report generation date: 5/18/2022 9:33:01 AM

»2029 Opening Yr + 5 With Development, AM
»2029 Opening Yr + 5 With Development, PM

Summary of junction performance

	AM					PM				
	Set ID	Queue (PCU)	Delay (s)	RFC	LOS	Set ID	Queue (PCU)	Delay (s)	RFC	LOS
	2029 Opening Yr + 5 With Development									
Stream B-ACD	D1	0.4	15.68	0.27	C	D2	0.2	14.17	0.18	B
Stream A-BCD		0.0	8.60	0.03	A		0.0	8.66	0.02	A
Stream D-ABC		0.1	13.03	0.05	B		0.2	16.18	0.15	C
Stream C-ABD		0.1	7.96	0.05	A		0.1	7.87	0.10	A

Values shown are the highest values encountered over all time segments. Delay is the maximum value of average delay per arriving vehicle.

File summary

File Description

Title	
Location	
Site number	
Date	4/20/2022
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	
Enumerator	ROD\Rico.Raymundo
Description	

Units

Distance units	Speed units	Traffic units input	Traffic units results	Flow units	Average delay units	Total delay units	Rate of delay units
m	kph	PCU	PCU	perHour	s	-Min	perMin

Analysis Options

Calculate Queue Percentiles	Calculate residual capacity	RFC Threshold	Average Delay threshold (s)	Queue threshold (PCU)
		0.85	36.00	20.00

Demand Set Summary

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D1	2029 Opening Yr + 5 With Development	AM	PHF	08:00	09:00	15
D2	2029 Opening Yr + 5 With Development	PM	PHF	08:00	09:00	15

Analysis Set Details

ID	Network flow scaling factor (%)
A1	100.000

2029 Opening Yr + 5 With Development, AM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Arm A Direction	Arm B Direction	Arm C Direction	Arm D Direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	Right-Left Stagger	Two-way	Two-way	Two-way	Two-way		1.27	A

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	1.27	A

Arms

Arms

Arm	Name	Description	Arm type
A	untitled		Major
B	untitled		Minor
C	untitled		Major
D	untitled		Minor

Major Arm Geometry

Arm	Width of carriageway (m)	Has kerbed central reserve	Has right-turn storage	Width for right-turn storage (m)	Visibility for right turn (m)	Blocks?	Blocking queue (PCU)
A	7.50		✓	2.20	20.0	✓	1.00
C	7.50		✓	2.20	20.0	✓	1.10

Geometries for Arm C are measured opposite Arm B. Geometries for Arm A (if relevant) are measured opposite Arm D.

Minor Arm Geometry

Arm	Minor arm type	Lane width (m)	Visibility to left (m)	Visibility to right (m)
B	One lane	2.25	16	14
D	One lane	2.25	17	18

Slope / Intercept / Capacity

Priority Intersection Slopes and Intercepts

Stream	Intercept (PCU/hr)	Slope for A-B	Slope for A-C	Slope for A-D	Slope for B-A	Slope for B-D	Slope for C-A	Slope for C-B	Slope for C-D	Slope for D-B	Slope for D-C
A-D	586	-	-	-	0.212	0.212	0.212	-	0.212	-	-
B-AD	453	0.077	0.195	-	-	-	0.123	0.278	0.123	0.077	0.195
B-C	585	0.084	0.212	-	-	-	-	-	-	0.084	0.212
C-B	586	0.212	0.212	-	-	-	-	-	-	0.212	0.212
D-A	588	-	-	-	0.213	0.084	0.213	-	0.084	-	-
D-BC	455	0.123	0.123	0.280	0.196	0.077	0.196	-	0.077	-	-

The slopes and intercepts shown above include custom intercept adjustments only.

Streams may be combined, in which case capacity will be adjusted.

Values are shown for the first time segment only; they may differ for subsequent time segments.

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D1	2029 Opening Yr + 5 With Development	AM	PHF	08:00	09:00	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A		✓	564	100.000
B		✓	80	100.000
C		✓	696	100.000
D		✓	14	100.000

Peak Hour Factor Data (Traffic)

Arm	Hourly volume (PCU/hr)	Peak hour factor	Peak time segment
A	564	0.92	SecondQuarter
B	80	0.92	SecondQuarter
C	696	0.92	SecondQuarter
D	14	0.92	SecondQuarter

Origin-Destination Data

Demand (PCU/hr)

		To			
		A	B	C	D
From	A	0	21	532	11
	B	39	0	41	0
	C	674	22	0	0
	D	7	0	7	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		A	B	C	D
From	A	0	2	2	2
	B	1	0	1	1
	C	2	2	0	2
	D	1	1	1	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
B-ACD	0.27	15.68	0.4	C
A-BCD	0.03	8.60	0.0	A
A-B				
A-C				
D-ABC	0.05	13.03	0.1	B
C-ABD	0.05	7.96	0.1	A
C-D				
C-A				

Main Results for each time segment

08:00 - 08:15

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-ACD	75	346	0.218	74	0.3	13.329	B
A-BCD	11	456	0.023	11	0.0	8.237	A
A-B	20			20			
A-C	501			501			
D-ABC	13	325	0.041	13	0.0	11.640	B
C-ABD	22	495	0.044	21	0.0	7.748	A
C-D	0			0			
C-A	634			634			

08:15 - 08:30

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-ACD	87	318	0.273	87	0.4	15.678	C
A-BCD	12	439	0.028	12	0.0	8.601	A
A-B	23			23			
A-C	578			578			
D-ABC	15	294	0.052	15	0.1	13.028	B
C-ABD	26	487	0.052	25	0.1	7.958	A
C-D	0			0			
C-A	731			731			

08:30 - 08:45

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-ACD	82	329	0.250	82	0.3	14.739	B
A-BCD	12	446	0.026	12	0.0	8.459	A
A-B	22			22			
A-C	547			547			
D-ABC	14	307	0.047	14	0.1	12.444	B
C-ABD	24	490	0.049	24	0.1	7.880	A
C-D	0			0			
C-A	692			692			

08:45 - 09:00

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-ACD	75	346	0.218	76	0.3	13.464	B
A-BCD	11	456	0.023	11	0.0	8.244	A
A-B	20			20			
A-C	501			501			
D-ABC	13	325	0.041	13	0.0	11.660	B
C-ABD	22	495	0.044	22	0.0	7.752	A
C-D	0			0			
C-A	634			634			

2029 Opening Yr + 5 With Development, PM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Arm A Direction	Arm B Direction	Arm C Direction	Arm D Direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	Right-Left Stagger	Two-way	Two-way	Two-way	Two-way		1.26	A

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	1.26	A

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D2	2029 Opening Yr + 5 With Development	PM	PHF	08:00	09:00	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A		✓	544	100.000
B		✓	50	100.000
C		✓	732	100.000
D		✓	37	100.000

Peak Hour Factor Data (Traffic)

Arm	Hourly volume (PCU/hr)	Peak hour factor	Peak time segment
A	544	0.92	SecondQuarter
B	50	0.92	SecondQuarter
C	732	0.92	SecondQuarter
D	37	0.92	SecondQuarter

Origin-Destination Data

Demand (PCU/hr)

		To			
		A	B	C	D
From	A	0	39	498	7
	B	25	0	25	0
	C	690	40	0	2
	D	11	0	26	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		A	B	C	D
From	A	0	2	2	2
	B	1	0	1	1
	C	2	2	0	2
	D	1	1	1	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
B-ACD	0.18	14.17	0.2	B
A-BCD	0.02	8.66	0.0	A
A-B				
A-C				
D-ABC	0.15	16.18	0.2	C
C-ABD	0.10	7.87	0.1	A
C-D				
C-A				

Main Results for each time segment

08:00 - 08:15

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-ACD	47	340	0.139	46	0.2	12.381	B
A-BCD	7	450	0.015	7	0.0	8.272	A
A-B	37			37			
A-C	469			469			
D-ABC	35	295	0.118	34	0.1	13.899	B
C-ABD	41	516	0.080	41	0.1	7.726	A
C-D	2			2			
C-A	647			647			

08:15 - 08:30

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-ACD	54	311	0.175	54	0.2	14.170	B
A-BCD	8	432	0.018	8	0.0	8.663	A
A-B	42			42			
A-C	541			541			
D-ABC	40	265	0.152	40	0.2	16.182	C
C-ABD	49	515	0.095	49	0.1	7.874	A
C-D	2			2			
C-A	744			744			

08:30 - 08:45

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-ACD	51	322	0.160	52	0.2	13.440	B
A-BCD	7	439	0.017	7	0.0	8.506	A
A-B	40			40			
A-C	512			512			
D-ABC	38	277	0.138	38	0.2	15.232	C
C-ABD	46	515	0.089	46	0.1	7.830	A
C-D	2			2			
C-A	705			705			

08:45 - 09:00

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-ACD	47	339	0.139	47	0.2	12.452	B
A-BCD	7	450	0.015	7	0.0	8.276	A
A-B	37			37			
A-C	469			469			
D-ABC	35	295	0.118	35	0.1	13.974	B
C-ABD	41	516	0.080	41	0.1	7.743	A
C-D	2			2			
C-A	647			647			

Junctions 10

PICADY 10 - Priority Intersection Module

Filename: 2039 Opening Yr + 15 No Development.j10
Path: J:\2021\21120\21120-02_WIP\05 CALCS\Traffic\Junctions 10 Analysis
Report generation date: 5/11/2022 4:14:48 PM

»2039 Opening Yr + 15 No Development, AM
»2039 Opening Yr + 15 No Development, PM

Summary of junction performance

	AM					PM				
	Set ID	Queue (PCU)	Delay (s)	RFC	LOS	Set ID	Queue (PCU)	Delay (s)	RFC	LOS
	2039 Opening Yr + 15 No Development									
Stream B-ACD	D1	0.0	0.00	0.00	A	D2	0.0	0.00	0.00	A
Stream A-BCD		0.0	8.46	0.03	A		0.0	8.60	0.02	A
Stream D-ABC		0.1	13.02	0.05	B		0.2	16.32	0.16	C
Stream C-ABD		0.0	7.92	0.00	A		0.0	7.85	0.00	A

There are warnings associated with one or more model runs - see the 'Data Errors and Warnings' tables for each Analysis or Demand Set.

Values shown are the highest values encountered over all time segments. Delay is the maximum value of average delay per arriving vehicle.

File summary

File Description

Title	
Location	
Site number	
Date	4/20/2022
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	
Enumerator	ROD\Rico.Raymundo
Description	

Units

Distance units	Speed units	Traffic units input	Traffic units results	Flow units	Average delay units	Total delay units	Rate of delay units
m	kph	PCU	PCU	perHour	s	-Min	perMin

Analysis Options

Calculate Queue Percentiles	Calculate residual capacity	RFC Threshold	Average Delay threshold (s)	Queue threshold (PCU)
		0.85	36.00	20.00

Demand Set Summary

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D1	2039 Opening Yr + 15 No Development	AM	PHF	08:00	09:00	15
D2	2039 Opening Yr + 15 No Development	PM	PHF	08:00	09:00	15

Analysis Set Details

ID	Network flow scaling factor (%)
A1	100.000

2039 Opening Yr + 15 No Development, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Vehicle Mix		HV% is zero for all movements / time segments. Vehicle Mix matrix should be completed whether working in PCUs or Vehs. If HV% at the junction is genuinely zero, please ignore this warning.

Junction Network

Junctions

Junction	Name	Junction type	Arm A Direction	Arm B Direction	Arm C Direction	Arm D Direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	Right-Left Stagger	Two-way	Two-way	Two-way	Two-way		0.23	A

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	0.23	A

Arms

Arms

Arm	Name	Description	Arm type
A	untitled		Major
B	untitled		Minor
C	untitled		Major
D	untitled		Minor

Major Arm Geometry

Arm	Width of carriageway (m)	Has kerbed central reserve	Has right-turn storage	Width for right-turn storage (m)	Visibility for right turn (m)	Blocks?	Blocking queue (PCU)
A	7.50		✓	2.20	20.0	✓	1.00
C	7.50		✓	2.20	20.0	✓	1.00

Geometries for Arm C are measured opposite Arm B. Geometries for Arm A (if relevant) are measured opposite Arm D.

Minor Arm Geometry

Arm	Minor arm type	Lane width (m)	Visibility to left (m)	Visibility to right (m)
B	One lane	2.25	16	14
D	One lane	2.25	17	18

Slope / Intercept / Capacity

Priority Intersection Slopes and Intercepts

Stream	Intercept (PCU/hr)	Slope for A-B	Slope for A-C	Slope for A-D	Slope for B-A	Slope for B-D	Slope for C-A	Slope for C-B	Slope for C-D	Slope for D-B	Slope for D-C
A-D	586	-	-	-	0.212	0.212	0.212	-	0.212	-	-
B-AD	453	0.077	0.195	-	-	-	0.123	0.278	0.123	0.077	0.195
B-C	585	0.084	0.212	-	-	-	-	-	-	0.084	0.212
C-B	586	0.212	0.212	-	-	-	-	-	-	0.212	0.212
D-A	588	-	-	-	0.213	0.084	0.213	-	0.084	-	-
D-BC	455	0.123	0.123	0.280	0.196	0.077	0.196	-	0.077	-	-

The slopes and intercepts shown above include custom intercept adjustments only.

Streams may be combined, in which case capacity will be adjusted.

Values are shown for the first time segment only; they may differ for subsequent time segments.

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D1	2039 Opening Yr + 15 No Development	AM	PHF	08:00	09:00	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A		✓	578	100.000
B		✓	2	100.000
C		✓	718	100.000
D		✓	14	100.000

Peak Hour Factor Data (Traffic)

Arm	Hourly volume (PCU/hr)	Peak hour factor	Peak time segment
A	578	0.92	SecondQuarter
B	2	0.92	SecondQuarter
C	718	0.92	SecondQuarter
D	14	0.92	SecondQuarter

Origin-Destination Data

Demand (PCU/hr)

		To			
		A	B	C	D
From	A	0	0	566	12
	B	0	0	2	0
	C	717	1	0	0
	D	7	0	7	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		A	B	C	D
From	A	0	0	0	0
	B	0	0	0	0
	C	0	0	0	0
	D	0	0	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
B-ACD	0.00	0.00	0.0	A
A-BCD	0.03	8.46	0.0	A
A-B				
A-C				
D-ABC	0.05	13.02	0.1	B
C-ABD	0.00	7.92	0.0	A
C-D				
C-A				

Main Results for each time segment

08:00 - 08:15

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-ACD	0	339	0.000	0	0.0	0.000	A
A-BCD	12	456	0.026	12	0.0	8.099	A
A-B	0			0			
A-C	533			533			
D-ABC	13	323	0.041	13	0.0	11.608	B
C-ABD	0.94	472	0.002	0.94	0.0	7.634	A
C-D	0			0			
C-A	675			675			

08:15 - 08:30

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-ACD	0	310	0.000	0	0.0	0.000	A
A-BCD	14	439	0.031	14	0.0	8.455	A
A-B	0			0			
A-C	615			615			
D-ABC	15	292	0.052	15	0.1	13.020	B
C-ABD	1	455	0.002	1	0.0	7.925	A
C-D	0			0			
C-A	779			779			

08:30 - 08:45

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-ACD	0	322	0.000	0	0.0	0.000	A
A-BCD	13	446	0.029	13	0.0	8.313	A
A-B	0			0			
A-C	582			582			
D-ABC	14	304	0.047	14	0.1	12.423	B
C-ABD	1	462	0.002	1	0.0	7.808	A
C-D	0			0			
C-A	738			738			

08:45 - 09:00

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-ACD	0	339	0.000	0	0.0	0.000	A
A-BCD	12	456	0.026	12	0.0	8.103	A
A-B	0			0			
A-C	533			533			
D-ABC	13	323	0.041	13	0.0	11.623	B
C-ABD	0.94	472	0.002	0.95	0.0	7.634	A
C-D	0			0			
C-A	675			675			

2039 Opening Yr + 15 No Development, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Vehicle Mix		HV% is zero for all movements / time segments. Vehicle Mix matrix should be completed whether working in PCUs or Vehs. If HV% at the junction is genuinely zero, please ignore this warning.

Junction Network

Junctions

Junction	Name	Junction type	Arm A Direction	Arm B Direction	Arm C Direction	Arm D Direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	Right-Left Stagger	Two-way	Two-way	Two-way	Two-way		0.54	A

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	0.54	A

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D2	2039 Opening Yr + 15 No Development	PM	PHF	08:00	09:00	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A		✓	538	100.000
B		✓	0	100.000
C		✓	738	100.000
D		✓	39	100.000

Peak Hour Factor Data (Traffic)

Arm	Hourly volume (PCU/hr)	Peak hour factor	Peak time segment
A	538	0.92	SecondQuarter
B	0	0.92	SecondQuarter
C	738	0.92	SecondQuarter
D	39	0.92	SecondQuarter

Origin-Destination Data

Demand (PCU/hr)

		To			
		A	B	C	D
From	A	0	1	530	7
	B	0	0	0	0
	C	734	2	0	2
	D	12	0	27	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		A	B	C	D
From	A	0	0	0	0
	B	0	0	0	0
	C	0	0	0	0
	D	0	0	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
B-ACD	0.00	0.00	0.0	A
A-BCD	0.02	8.60	0.0	A
A-B				
A-C				
D-ABC	0.16	16.32	0.2	C
C-ABD	0.00	7.85	0.0	A
C-D				
C-A				

Main Results for each time segment

08:00 - 08:15

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-ACD	0	340	0.000	0	0.0	0.000	A
A-BCD	7	446	0.015	7	0.0	8.192	A
A-B	0.94			0.94			
A-C	499			499			
D-ABC	37	294	0.125	36	0.1	13.946	B
C-ABD	2	477	0.004	2	0.0	7.579	A
C-D	2			2			
C-A	691			691			

08:15 - 08:30

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-ACD	0	311	0.000	0	0.0	0.000	A
A-BCD	8	426	0.018	8	0.0	8.598	A
A-B	1			1			
A-C	576			576			
D-ABC	42	263	0.161	42	0.2	16.325	C
C-ABD	2	461	0.005	2	0.0	7.852	A
C-D	2			2			
C-A	798			798			

08:30 - 08:45

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-ACD	0	323	0.000	0	0.0	0.000	A
A-BCD	7	434	0.017	7	0.0	8.433	A
A-B	1			1			
A-C	545			545			
D-ABC	40	275	0.146	40	0.2	15.333	C
C-ABD	2	467	0.004	2	0.0	7.743	A
C-D	2			2			
C-A	755			755			

08:45 - 09:00

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-ACD	0	340	0.000	0	0.0	0.000	A
A-BCD	7	446	0.015	7	0.0	8.196	A
A-B	0.94			0.94			
A-C	499			499			
D-ABC	37	294	0.125	37	0.1	14.020	B
C-ABD	2	477	0.004	2	0.0	7.583	A
C-D	2			2			
C-A	691			691			

Junctions 10

PICADY 10 - Priority Intersection Module

Version: 10.0.2.1574

Filename: 2039 Opening Yr + 15 With Development.j10
Path: J:\2021\21120\21120-02_WIP\05 CALCS\Traffic\Junctions 10 Analysis
Report generation date: 5/18/2022 9:38:22 AM

Summary of junction performance

	AM					PM				
	Set ID	Queue (PCU)	Delay (s)	RFC	LOS	Set ID	Queue (PCU)	Delay (s)	RFC	LOS
	2039 Opening Yr + 15 With Development									
Stream B-ACD	D1	0.4	16.61	0.29	C	D2	0.2	14.93	0.18	B
Stream A-BCD		0.0	8.90	0.03	A		0.0	9.04	0.02	A
Stream D-ABC		0.1	13.74	0.05	B		0.2	17.32	0.17	C
Stream C-ABD		0.1	8.18	0.05	A		0.1	8.11	0.10	A

Values shown are the highest values encountered over all time segments. Delay is the maximum value of average delay per arriving vehicle.

File summary

File Description

Title	
Location	
Site number	
Date	4/20/2022
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	
Enumerator	ROD\Rico.Raymundo
Description	

Units

Distance units	Speed units	Traffic units input	Traffic units results	Flow units	Average delay units	Total delay units	Rate of delay units
m	kph	PCU	PCU	perHour	s	-Min	perMin

Analysis Options

Calculate Queue Percentiles	Calculate residual capacity	RFC Threshold	Average Delay threshold (s)	Queue threshold (PCU)
		0.85	36.00	20.00

Demand Set Summary

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D1	2039 Opening Yr + 15 With Development	AM	PHF	08:00	09:00	15
D2	2039 Opening Yr + 15 With Development	PM	PHF	08:00	09:00	15

Analysis Set Details

ID	Network flow scaling factor (%)
A1	100.000

2039 Opening Yr + 15 With Development, AM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Arm A Direction	Arm B Direction	Arm C Direction	Arm D Direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	Right-Left Stagger	Two-way	Two-way	Two-way	Two-way		1.27	A

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	1.27	A

Arms

Arms

Arm	Name	Description	Arm type
A	untitled		Major
B	untitled		Minor
C	untitled		Major
D	untitled		Minor

Major Arm Geometry

Arm	Width of carriageway (m)	Has kerbed central reserve	Has right-turn storage	Width for right-turn storage (m)	Visibility for right turn (m)	Blocks?	Blocking queue (PCU)
A	7.50		✓	2.20	20.0	✓	1.00
C	7.50		✓	2.20	20.0	✓	1.10

Geometries for Arm C are measured opposite Arm B. Geometries for Arm A (if relevant) are measured opposite Arm D.

Minor Arm Geometry

Arm	Minor arm type	Lane width (m)	Visibility to left (m)	Visibility to right (m)
B	One lane	2.25	16	14
D	One lane	2.25	17	18

Slope / Intercept / Capacity

Priority Intersection Slopes and Intercepts

Stream	Intercept (PCU/hr)	Slope for A-B	Slope for A-C	Slope for A-D	Slope for B-A	Slope for B-D	Slope for C-A	Slope for C-B	Slope for C-D	Slope for D-B	Slope for D-C
A-D	586	-	-	-	0.212	0.212	0.212	-	0.212	-	-
B-AD	453	0.077	0.195	-	-	-	0.123	0.278	0.123	0.077	0.195
B-C	585	0.084	0.212	-	-	-	-	-	-	0.084	0.212
C-B	586	0.212	0.212	-	-	-	-	-	-	0.212	0.212
D-A	588	-	-	-	0.213	0.084	0.213	-	0.084	-	-
D-BC	455	0.123	0.123	0.280	0.196	0.077	0.196	-	0.077	-	-

The slopes and intercepts shown above include custom intercept adjustments only.

Streams may be combined, in which case capacity will be adjusted.

Values are shown for the first time segment only; they may differ for subsequent time segments.

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D1	2039 Opening Yr + 15 With Development	AM	PHF	08:00	09:00	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A		✓	599	100.000
B		✓	80	100.000
C		✓	739	100.000
D		✓	14	100.000

Peak Hour Factor Data (Traffic)

Arm	Hourly volume (PCU/hr)	Peak hour factor	Peak time segment
A	599	0.92	SecondQuarter
B	80	0.92	SecondQuarter
C	739	0.92	SecondQuarter
D	14	0.92	SecondQuarter

Origin-Destination Data

Demand (PCU/hr)

		To			
		A	B	C	D
From	A	0	21	566	12
	B	39	0	41	0
	C	717	22	0	0
	D	7	0	7	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		A	B	C	D
From	A	0	4	4	4
	B	1	0	1	1
	C	4	4	0	4
	D	1	1	1	2

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
B-ACD	0.29	16.61	0.4	C
A-BCD	0.03	8.90	0.0	A
A-B				
A-C				
D-ABC	0.05	13.74	0.1	B
C-ABD	0.05	8.18	0.1	A
C-D				
C-A				

Main Results for each time segment

08:00 - 08:15

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-ACD	75	335	0.225	74	0.3	13.876	B
A-BCD	12	451	0.026	12	0.0	8.518	A
A-B	20			20			
A-C	533			533			
D-ABC	13	313	0.042	13	0.0	12.111	B
C-ABD	22	492	0.044	22	0.1	7.957	A
C-D	0			0			
C-A	674			674			

08:15 - 08:30

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-ACD	87	305	0.285	87	0.4	16.607	C
A-BCD	14	434	0.032	14	0.0	8.903	A
A-B	23			23			
A-C	615			615			
D-ABC	15	280	0.054	15	0.1	13.736	B
C-ABD	26	484	0.053	26	0.1	8.176	A
C-D	0			0			
C-A	777			777			

08:30 - 08:45

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-ACD	82	317	0.260	82	0.4	15.507	C
A-BCD	13	441	0.029	13	0.0	8.754	A
A-B	22			22			
A-C	582			582			
D-ABC	14	293	0.049	14	0.1	13.049	B
C-ABD	24	487	0.050	24	0.1	8.095	A
C-D	0			0			
C-A	736			736			

08:45 - 09:00

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-ACD	75	335	0.225	76	0.3	14.033	B
A-BCD	12	451	0.026	12	0.0	8.526	A
A-B	20			20			
A-C	533			533			
D-ABC	13	313	0.042	13	0.0	12.133	B
C-ABD	22	492	0.044	22	0.1	7.967	A
C-D	0			0			
C-A	674			674			

2039 Opening Yr + 15 With Development, PM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Arm A Direction	Arm B Direction	Arm C Direction	Arm D Direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	Right-Left Stagger	Two-way	Two-way	Two-way	Two-way		1.29	A

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	1.29	A

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D2	2039 Opening Yr + 15 With Development	PM	PHF	08:00	09:00	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A		✓	576	100.000
B		✓	50	100.000
C		✓	776	100.000
D		✓	39	100.000

Peak Hour Factor Data (Traffic)

Arm	Hourly volume (PCU/hr)	Peak hour factor	Peak time segment
A	576	0.92	SecondQuarter
B	50	0.92	SecondQuarter
C	776	0.92	SecondQuarter
D	39	0.92	SecondQuarter

Origin-Destination Data

Demand (PCU/hr)

		To			
		A	B	C	D
From	A	0	39	530	7
	B	25	0	25	0
	C	734	40	0	2
	D	12	0	27	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		A	B	C	D
From	A	0	4	4	4
	B	1	0	1	1
	C	5	5	0	5
	D	1	1	1	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS
B-ACD	0.18	14.93	0.2	B
A-BCD	0.02	9.04	0.0	A
A-B				
A-C				
D-ABC	0.17	17.32	0.2	C
C-ABD	0.10	8.11	0.1	A
C-D				
C-A				

Main Results for each time segment

08:00 - 08:15

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-ACD	47	329	0.143	46	0.2	12.858	B
A-BCD	7	443	0.015	7	0.0	8.608	A
A-B	37			37			
A-C	499			499			
D-ABC	37	285	0.129	36	0.1	14.587	B
C-ABD	42	517	0.081	41	0.1	7.978	A
C-D	2			2			
C-A	687			687			

08:15 - 08:30

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-ACD	54	297	0.183	54	0.2	14.933	B
A-BCD	8	424	0.019	8	0.0	9.039	A
A-B	42			42			
A-C	576			576			
D-ABC	42	252	0.168	42	0.2	17.318	C
C-ABD	50	518	0.097	50	0.1	8.107	A
C-D	2			2			
C-A	791			791			

08:30 - 08:45

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-ACD	51	310	0.166	52	0.2	14.077	B
A-BCD	7	431	0.017	7	0.0	8.867	A
A-B	40			40			
A-C	545			545			
D-ABC	40	265	0.151	40	0.2	16.175	C
C-ABD	47	517	0.090	47	0.1	8.071	A
C-D	2			2			
C-A	750			750			

08:45 - 09:00

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-ACD	47	328	0.143	47	0.2	12.941	B
A-BCD	7	443	0.015	7	0.0	8.612	A
A-B	37			37			
A-C	499			499			
D-ABC	37	285	0.129	37	0.2	14.678	B
C-ABD	42	517	0.081	42	0.1	7.994	A
C-D	2			2			
C-A	687			687			

APPENDIX E
TRAVEL PLAN / MOBILITY MANAGEMENT PLAN

Prepared by
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RESIDENTIAL DEVELOPMENT, DALGUISE HOUSE, MONKSTOWN, CO DUBLIN

Travel Plan / Mobility Management Plan

Further Information | July 2023

ROD
ROUGHAN & O'DONOVAN

Residential Development, Dalguise House, Monkstown, Co Dublin

Travel Plan / Mobility Management Plan

Document No: 21.120

Author:.. Rico Raymundo

Checker: .... Eoin Ó Catháin (EOC)

Approver:... Eoin Ó Catháin (EOC)

Description	Revision	Made	Checked	Approved	Date
21.120	For Planning	RR	EOC	EOC	Sept 2022
21.120	TPA Comments	EOC	EOC	EOC	Oct 2022
21.120	Further Information	EOC	EOC	EOC	July 2023

Residential Development, Dalguise House, Monkstown, Co Dublin

Travel Plan / Mobility Management Plan

TABLE OF CONTENTS

1. INTRODUCTION

This Travel Plan / Mobility Management Plan has been prepared for the planning application for the residential development at Dalguise House, Monkstown, Co Dublin. The proposed development will consist of the following elements:

- 493 residential units comprising 3 no. conventional houses, 490 no. BRT units comprising 2 No. studio units, 289 No. 1-beds, 20 No. 2-beds/3 persons. 166 No. 2-beds/4persons, and 13 No. 3-beds
- Childcare Facility
- Restaurant/Cafe
- Residential Amenities including yoga studio, gym, resident's lounge, music room, library, and co working spaces.

The purpose of the Travel Plan is to define an over-arching mobility management strategy that can be further refined by the eventual residents to optimise the uptake of sustainable transport modes. The Travel Plan will ensure the realisation of the following objectives:

- to encourage the use of sustainable modes of transport;
- to reduce dependency on lone travel by private car;
- to promote the use of public transport, car sharing, cycling and walking.

1.1 Background

Roughan & O'Donovan was commissioned by GEDV Monkstown Owner Limited (part of the Greystar Group) to advise on Traffic and Transportation related matters for the proposed residential development. A Transport Impact Assessment has also been submitted with this planning application. This Report assesses the proposed residential development in terms of its accessibility by all modes of transport and makes recommendations that will affect travel behaviour and make it easier for residents and visitors to travel by public transport, walking, cycling or car sharing, thereby reducing the need for car use.

1.2 Description of Proposed Development

The proposed development includes 493 residential units comprising 3 no. conventional houses, 490 no. BRT units comprising 2 No. studio units, 289 No. 1-beds, 20 No. 2-beds/3 persons. 166 No. 2-beds/4persons, and 13 No. 3-beds, childcare facility, restaurant/café, residential amenities including yoga studio, gym, resident's lounge, music room, library, and co working spaces. The development also includes 228 car parking spaces (of which 6 are dedicated car share spaces), and 967 bike spaces. 711 bike parking spaces will be secure long stays for residents and 256 will be provided for visitors at convenient locations throughout the site. In addition to this, 20 cargo bike spaces (16 in basement and 4 at surface) and 8 motorbike spaces will also be provided.

All short-term cycle spaces are provided as 'Sheffield' cycle parking to DLRCC's standard, Long term parking in basement, undercroft or the internal of buildings is provided as single level stacker stands, Long term parking in above ground secure cycle shelters is provided with a mix of 'Sheffield' cycle parking to DLRCC's standard and single level stacker stands.

The proposed development will be developer owned and managed as a “Build to Rent” development. Greystar is an international company providing high quality managed accommodation, and this is one of several residential campuses it is developing in Ireland. These developments are self-contained with amenities and essential services for residents, and are typically located in proximity to public transport and cycling corridors to minimise the need for car use. Greystar are operational long term holders with directly employed staff, supporting local employment. Other schemes in Ireland include Dublin Landings and Griffith Woods which are high quality well managed schemes in Dublin City Council jurisdiction.

1.3 Site Location

The proposed residential development is located south of Monkstown Road. The site is approximately 3.58 ha and is bounded by existing residential estates to south, east, and west. To the north, the site is bounded by Purbeck which connects with Monkstown Road by means of a simple priority T-junction. The site is approximately 300m from Monkstown Village and 500m from Salthill and Monkstown Dart Station.

Figure 1 below shows the location of the development, and the surrounding road network.

Figure 1: Aerial Photo of Site Location (Source: Google Maps)

1.4 Site Access

Vehicular access to the proposed development will be primarily via Purbeck, from which the main underground car park will be accessed, while the rear part of the site will be accessed via the Dalguise House Access Avenue. The proposal includes the provision of passing bays along the avenue to facilitate the low volumes of two-way vehicular traffic. Car traffic from Blocks A – G (i.e. the blocks in front of Dalguise House) will access the site via Purbeck (385 of 493 units). This represents approx. 78% of total development traffic. Car traffic from Blocks H – I, Dalguise House, Coach House, Brick Gate Lodge, and North West House will access the site via the Dalguise House Access Avenue (108 of 493 units).

Pedestrian and cycle access will be predominantly along the Dalguise House Access Avenue. Delivery and service access will also be predominantly via this route, although a bin store is provided for Blocks A, B and C via the Purbeck access.

2. PLANNING CONTEXT

2.1 Background

This Travel Plan has been prepared with reference to the following documents:

- Smarter Travel: A Sustainable Transport Future 2009 – 2020;
- National Cycle Policy Framework, 2009;
- Dun Laoghaire Rathdown County Development Plan 2022 - 2028
- The Greater Dublin Area Cycle Network Plan.

2.2 Smarter Travel: A Sustainable Transport Future 2009 - 2020

This policy document sets its key targets for sustainable transport as:

- Future population and employment growth will predominantly take place in sustainable compact forms, which reduce the need to travel for employment and services;
- Nationally, 500,000 more people will take alternative means to commute to work to the extent that the total share of car commuting will drop from 65% to 45%;
- Alternatives such as walking, cycling and public transport will be supported and provided to the extent that these will rise to 55% of total commuter journeys to work;
- The total kilometres travelled by the car fleet in 2020 will not increase significantly from current levels;
- A reduction will be achieved on the 2005 figure for greenhouse gas emissions from the transport sector.

2.3 National Cycle Policy Framework 2009

The Government is committed to developing cycling as one of the most desirable modes of travel, it being good for your health, the economy and the environment. This National Cycle Policy Framework sets out objectives to the year 2020 to achieve its vision. The vision is that all cities, towns, villages and rural areas will be bicycle friendly. Cycling will be a normal way to get about, especially for short trips. Next to walking, cycling will be the most popular means of getting to school, university, college and work. The bicycle will be the transport mode of choice for all ages. We will have a healthier and happier population with consequent benefits on the health service. We will all gain economically as cycling helps in easing congestion and providing us with a fitter and more alert work force. A culture of cycling will have developed in Ireland to the extent that by 2020, 10% of all trips will be by bike.

2.4 Dun Laoghaire Rathdown County Development Plan 2022 – 2028

The Dun Laoghaire Rathdown County Development Plan states that their travel plan policy require a submission of travel plans for developments that generate significant trip demand. *“Travel plans should seek to reduce reliance on car based travel and encourage more sustainable modes of transport over the lifetime of a development”.*

Dun Laoghaire Rathdown County Council will review and monitor Travel Plans through the Dun Laoghaire Rathdown County Council Mobility Management Section. They will also look to support the growth of Electric Vehicles and e-bikes, with support facilities as an alternative to use of fossil fuel burning vehicles, through a roll out of additional electric charging points in collaboration with relevant agencies at appropriate locations.

Dun Laoghaire Rathdown County Council use Travel Plans as a way to encourage as much travel as possible by sustainable means such as public transport, walking and cycling. To achieve this, new developments must be designed in a way that minimises the need to travel from the outset and reduces the demand for car use.

2.5 The Greater Dublin Area Cycle Network Plan

The Greater Dublin Area Cycle Network Plan mapped the existing cycle network infrastructure and identified a network for further expansion and improvement of the cycle network. The maps below are an extract from the Greater Dublin Area Cycle Network Plan showing the existing and proposed cycle network in the vicinity of the proposed development. The full document can be viewed or downloaded from the National Transport Authority website:
https://www.nationaltransport.ie/publications/strategic-planning/gda-cycle-network-plan/


N
1:30,000 @ A3
0
250
500
1,000 Metres
Project:
CYCLE NETWORK PLAN FOR THE GREATER DUBLIN AREA
Title:
EXISTING CYCLE FACILITY TYPE
DUBLIN SOUTH CENTRAL
SHEET E7
Legend:
B1 - Bus Lane (no cycle lane)
C1 - Cycle Track - separated from road
C2 - Cycle Track - immediately adjacent
C3 - Cycle Lane (even within Bus Lane)
G1 - Cycle Trail or Greenway
S2 - Shared Walking & Cycling
Study Area
County Council Boundaries
Greenline Tram Stops
Redline Tram Stops
Stations
Údarás Náisiúnta Iompair
National Transport Authority
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RATHMINES
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CHURCHTOWN
DUNDRUM
STILLORGAN
SANDYFORD
DEANSGRANGE
SALLYNOGGIN
DALKEY
BALLINTEER
LEOPARDSTOWN
CORNELSCOURT
KILLINEY
CABINTEELY
1:30,000 @ A3
Project:
CYCLE NETWORK PLAN FOR THE GREATER DUBLIN AREA
Title:
PROPOSED CYCLE NETWORK DUBLIN SOUTH CENTRAL SHEET N7
Legend:
Primary
Secondary
Greenway
Primary/Secondary
Inter-Urban
Feeder
Minor Greenway
New Cycle Bridge
Permeability Link
Gateway
Employment Zones
Hospitals
Institute of Technology
Shopping Centre
Town Centre
University
Village Centre
Greenline Tram Stops
Redline Tram Stops
Stations
Údarás Náisiúnta Iompair
National Transport Authority
AECOM
Roughan & O'Donovan
Grand Canal House, Upper Grand Canal Street, Dublin 4

3. INTRODUCTION TO MOBILITY MANAGEMENT

3.1 Background

Road traffic growth is having a damaging effect on the environment, the economy and public health. A key contributor to this is the number of people travelling in a 'driver only car'. The impact that new developments have on the local road network can be reduced through the preparation and implementation of a Travel Plan / Mobility Management Plan.

3.2 Objectives

The purpose of the Travel Plan is to assist the residents to minimise the amount of road traffic the development will generate. It assesses the development in terms of its accessibility by all modes of transport and makes recommendations consisting of physical measures and good working practices and policies that encourage and makes it easier for residents to travel to the site by public transport, car sharing, walking or cycling.

Target modal splits will be identified for the development and associated mobility management proposals are identified to enable these targets to be achieved. Thus, the plan will make a direct contribution to reducing the traffic impact of the existing development.

Through the on-going monitoring of residents and visitor travel modes, the success of the measures contained within a Travel Plan can be assessed and changes made to the Plan as appropriate.

3.3 Structure of this Travel Plan

This Travel Plan provides a review of the existing transport options at the site of the proposed residential development at Dalguise House, Monkstown.

It is intended that this report will provide direction on ways best to encourage greater use of public transport, cycling and walking and thereby minimise the traffic impact of the development.

This Travel Plan is divided into the following principal sections:

- Existing transport infrastructure available in the vicinity of the site;
- Likely commuter trends of the residents and visitors to the proposed development; and
- Recommendations to encourage greater use of more sustainable modes of transport by the residents and visitors to the site.

4. EXISTING TRANSPORTATION INFRASTRUCTURE

4.1 Road Network

The roads surrounding the site vary in their importance to the road network. North of the site is Monkstown Road, a regional road single carriageway with a 50km/hr speed limit. Monkstown Road connects to Monkstown Village to the east, and Blackrock to the west. Monkstown Road is primarily used as a link between Monkstown and Blackrock.

Monkstown Road (Source: Google Maps)

Brighton Avenue is located north of Monkstown Road adjacent to Purbeck (primary site access). Brighton Avenue is a local road used as local access. it also, provides a link from Monkstown Road to the N31 Seapoint Avenue. The west side of Brighton Avenue is used for Pay & Display parking.

Brighton Avenue (Source: Google Maps)

4.2 Pedestrian & Cyclists Accessibility

The proposed development will be fully accessible for pedestrians, cyclists, and the mobility impaired and disabled. All the surrounding main roads have adequate width footpaths on both sides and crossing facilities at junctions. Along the R119 Monkstown Road footpath width on the south side is approximately 1.8m and between 2-2.5m on the northern side.

In terms of cyclist accessibility, cycle facilities are present along the R119 Monkstown Road. These connect to express routes to the city centre along both the Blackrock Road and Coast Road corridors. These major routes are subject to ongoing improvement as part of the implementation of the GDA Cycle Network Plan and the BusConnects programme.

Pedestrian and cycle facilities within the site will be provided in accordance with the Design Manual for Urban Roads and Streets [DMURS]. The developer hopes to maximise permeability through the site by linking through to adjoining developments at Richmond Park and Arundel. This would complement the network of walking and cycling routes separate to the road network throughout the Monkstown area. While the developer does not have the power to implement these links without the consent of adjacent landowners, it is the developer’s intention to work closely with Dún Laoghaire – Rathdown County Council towards their realisation.

4.3 Public Transport Accessibility

Existing Public Transport

The proposed development site is highly accessible by public transport. It is within 500m (5 minute walk) of the Salthill and Monkstown Train Station. The DART suburban rail service connects directly to Connolly Station in Dublin City Centre, where it connects to the national rail network, as well as the Luas red line and the national bus network via BusÁras. The DART is a high frequency, high capacity regular service, operating at frequencies of up to 1 train every 10 minutes, with potential to further increase this in future.

The site also enjoys excellent accessibility by bus. Routes 7, 7a and 7d directly serve the site on the R119 Monkstown Road (connecting to Mountjoy Square at one end and Bride’s Glen, Loughlinstown Wood, and Dalkey respectively at the other end). In addition, the 703 route connects the site directly to Dublin Airport. There is up to 1 bus every 12 minutes at peak times.

The site therefore enjoys excellent accessibility by public transport.

Future Transport Network

As part of the BusConnects programme, it is proposed to further enhance the number of bus service in the area. The following BusConnects routes will serve Monkstown Road:

- B3: Dun Laoghaire – City Centre – Tyrrelstown, with a frequency of 15 minutes;
- S8: Dun Laoghaire – Sandyford – Tallaght, with a frequency of 15-30 minutes;
- 98: Loughlinstown Drive – Dun Laoghaire – Mountjoy Square, with a frequency 60 minutes.

Proposed BusConnects Network

5. TRANSPORT MODAL SPLITS

5.1 Existing Modal Splits

Following an analysis of the Small Area Population Statistics from the Central Statistics Office survey in 2016, the following trends were noted.

- Dalguise House, Monkstown is located just south of Monkstown Road. The existing modal split of this area is compared to the regional and national averages below.

An analysis of census data from 2016 was carried out to identify the current modal split of commuters in the local area, compared with the regional and national averages. Table 5.1 below contains percentage modal split.

Table 5.1 Current Modal Split Data

Existing Modal Share	Monkstown Road	Electoral Division (Blackrock-Monkstown)	Dublin	Leinster	National
On Foot	8.11%	9.99%	19.09%	15.87%	13.94%
Bicycle	12.16%	8.10%	6.30%	3.83%	2.68%
Bus, minibus or coach	12.16%	11.92%	14.09%	11.74%	10.24%
Train, DART or LUAS	16.22%	17.10%	6.78%	4.52%	2.70%
Motorcycle or scooter	0.68%	0.66%	0.51%	0.36%	0.28%
Car Driver	29.73%	31.84%	31.84%	36.58%	39.31%
Car passenger	14.86%	12.39%	11.83%	16.12%	18.64%
Van	0.00%	0.66%	2.13%	3.45%	4.20%
Other (incl. lorry)	0.00%	0.05%	0.14%	0.29%	0.39%
Work mainly at or from home	2.70%	3.01%	1.66%	2.51%	3.14%
Not stated	3.38%	4.29%	5.63%	4.73%	4.48%

5.2 Proposed Occupancy Levels

It is proposed that the Dalguise House development will have a minimum occupancy 493 and a maximum occupancy of 711 based on an average occupancy of one person per bedroom. This Travel Plan has been prepared on the basis of this maximum occupancy level.

The proposed provision of 208 resident car parking spaces equates to at least one space per 3.4 residents or 29% of the maximum occupancy. This requires that 7 out of 10 residents does not park a private car at the development. It is not recommended to further reduce the parking provision below this amount. The proposed provision of 727 long stay-stay bicycle parking spaces (including cargo bike spaces) dedicated to residents will account for over 100% of the maximum occupancy.

5.3 Proposed Target Modal Splits

It is clear from the above that sustainable transport already prevails in the Monkstown area. However, even more ambitious targets are required for new developments, reflective of the restricted road capacity and parking provision in the area. Active mobility management is essential to achieving the required modal split. The following modal split targets are proposed for the proposed Dalguise House development at Monkstown:

Table 5.2 Proposed Modal Split Target

Existing Modal Share	Monkstown Road	Proposed Development	Number of Residents if maximum occupancy achieved
On Foot	8.11%	12.0%	85
Bicycle	12.16%	33.0%	233
Bus, minibus, or coach	12.16%	9.0%	63
Train, DART, or LUAS	16.22%	12.0%	85
Motorcycle or scooter	0.68%	0.8%	6
Car Driver	29.73%	18.0%	127
Car passenger	14.86%	5.0%	35
Van	0.00%	0.2 %	1
Other (incl. lorry)	0.00%	0%	0
Work Mainly at or from home	2.70%	10%	71
Not stated	3.38%	0%	0

Of the above, it is expected that approximately 50% of car and public transport movements will occur during the AM peak hour, and this is reflected in the accompanying Transport Impact Assessment report. The above table includes a conservatively low provision of 10% of workers home working. Given recent trends in the population, it is likely that this figure will be higher in practice, with a corresponding reduction in use of other modes of transport.

6. MOBILITY MANAGEMENT PLAN

6.1 Introduction

This Travel Plan / Mobility Management Plan sets out the sustainable travel objectives and how maximising travel by walking, cycling and public transport will be achieved. This section outlines a series of recommendations to help set, achieve and maintain the Target Modal Splits throughout the life of the Plan.

It is intended that this report will provide direction on how best to set and achieve target modal splits for the journey to/from the new development and encourage greater use of public transport, cycling and walking and thereby minimise the traffic impact of the development. It also outlines monitoring of the plan, which is considered essential to its successful implementation.

6.2 Travel Plan Administration

Successful Travel Plans require constant management and supervision. A Travel Plan Coordinator will be required to administer, implement, monitor and review the Travel Plan.

A senior member of staff who supports the philosophy of the Travel Plan will be appointed as the Co-ordinator. The Co-ordinator will be appointed prior to the first occupation of the Site. A dedicated commuter space will be provided within the tenant amenity area where travel information, timetables, access to the internet and notice boards will be provided.

The Co-ordinator will be responsible for:

- Implementation and maintenance of the Plan
- Monitoring progress of the Plan
- Liaison with public transport operators and officers of the Planning and Highway Authorities
- Production of information reports for the Developer, the Occupier(s) and the Planning and Highway Authorities
- and Ongoing assessment of the objectives of the Plan.

Within the first 6 months of being appointed, the Co-ordinator shall arrange for a resident's travel survey to be carried out. This can be achieved by means of self-completion questionnaires, which will help to identify travel requirements and set targets for modal splits.

The information requested in the questionnaire should include:

- Primary mode of transport
- Current travel patterns including the time taken to travel to work and the place of work;
- Views on alternative modes to the car (i.e. what would encourage them to switch to other modes)
- and usage of car sharing scheme

6.3 Travel Plan Details

There are a number of measures that can be undertaken to help reduce car travel as set out under the following general headings and outlined below:

(a) Travel Database

(b) Personalised Travel Plans

(c) Travel Awareness

(d) Cycling

(e) Walking

(f) Public Transport

(g) Car Sharing

(a) Travel Database

In order to optimise efficiency from the Travel Plan, an assessment of travel behaviour should be undertaken to determine the travel patterns exhibited by residents and visitors to the proposed Dalguise House development. The Plan Coordinator will produce and maintain a travel database. It is envisaged that the Plan Coordinator would distribute a Travel Survey Questionnaire to the residents and a selection of visitors. The survey would typically provide details of the following:

- Home location;
- Mode of travel to Dalguise House;
- Car occupancy rate;
- Route taken to Dalguise House;
- Journey time;
- Distance travelled;
- Estimates of public transport / taxi cost;
- Alternative modes of transport available for travel;
- Interest in car sharing;
- Reasons for not car sharing, using public transport, cycling or walking;
- Measures that would encourage the use of public transport, cycling, walking, or car sharing;

The availability of this data will assist in more accurately defining travel requirements for the site, and in defining the specific measures that would maximise the success of the Plan. A sample of this Travel Survey Questionnaire to be used by the Plan Coordinator is included in Appendix A.

In addition, the Plan Coordinator would carry out further on-site data collection, which will include surveys to measure car park and cycle facility use. This data will complement the information provided in the survey questionnaires and will provide guidance on how the Plan could be improved or modified.

These surveys should be repeated annually to highlight any measures which are not operating successfully, or those that are being underutilised by residents.

(b) Personalised Travel Plans

Action 9 of the "*Smarter Travel – Sustainable Transport Future - A New Transport Policy for Ireland 2009-2020*" document is to "*implement a programme to promote Personalised Travel Plans aimed at citizens in areas served by public transport*". The document states that Personalised Travel Plans aim to encourage individuals to take alternatives to car travel where these are available.

Personalised travel plans should be provided by the Development Management Company to the residents. It will involve the designated Travel Plan Coordinator meeting with residents in person to understand their travel needs to provide personalised journey advice including information on routes, timetables and details of interchange. Welcome packs would also assist in introducing the concept of mobility management to future residents at the proposed development. The pack would contain an access map and information on travel alternatives to the site, information on the location of bicycle parking, and the health and financial benefits of sustainable commuting.

(c) Travel Awareness

Awareness, acceptance and appreciation of the scope, objectives and targets of the Travel Plan will be key to its success.

It will be the responsibility of the Plan Coordinator to make all residents and visitors aware of the environmental consequences of their travel choices and the health benefits associated with choices such as walking and cycling.

It is recommended that a Travel Notice Board is provided for the use by all the residents of Dalguise House. This information point will dispense information to residents at the site in relation to walking, cycling and public transport.

The Travel Plan Coordinator should develop an events calendar linking in to existing national and county wide events to promote sustainable transport and capitalise on interest generated around these events. For example, the following campaigns run every year:

- *National Bike Week*: National Bike Week aims to promote cycling as a healthy mode of transport and is the opportunity for people to get back on the saddle – for commuting or for recreation. There are various events in local schools and communities organised throughout the week. These include children's art competitions and discounts offered to cyclists at city centre shops. National Cycle to Work Day also forms part of National Bike Week.
- *Commuter Challenge:* The Commuter Challenge is a national event open only to employers who have signed up to implement workplace travel plans as part of the Smarter Travel Workplaces programme. Teams of 3–6 workmates can register for the Commuter Challenge. Participants are encouraged to choose healthier and smarter modes of transport for their commute to and from work.
- *Cycle Challenge:* This is a free workplace event, for both experienced and new cyclists. The Challenge is open only to employers who have signed up to implement workplace travel plans as part of the Smarter Travel Workplaces programme. This is a team event (3–6 cyclists) and every team must have a 'new cyclist' – that's someone who hasn't cycled in the past six months. 1 trip = 1 point.

(d) Cycling

Cycling is cost-effective, non-polluting, reduces congestion in urban areas, fosters improved health, and is accessible to everybody. It is considered reasonable that a cyclist will be prepared to travel up to 5km to work along normal roads and streets but will be prepared to travel up to 10km along a cycle network.

Maps of cycle routes will be provided with typical journey time and distance information and will be distributed to the residents the site and displayed on the travel notice board in the Dalguise House development.

The Plan Coordinator will try to encourage residents to cycle to work by implementing the government's 'Bike to Work' Scheme in order to reduce the percentage of single car users to and from Dalguise House. This government scheme covers bicycles and accessories up to a maximum cost of €1,500 for ebikes or €1,250 for other bicycle types. The bicycle must be purchased by the employer but the scheme can then operate either with the employer bearing the full cost of the bicycle, or by way of a salary sacrifice agreement.

(e) Walking

Walking is beneficial for the environment, healthier and a cost-effective mode of transport. People will typically be prepared to walk for up to 30 minutes to work, which means that walking could be an option from all home locations within 3km of the site. Pedestrian routes should be:

- Comfortable – provide a good surface without puddles and trips;
- Convenient – provide continuous footpaths;
- Convivial – be safe to use, and free from litter;
- Conspicuous – routes should be open to view, clearly signed and lit, assisting to improve perceptions of personal security; and
- Connected – direct routes reflecting desire lines where possible. They should link the main starting points with the destinations.

Similar to cycling, the Plan Coordinator will encourage more residents to walk to the Dalguise House by raising awareness of the health benefits of walking. Information on walking distances, journey times and optimal routes will give residents and visitors at the site a better perception of walking as a mode of travel. This should be displayed on the Travel Notice Board.

(f) Public Transport

The Plan Coordinator will work to promote a public transport culture amongst residents.

Poor or insufficient access to information can be a major barrier to public transport use. For Dalguise House to promote greater use of public transport, they must make the timetable information easily available and as accurate as possible. It will therefore be the responsibility of the Plan Coordinator to regularly liaise with public transport operators to ensure that residents are provided with up-to-date public transport information to help maximise patronage. This includes timetable information, fares, bus stop location, DART stop locations and route planning. This information will be on permanent display on the Travel Notice board.

The Government's 'Tax Saver' incentive scheme should be advertised on the Travel Notice Board. Annual and Monthly public tickets for under this scheme have tax benefits for both employers and employees. Information related to the tax saver scheme should be made available among residents to increase awareness of the merits of rail and bus travel, which they can in turn highlight to their employers.

taxsaver.ie
cut the cost of your commute

(g) Car Sharing

Car sharing involves two or more people sharing a lift. One of the people travelling is usually the owner of the vehicle and the other(s) usually make a contribution towards fuel costs. It can take place either as a regular occurrence or just a one-off journey.

The numerous benefits of car sharing for individuals and residents are the following:

- The fuel cost is divided equally between driver and passenger(s), making the trip cheaper for everyone;
- Car pooling can help people get to know neighbours and/or colleagues better;
- Car sharing is one means of vastly reducing the number of single-occupancy vehicles commuting everyday; and
- Less private vehicles on the road means less car emissions, noise, fossil energy consumption and pressures on the environment resulting in a better quality of life.

The Travel Plan Coordinator should promote car-pooling as a method of reducing the traffic volume attracted by Dalguise House. An initial provision of 6 car share spaces is proposed centrally within the site, adjacent to Dalguise House. This number can be increased during the operational phase of the development by the reclassification of private car parking spaces (the need for which would logically diminish) should the need for car sharing spaces grow. GoCar Ireland has confirmed that this quantum of initial provision is appropriate (see **Appendix C**). Using the information in the Travel Database, the Travel Plan Coordinator can monitor the car sharing scheme for the Dalguise House redevelopment. This will involve preparing a car sharing notice board, regularly updated, of those wishing to car share, the locations from which they travel, compatible work patterns and the associated costs. The Travel Plan Coordinator can then make recommendations for the provision of additional spaces, as and when the need arises.

6.4 Monitoring and Assessment

Ongoing monitoring and assessment are an essential tool for feedback to enable adjustment of the mobility management measures for greatest effect.

Monitoring and assessment will be undertaken every year. This will help to identify those measures that are performing most effectively and to allow the strategy to be tailored or changed to suit the specific travel patterns in place. Future strategies will be developed with Dun Laoghaire Rathdown County Council, the National Transport Authority, and public transport operators.

The Plan Coordinator will be responsible for ongoing monitoring and regular surveys. The monitoring should include items such as:

- Review the implementation of the Travel Plan measures;
- Annual travel surveys to establish effective comparisons from earlier surveys, for example if modal split targets for the development are being met. The results of the survey will be circulated to residents to highlight any changes in travel patterns from previous years;
- Car park surveys to establish car usage by residents and overall car parking demands; and
- Level of usage of cycle stands and lockers to determine demand.

Information gathered as part of the continuous monitoring process will be made available to the residents and visitors on the Travel Notice board.

6.5 Commitments

The management company of the Dalguise House development will make the following commitments to ensure the effective operation of the Travel Plan:

- Appoint a Travel Plan Coordinator to administer, implement, monitor, and review the Travel Plan.
- Provide a Travel Notice board for the use by the Travel Plan Coordinator and residents.
- Provide a shared taxi service for people travelling to the same location and willing to share taxis.
- Make all residents aware of the environmental consequences of their travel choices and the health benefits associated with choices such as walking and cycling.
- Supply information on public transport, cycling and walking, including timetable information, fares, bus stop location, DART stop locations, distances, journey times and optimal routes.
- Promote the use of public transport as a measure to travel to and from Dalguise House.
- Promote cycling and walking to and from Dalguise House as an alternative to driving.
- Promote car sharing as a method of reducing the traffic volume attracted by Dalguise House, and liaise with a private car sharing company to make provision for car sharing on site from the outset, with an initial provision of 6 car share spaces on completion of the development.

To further ensure the effective operation of the Travel Plan the management of Dalguise House will actively attempt to initiate and support the following activities:

- Undertake annual residents travel surveys and maintain a travel database
- Organise a car free day where all residents are encouraged to make an effort to travel to work by non-car based modes.

GEDV Monkstown Owner Limited (part of the Greystar Group) has been actively involved in the preparation of this plan, and has formalised its commitments in its statement included in **Appendix B**.

7. CONCLUSIONS

This Travel Plan has assessed the proposed development of Dalguise House in terms of its accessibility by all modes of transport and includes recommendations that will encourage and make it easier for residents to travel by public transport, walking, cycling or car sharing, thereby reducing the need for car use.
The conclusions of this report are as follows:

- The area already enjoys a high modal share for sustainable transport modes. However, the extremely restrictive car parking provision on site requires even more ambitious modal share targets.
- The success of the proposed Travel Plan will be contingent on effecting and maintaining sustainable transport patterns among residents of the proposed residential development. Modal split targets have been set out herein.
- The site is highly accessible by public transport, walking and cycling. This should encourage the use of these modes.
- This Travel Plan identifies measures to enable the target modal splits to be achieved and sustained. A Travel Plan Coordinator will be required to administer, implement, monitor, and review the measures outlined. It will be the responsibility of the Plan Coordinator to make all residents aware of the environmental consequences of their travel choices and the health benefits associated with choices such as walking and cycling.
- It is proposed that monitoring and assessment of the Travel Plan will be undertaken every year. This will give an indication of the success of the various measures adopted and allow the strategy to be tailored or changed to suit the specific travel patterns in place.
- The developer, GEDV Monkstown Owner Limited (part of the Greystar Group), has demonstrated its commitment to the above in a statement included in Appendix B of this Travel Plan.

In summary, the mobility management measures outlined in this report will ensure that the residential development at Dalguise House will be a sustainable and progressive development in terms of transportation. This report provides direction to the Management Company, the Local Authority and public transport agencies on the best methods to achieve the target modal splits for the journey to/from the site and encourage greater use of public transport, cycling and walking and thereby minimising the traffic impact of the development.

APPENDIX A

Sample Travel Survey Questionnaire

Travel Survey 2017

* 1. Please specify the name of your company

* 2. How do you usually travel to work?
Pick one box only, for the longest part, by distance, of your usual journey to work.

- On foot
- Bycle
- Bus, minibus or coach
- Motorcycle or scooter
- Driving a car
- Passenger in a car with driver going to same destination
- Passenger in a car with driver going to different destination
- Taxi
- Lorry or van
- Other means
- Work mainly at or from home

* 3. Which modes of travel do you use occasionally to travel to/ from work?

Please choose all modes that apply.

- [ ] On foot
- [ ] Bicycle
- [ ] Bus, minibus or coach
- [ ] Motorcycle or scooter
- [ ] Driving a car
- [ ] Passenger in a car with driver going to same destination
- [ ] Passenger in a car with driver going to different destination
- [ ] Taxi
- [ ] Lorry or van
- [ ] Other means
- [ ] Work mainly at or from home

* 4. How far do you travel to work?

- ◯ Less than 1km
- ◯ Between 1 and 3km
- ◯ Between 3 and 5km
- ◯ Between 5 and 10km
- ◯ More than 10km

* 5. If you have changed the mode of transport you use on the commute over the past two years, please can you indicate the main reason for this change.

- Financial reasons
- Health or fitness reasons
- Sustainable Transport promotions in your workplace e.g. Cycle to Work promotion, Tax Saver sales
- The infrastructure available to you changed (buses introduced/ removed, cycle lanes installed etc)
- You changed job or the nature of your work changed
- You moved house
- Other (please specify)

* 6. Please indicate your level of agreement with the statements below:

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	N/A
I feel confident cycling my bike to work						
I enjoy walking (all or part of the way) to work						
Public Transport is convenient for my commute						
I try to use sustainable transport when I can						
I travel the way I do out of habit						
I use my car on the commute because I have no alternative						
Driving a car is the most effective way to commute						
I would like to walk more often						
I would like to cycle more often						
I would like to use public transport more often						
I would like to carshare more often						

* 7. Please indicate your age range:

- ◯ Under 25
- ◯ 25-34
- ◯ 35-44
- ◯ 45-54
- ◯ 55 or over

* 8. Please indicate your gender:

- ◯ Male
- ◯ Female
- ◯ Prefer not to say
- ◯ Other (please specify if you wish to do so)

* 9. Are you currently active (apart from routine tasks) for at least 30 minutes at a moderate intensity five or more days per week? Moderate intensity is similar to a brisk walk.

- ◯ Yes
- ◯ No

10. Do you have any other comments?

APPENDIX B

Greystar Commitment

Greystar has more than 30 years of residential experience and we invest, develop, and operate assets across the globe.

GLOBAL PLATFORM, LOCAL EXPERTISE

We use our experience to create the very best purpose-built and purpose-designed communities with experienced local teams that tailor each concept to the local market. Our residents benefit from technology-enabled apartments in highly amenitised buildings underpinned by the exceptional customer service provided by our dedicated onsite team members. By delivering what we promise to our customers, we strengthen and deepen our relationships, and we continue reinvesting in our business and our team to provide a best-in-class experience.

Careful consideration has been given to the customer and public experience in Dalguise House from a Mobility Management perspective.

Mobility Management Co-ordinator

A senior member of staff who supports the philosophy of the Mobility Management Plan will be appointed as the Co-ordinator. The Co-ordinator will be appointed prior to the first occupation of the Site. A dedicated commuter space will be provided within the tenant amenity area where travel information, timetables, access to the internet and notice boards will be provided.

The Co-ordinator will be responsible for:

- Implementation and maintenance of the Plan
- Monitoring progress of the Plan
- Liaison with public transport operators and officers of the Planning and Highway Authorities
- Production of information reports for the Developer, the Occupier(s) and the Planning and Highway Authorities
- and Ongoing assessment of the objectives of the Plan.

Within the first 6 months of being appointed, the Co-ordinator shall arrange for a resident's travel survey to be carried out. This can be achieved by means of self-completion questionnaires, which will help to identify travel requirements and set targets for modal splits.

The information requested in the questionnaire should include:

- Primary mode of transport
- Current travel patterns including the time taken to travel to work and the place of work;
- Views on alternative modes to the car (i.e. what would encourage them to switch to other modes)
- and usage of car sharing scheme

Car Sharing

GoCar is Ireland's leading car sharing service with 50,000 members and over 650 cars and vans across the country Each GoCar which is placed in a community has the potential to replace the journeys of up to 15 private cars. GoCar members sign up online and can book cars or vans via the website or mobile app. It allows individuals to have the benefits of a private car, without having the large costs and hassle associated with car ownership. GoCar is ideal for people or organisations who only need occasional access to a car, for families who need a second car sometimes, and for others who would like occasional access to a vehicle of a different type than they use day-to-day. Carsharing is a sustainable service. By allowing multiple people to use the same vehicle at different times, car sharing reduces car ownership, car dependency, congestion, noise and air pollution. It frees up land which would otherwise be used for additional parking spaces. Most GoCar users only use a car when necessary, and walk and use public transport more often than car owners. By having GoCar car club vehicles in a residential development such as this, residents will have access to pay-as-you-go driving, in their homes, which will increase usership of the service.

Coming to live with us or visit us

All our residents are contacted in advance of their arrival on site for the first time to help them plan their journey to Monkstown, be that via public transport or by vehicle. This information is also contained in our resident's handbook, to further support our efforts in communicating our parking facilities, there are paper maps available at the Concierge but more importantly we have a staff member available 24/7 to direct residents to their destination and answer any queries. Carefully considered wayfinding is visible for dedicated car parking and bicycle spaces carefully managed by the onsite team who keep a database of all allocated car parking spaces. There are clear parking guidelines for ease of use for all residents. When residents arrive for the first time, they are further assisted to their car space by the 24/7 onsite management team. Their car spaces are allocated prior to check in for efficiency. Any disregard for our parking guidelines will be dealt with immediately by our 24/7 onsite management team to ensure we are always striving to deliver a superior customer experience.

There are clearly sign posted EV Charging points available for our residents and guests. This is communicated from the outset in our handbook which every resident receives.

There is a dedicated loading zone assigned to each block to facilitate move in's/ move out's which is clearly sign posted and further advice on this is communicated from our on-site management team when required.

Disabled car spaces are available for residents and visitors and signposted accordingly. This is carefully managed to avoid misuse from able bodied residents.

GoCar spaces will be initially provided and details of how to join the scheme will be provided to all residents when the move into their apartment. Information will also be displayed within the resident amenity area and updated when required.

When guests of residents or members of the public visit by public transport or by vehicle, there are clear and visible signposts directing to the onsite concierge, and dedicated car parking spaces. The location of the concierge and security desk has been carefully considered to ensure it is immediately visible on arrival but also provides the onsite team clear visibility to the main road in and out of Dalguise House. They are also further assisted by the 24/7 onsite management team.

We manage Contractors in advance of their arrival on site to ensure they are advised or our access control policies. We carefully manage our PPM and communicate with all contractors in advance of their arrival to ensure they have adequate paperwork to undertake the task at hand but also to advise on parking facilities. All contractors must arrive at the Concierge Desk to check in and receive further instructions from the onsite maintenance team.

All suppliers/providers for the restaurant will have a dedicated drop off zone which will operate between dedicated hours of business.

Secure parking facilities will be provided within the basement levels for residents and at a number of locations through the site at ground level for visitors, Café and Crèche users. Local cycle route information will be provided in the tenant amenity area and at other fixed points within the development and residents will be advised of their location.

All residents, visitors, contractors, providers and suppliers will act in accordance with our parking guidelines which will be effectively managed by our onsite team to ensure a superior customer experience.

Active Adult

"Senior Housing" Redefined

The blue arrows point to Block I which recognises a new style of rental age-qualified housing. Greystar active adult apartment homes enable residents to live a maintenance-free, "lock-and-leave" lifestyle. Across our active adult platform, resident satisfaction is consistently ranked among the highest within the Greystar's global portfolio as well as within or senior housing industry peers. Our Mobility Management Coordinator will arrange parking in close proximity to this specific block with designated zoning monitored 24/7 to enhance resident experience.

Couriers/ Parcel Delivery

As part of our ongoing commitment to our ESG credentials, we have chosen to engage with one company for all our postal requirements. Online orders are growing nationally, evidenced by the vast increase in courier vans across our cities. Our experience of managing schemes of this nature allowed us to determine that an unacceptably large number of couriers would be delivering daily to Dalguise House without our intervention. We researched several options, and decided on one company that we will be using, who offer a unique and sustainable concept. The company we will be using collects all parcels in edge of city depots and brings them in one movement to the dedicated and purposely designed lockers within a parcel delivery area at Dalguise House by electronic vehicle. This will eliminate the need for several courier drivers arriving at multiple times and any hour during the day, reducing the requirement for vehicular movement and in turn reducing the carbon emissions in the air. Our parcel delivery driver arrives once daily to a dedicated drop off zone. This also greatly assists with the onsite traffic management and avoiding a build-up of courier drivers in the loading zone which could potentially lead to an unhealthy congestion of traffic in the main thoroughfare and eliminating the risk of couriers parking illegally

Public Transport

Up to date local bus timetables will be maintained within the tenant amenity area and other fixed points within the buildings on the site. Residents will be advised of their location. In addition, Internet access to travel information will be provided. We will provide all new residents with a travel pack showing alternative modes of travel to the development. Where possible, we will advise visitors to the site of alternative modes of travel to that of the car

We are aware that Dún Laoghaire-Rathdown County Council has renewed its focus on public awareness of bad parking practices and enforcement on illegal parking, particularly on footpaths and cycle lanes and inconsiderate parking near parks or along the coast. In the event that a vehicle was illegally parked and causing an obstruction, we would call An Gárda Siochána

Our Promise

The strategy for this Plan is based on the movement of people not vehicles. The objectives of the Plan are:

- To endeavour to reduce the use of the car by single occupants.
- To endeavour to reduce the use of the car for trips from and to the development.
- To encourage the residents to use sustainable transport modes.
- To increase the percentage of people choosing to walk, cycle or travel by public transport to and from the development.
- To create an alliance with Dun Laoghaire-Rathdown County Council, providers of public transport and residents/owners of other major developments to promote a sustainable transport network in the local area.

APPENDIX C

GoCar Commitment

GEDV Monkstown Owner Limited,
3rd Floor,
Kilmore House,
Spencer Dock,
Dublin 1

12/05/2023

To Whom It May Concern,

This is a letter to confirm that GoCar intends to provide a car sharing service in the Dalguise development located at Dalguise House, Monkstown Road, Monkstown, Dublin, A94 D7D1. GoCar representatives have discussed the project with representatives of GEDV Monkstown Owner Limited and are excited to provide a car sharing service at this location. The development consists of 493 dwellings, within the Monkstown area of Dublin. The developer proposes to have available up to 6 [Six] vehicles for public service available upon demand at surface level within the development available at end of phase 1 of the build.

GoCar is Ireland's leading car sharing service with over 60,000 members and over 900 cars and vans on fleet. Each GoCar which is placed in a community has the potential to replace the journeys of up to 15 private cars. The Department of Housing's Design Standards for New Apartments - Guidelines for Planning Authorities 2018 outline: "For all types of location, where it is sought to eliminate or reduce car parking provision, it is necessary to ensure... provision is also to be made for alternative mobility solutions including facilities for car sharing club vehicles."

Carsharing is a sustainable service. By allowing multiple people to use the same vehicle at different times, car sharing reduces car ownership, car dependency, congestion, noise, and air pollution. It frees up land which would otherwise be used for additional parking spaces. Most GoCar users only use a car when necessary and walk and use public transport more often than car owners.

By having GoCar car sharing vehicles in a development such as this, the residents therein will have access to pay-as-yougo driving, in close proximity to their homes, which will increase usership of the service.

I trust that this information is satisfactory. For any queries, please do not hesitate to contact me.

D Ralston

Daniel Ralston
Business Account Manager
GoCar Carsharing Ltd
Mobile: 086 0414 991
E: daniel.ralston@gocar.ie

APPENDIX 18.1

RESOURCE & WASTE MANAGEMENT PLAN FOR A RESIDENTIAL DEVELOPMENT

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RESOURCE & WASTE MANAGEMENT PLAN FOR A RESIDENTIAL DEVELOPMENT

AT

DALGUISE HOUSE, MONKSTOWN ROAD, MONKSTOWN, CO. DUBLIN

Report Prepared For

GEDV Monkstown Owner Limited

Report Prepared By

David Doran, Senior Environmental Consultant
&
Chonaill Bradley, Principal Environmental Consultant

Our Reference

227501.0145WMR02

Date of Issue

21 July 2022

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Document History

Document Reference		Original Issue Date	
227501.0145WMR02		21 July 2022	
Revision Level	Revision Date	Description	Sections Affected

Record of Approval

Details	Written by	Approved by
Signature		
Name	David Doran	Chonaill Bradley
Title	Senior Environmental Consultant	Principal Environmental Consultant
Date	21 July 2022	21 July 2022

CONTENTS

1.0 INTRODUCTION

AWN Consulting Ltd. (AWN) has prepared this Resource & Waste Management Plan (RWMP) on behalf of GEDV Monkstown Owner Limited. The proposed development comprises the demolition and part-demolition of existing structures onsite (total demolition area 815 sq m) and the construction of 493 No. residential units comprising: 3 No. three storey 3-bed terraced houses (GFA 569 sq m); 490 No. Build-to-Rent units, residential amenities and residential support facilities; a childcare facility; and restaurant/café and ancillary works at Dalguise House, Monkstown Road, Monkstown, Co Dublin.

This plan will provide information necessary to ensure that the management of construction and demolition (C&D) waste at the site is undertaken in accordance with all current legal and industry standards including the *Waste Management Act 1996* as amended and associated Regulations [1], *Environmental Protection Agency Act 1992* as amended [2], *Litter Pollution Act 1997* as amended [3], the *Eastern-Midlands Region Waste Management Plan 2015 – 2021* [4] and the *draft National Waste Management Plan for a Circular Economy (NWPCE) (2023)* [5] In particular, this plan aims to ensure maximum recycling, reuse and recovery of waste with diversion from landfill, wherever possible. It also seeks to provide guidance on the appropriate collection and transport of waste from the site to prevent issues associated with litter or more serious environmental pollution (e.g. contamination of soil and/or water).

This RWMP includes information on the legal and policy framework for C&D waste management in Ireland, estimates of the type and quantity of waste to be generated by the proposed development and makes recommendations for management of different waste streams. The RWMP should be viewed as a live document and should be regularly revisited throughout a project's lifecycle so that opportunities to maximise waste reduction / efficiencies are exploited throughout, and that data is collected on an ongoing basis so that it is as accurate as possible.

2.0 CONSTRUCTION & DEMOLITION WASTE MANAGEMENT IN IRELAND

2.1 National Level

The Irish Government issued a policy statement in September 1998*, Changing Our Ways* [6], which identified objectives for the prevention, minimisation, reuse, recycling, recovery and disposal of waste in Ireland. The target for C&D waste in this report was to recycle at least 50% of C&D waste within a five year period (by 2003), with a progressive increase to at least 85% over fifteen years (i.e. 2013).

In response to the *Changing Our Ways* report, a task force (Task Force B4) representing the waste sector of the already established Forum for the Construction Industry, released a report entitled '*Recycling of Construction and Demolition Waste'* [7] concerning the development and implementation of a voluntary construction industry programme to meet the Government's objectives for the recovery of C&D waste.

In September 2020, the Irish Government published a policy document outlining a new action plan for Ireland to cover the period of 2020-2025. This plan, *'A Waste Action Plan for a Circular Economy'* [8] (WAPCE), replaces the previous national waste management plan, *"A Resource Opportunity"* (2012), and was prepared in response to the 'European

Green Deal' which sets a roadmap for a transition to an altered economical model, where climate and environmental challenges are turned into opportunities.

The WAPCE sets the direction for waste planning and management in Ireland up to 2025. This reorientates policy from a focus on managing waste to a much greater focus on creating circular patterns of production and consumption. Other policy statements of a number of public bodies already acknowledge the circular economy as a national policy priority.

The policy document contains over 200 measures across various waste areas including circular economy, municipal waste, consumer protection and citizen engagement, plastics and packaging, construction and demolition, textiles, green public procurement and waste enforcement.

One of the first actions to be taken was the development of the Whole of Government Circular Economy Strategy 2022-2023 'Living More, Using Less' (2021) [9] to set a course for Ireland to transition across all sectors and at all levels of Government toward circularity and was issued in December 2021. It is anticipated that the Strategy will be updated in full every 18 months to 2 years.

The Circular Economy and Miscellaneous Provisions Act 2022 [10] was signed into law in July 2022. The Act underpins Ireland's shift from a "take-make-waste" linear model to a more sustainable pattern of production and consumption, that retains the value of resources in our economy for as long as possible and that will to significantly reduce our greenhouse gas emissions. The Act defines Circular Economy for the first time in Irish law, incentivises the use of recycled and reusable alternatives to wasteful, single-use disposable packaging, introduces a mandatory segregation and incentivised charging regime for commercial waste, streamlines the national processes for End-of-Waste and By-Products decisions, tackling the delays which can be encountered by industry, and supporting the availability of recycled secondary raw materials in the Irish market, and tackles illegal fly-tipping and littering.

The Environmental Protection Agency (EPA) of Ireland issued '*Best Practice Guidelines for the Preparation of Resource & Waste Management Plans for Construction & Demolition Projects'* in November 2021 [11]. These guidelines replace the previous guidelines issued by The National Construction and Demolition Waste Council (NCDWC) and the Department of the Environment, Heritage and Local Government (DoEHLG) in 2006 [12]. The guidelines provide a practical approach which is informed by best practice in the prevention and management of C&D wastes and resources from design to construction of a project, including consideration of the deconstruction of a project. These guidelines have been followed in the preparation of this document and include the following elements:

- Predicted C&D wastes and procedures to prevent, minimise, recycle and reuse wastes;
- Design teams roles and approach;
- Relevant EU, national and local waste policy, legislation and guidelines;
- Waste disposal/recycling of C&D wastes at the site;
- Provision of training for Resource Manager (RM) and site crew;
- Details of proposed record keeping system;
- Details of waste audit procedures and plan; and

- Details of consultation with relevant bodies i.e. waste recycling companies, Local Authority, etc.

Section 3 of the Guidelines identifies thresholds above which there is a requirement for the preparation of a RWMP for developments. The new guidance classifies developments on a two-tieredsystem. Developments which do not exceed any of the following thresholds may be classed as Tier 1 development:

- New residential development of less than 10 dwellings.
- Retrofit of 20 dwellings or less.
- New commercial, industrial, infrastructural, institutional, educational, health and other developments with an aggregate floor area less than 1,250 m^2.
- Retrofit of commercial, industrial, infrastructural, institutional, educational, health and other developments with an aggregate floor area less than 2,000m^2; and
- Demolition projects generating in total less than 100 m^3 in volume of C&D waste.

A development which exceeds one or more of these thresholds is classed as Tier-2 projects.

This development requires a RWMP as a Tier 2 development as it is above following criteria:

- New residential developments of less than 10 dwellings.

Other guidelines followed in the preparation of this report include *'Construction and Demolition Waste Management – a handbook for Contractors and Site Managers'* [13] , published by FÁS and the Construction Industry Federation in 2002 and the previous guildines, *'Best Practice Guidelines for the Preparation of Waste Management Plans for Construction and Demolition Projects' (2006).*

These guidance documents are considered to define best practice for C&D projects in Ireland and describe how C&D projects are to be undertaken such that environmental impacts and risks are minimised and maximum levels of waste recycling are achieved.

2.2 Regional Level

The proposed development is located in the Local Authority area of Dún Laoghaire Rathdown County Council (DLRCC). The *Eastern-Midlands Region Waste Management Plan 2015 – 2021* is the regional waste management plan to the administrative area, published in May 2015. Currently the EMR and other regional waste management plans are under review and the Regional Waste Management Planning Offices have issued the new draft NWMPCE in June 2023.

The Regional Plan sets out the strategic targets for waste management in the region and sets a specific target for C&D waste of *"70% preparing for reuse, recycling and other recovery of construction and demolition waste"* (excluding natural soils and stones and hazardous wastes) to be achieved by 2020.

The Draft NWMPCE does not dissolve the three regional waste areas. The NWCPCE sets the ambition of the plan to have a 0% total waste growth per person over the life of the Plan with an emphasis on non-household wastes including waste from commercial activities and the construction and demolition sector.

Proposed National Target

1b. (Construction Materials) 2% Reduction / year – Construction & Demolition Waste Generated.

Municipal landfill charges in Ireland are based on the weight of waste disposed. In the Leinster Region, charges are approximately €130 - €150 per tonne of waste, which includes a €75 per tonne landfill levy introduced under the *Waste Management (Landfill Levy) (Amendment) Regulations 2015.*

The *Dún Laoghaire-Rathdown County Development Plan 2022 – 2028* [14] sets out a number of policies for the Dún Laoghaire-Rathdown area in line with the objectives of the regional waste management plan and the new circular economy strategy.

The proposed waste policies with a particular relevance to the proposed development are as follows:

Policy Objective EI12: Resource Management

It is a Policy Objective to implement the Eastern-Midlands Region Waste Management Plan 2015-2021 and subsequent plans, in supporting the transition from a waste management economy towards a circular economy, to enhance employment and increase the value recovery and recirculation of resources. Underpinning this objective is the requirement to conform to the European Union and National Waste Management Hierarchy of the most favoured options for waste as illustrated below subject to economic and technical feasibility and Environmental Assessment.

Policy Objective EI13: Waste Management Infrastructure, Prevention, Reduction, Reuse and Recycling

- To support the principles of the circular economy, good waste management and the implementation of best international practice in relation to waste management in order for the County and the Region to become self-sufficient in terms of resource and waste management and to provide a waste management infrastructure that supports this objective.

- To provide for civic amenity facilities and bring centres as part of an integrated waste collection system in accessible locations throughout the County and promote the importance of kerbside source segregated collection of household and commercial waste as the best method to ensure the quality of waste presented for recycling is preserved.

- To ensure any waste amenity facilities adhere to the Waste Regional Offices Waste Management Infrastructure siting guidelines.

- To develop a County wide network of multi material recycling centres, bring centres and a re-use centre and to require the provision of adequately-sized recycling facilities in new commercial and large-scale residential developments, where appropriate.

- To require the inclusion of such centres in all large retail developments to maximise access by the public. To ensure new developments are designed and constructed in line with the Council's Guidelines for Waste Storage Facilities

Policy Objective EI14: Hazardous Waste

It is a Policy Objective to adhere to the recommendations of the 'National Hazardous Waste Management Plan 2014-2020' and any subsequent plan, and to co-operate with other agencies, to plan, organise, authorise and supervise the disposal of hazardous waste streams, including hazardous waste identified during construction and demolition projects.

2.3 Legislative Requirements

The primary legislative instruments that govern waste management in Ireland and applicable to the development are:

- Waste Management Act 1996 as amended.
- Environmental Protection Agency Act 1992 as amended.
- Litter Pollution Act 1997 as amended.
- Planning and Development Act 2000 as amended [15].

One of the guiding principles of European waste legislation, which has in turn been incorporated into the *Waste Management Act 1996* as amended and subsequent Irish legislation, is the principle of *"Duty of Care"*. This implies that the waste producer is responsible for waste from the time it is generated through until its legal recycling, recovery or disposal (including its method of disposal). As it is not practical in most cases for the waste producer to physically transfer all waste from where it is produced to the final destination, waste contractors will be employed to physically transport waste to the final destination. Following on from this is the concept of *"Polluter Pays"* whereby the waste producer is liable to be prosecuted for pollution incidents, which may arise from the incorrect management of waste produced, including the actions of any contractors engaged (e.g. for transportation and disposal/recovery/recycling of waste).

It is therefore imperative that the Developer ensures that the waste contractors engaged by the construction contractors are legally compliant with respect to waste transportation, recycling, recovery and disposal. This includes the requirement that a contractor handle, transport and recycle/recover/dispose of waste in a manner that ensures that no adverse environmental impacts occur as a result of any of these activities.

A collection permit to transport waste must be held by each waste contractor which is issued by the National Waste Collection Permit Office (NWCPO). Waste receiving facilities must also be appropriately permitted or licensed. Operators of such facilities cannot receive any waste, unless in possession of a Certificate of Registration (COR) or waste permit granted by the relevant Local Authority under the *Waste Management (Facility Permit & Registration) Regulations 2007 and Amendments* or a Waste or Industrial Emissions Licence granted by the EPA. The COR / permit / licence held will specify the type and quantity of waste able to be received, stored, sorted, recycled, recovered and/or disposed of at the specified site.

2.4 Local Authority Guidelines

DLRCC's Waste Management Division have issued *Guidance Notes for Environmental Design and Management of Construction Projects* (July 2022) [16] which provide good provide good practice guidance for environmental design and construction of new build high density developments to assist developers in demonstrating to local planning and waste management authorities that they have considered how the design, construction and operation of the proposed development complies with best environmental management practice.

Waste planning shall take account of "Best Practice Guidelines for the preparation of resource & waste management plans for construction & demolition projects", published by the Environmental Protection Agency in 2021.

The objective of the guidelines is to allow developers and designers to demonstrate to local planning and waste management authorities that they have considered how the design and the operation of waste management services will enable construction and demolition contractors to effectively manage their wastes arisings.

The following list sets out the main points that are considered to be necessary to proper construction waste management:

- Identification, subject to site restrictions, of a dedicated and secure compound, containing bins and skips into which all waste generated by construction site activities will be placed and designation of a single person with responsibility for provision of signage and verbal instruction to ensure proper housekeeping, maintenance of records and segregation of construction waste materials.
- Measures to ensure tracking of all waste generated to final destination. The recording of gate receipts for the licenced facility to which excavation and demolition wastes are brought is essential to ensure that waste materials removed from sites are properly disposed of and that site management is in compliance with statutory obligations under the Waste Management Acts 1996, as amended.
- Analysis of the waste arisings/material surpluses; specific waste management objectives for the project; and proposals for prevention, reuse and recycling of waste, including applications under Article 27 of the European Communities (Waste Directive) Regulations, 2011 and planning for design of projects to facilitate maintenance, replacement and re-use of building materials, recycling of demolition material and the use of materials from renewable sources.
- In all developments in excess of 10 housing units and commercial developments in excess of 1000 sq.m, a materials source and management plan illustrating design for maintenance and replacement in addition to type of materials/proportion of re-use/recycled materials to be used shall be developed and implemented by the developer to support the development of the circular economy.
- Identification and management of any Hazardous Wastes likely to arise during the construction process. In the event that hazardous soil, or historically deposited hazardous waste is encountered during the work, the contractor must notify Dún Laoghaire-Rathdown County Council, Environmental Enforcement Section, and provide a Hazardous/Contaminated Soil Management Plan, to include estimated tonnages, description of location, any relevant mitigation or monitoring proposed, and destinations for authorised disposal/treatment, in addition to information on the authorised waste collector(s).

- Identification and management of any invasive species found, including plans for eradication and follow up checks.

This RWMP has been prepared to demonstrate exactly that and aims to do that in a comprehensive manner.

3.0 DESIGN APPROACH

The client and the design team have integrated the *'Best Practice Guidelines for the Preparation of Resource & Waste Management Plans for Construction & Demolition Projects'* into the design workshops, to help review processes, identify and evaluate resource reduction measures and investigate the impact on cost, time, quality, buildability, second life and management post demolition and construction. Further details on these design principals can be found within the aforementioned guidance document.

The design team have undertaken the design process in line with the international best practice principles to firstly prevent wastes, reuse where possible and thereafter sustainably reduce and recover materials. The below sections have been the focal point of the design process and material selections and will continued to be analysed and investigated throughout the design process and when selecting material.

The approaches presented are based on international principles of optimising resources and reducing waste on construction projects through:

- Prevention;
- Reuse;
- Recycling;
- Green Procurement Principles;
- Off-Site Construction;
- Materials Optimisation; and
- Flexibility and Deconstruction.

3.1 Designing For Prevention, Reuse and Recycling

Undertaken at the outset and during project feasibility and evaluation the Client and Design Team considered:

- Establishing the potential for any reusable site assets (buildings, structures, equipment, materials, soils, etc.);
- The potential for refurbishment and refit of any existing structures or buildings rather than demolition and new build;
- Assessing any existing buildings on the site that can be refurbished either in part or wholly to meet the Client requirements; and
- Enabling the optimum recovery of assets on site.

3.2 Designing for Green Procurement

Waste prevention and minimisation pre-procurement have been discussed and will be further discussed in this section. The Design Team will discuss proposed design solutions, encourage innovation in tenders and incentivise competitions to recognise sustainable approaches. They should also discuss options for packaging reduction with the main

Contractor and subcontractors/suppliers using measures such as 'Just-in-Time' delivery and use ordering procedures that avoid excessive waste. The Green procurement extends from the planning stage into the detailed design and tender stage and will be an ongoing part of the long-term design and selection process for this development.

3.3 Designing for Off-Site Construction

Use of off-site manufacturing has been shown to reduce residual wastes by up to 90% (volumetric building versus traditional). The decision to use offsite construction is typically cost led but there are significant benefits for resource management. Some further considerations for procurement which are being investigated as part of the planning stage design process are listed as follows:

- Modular buildings as these can displace the use of concrete and the resource losses associated with concrete blocks such as broken blocks, mortars, etc.;
    - Modular buildings are typically pre-fitted with fixed plasterboard and installed insulation, eliminating these residual streams from site.
- Use of pre-cast structural concrete panels which can reduce the residual volumes of concrete blocks, mortars, plasters, etc.;
- The use of prefabricated composite panels for walls and roofing to reduce residual volumes of insulation and plasterboards;
- Using pre-cast hollow-core flooring instead of in-situ ready mix flooring or timber flooring to reduce the residual volumes of concrete/formwork and wood/packaging, respectively; and
- Designing for the preferential use of offsite modular units.

3.4 Designing for Materials Optimisation During Construction

To ensure manufacturers and construction companies adopt lean production models, including maximising the reuse of materials onsite as outlined in section 2.1. This helps to reduce the environmental impacts associated with transportation of materials and from waste management activities. This includes investigating the use of standardised sizes for certain materials to help reduce the amount of offcuts produced on site, focusing on promotion and development of off-site manufacture.

3.5 Designing for Flexibility and Deconstruction

Design flexibility has and will be investigated throughout the design process to ensure that where possible products (including buildings) only contain materials that can be recycled and are designed to be easily disassembled. Material efficiency is being considered for the duration and end of life of a building project to produce; flexible, adaptable spaces that enable a resource-efficient, low-waste future change of use; durability of materials and how they can be recovered effectively when maintenance and refurbishment are undertaken and during disassembly/deconstruction.

4.0 DESCRIPTION OF THE DEVELOPMENT

4.1 Size and Scale of the Development

GEDV Monkstown Owner Limited intends to apply for a seven year permission for development on a site of c. 3.58 hectares at Dalguise House (Protected Structure RPS No. 870), Monkstown Road, Monkstown, County Dublin, A94 D7D1 (the lands include the following structures identified as Garage (A94 N3A1); Gate Lodge (aka Brick Lodge) (A94 R9T1); Dalguise Lodge (aka Entrance Lodge) (No. 71 Monkstown Rd, A94 TP46); White Lodge (A94 V6V9)); and on-street car parking in front of Nos. 6 and 7 Purbeck (A94 C586 and A94 HT99, respectively), with the provision of vehicular and pedestrian access and egress at two points on Monkstown Road: the existing entrance to Dalguise; and at Purbeck.

Alterations will be made at Purbeck including the relocation of 4 No. existing car parking spaces to facilitate the construction of a new vehicular and pedestrian bridge over the Stradbrook Stream.

The development, with a total gross floor area of approximately 47,382 sq m (including a basement of 5,396 sq m and undercroft parking of 1,403 sq m) (of which some 46,154 sq m is new build, and 1,228 sq m retained existing buildings), will consist of the construction of 493 No. residential units, consisting of 486 No. new build and 7 No. residential units (the latter within existing structures (repurposed from Dalguise House, Gate Lodge (Brick Lodge) and Coach House)).

The residential provision will comprise: 3 No. three storey 3-bed terraced houses (GFA 569 sq m), and 490 No. Build-to-Rent units (consisting of 2 No. studio units; 289 No. 1-beds; 20 No. 2-beds/3 persons; 166 No. 2-beds/4-persons; and 13 No. 3-beds) (with an option for the use of 4 No. of the BTR Units to cater for short-term stays of up to 14 days at any one time to cater inter alia for visitors and short-term visits to residents of the overall scheme) residential amenities and residential support facilities; a childcare facility; and restaurant/café.

The development will consist of: the demolition and partial demolition of existing structures (total demolition area 967 sq m, comprising: two residential properties (White Lodge (A94 V6V9), a 2 storey house (192 sq m); and a residential garage (A94 N3A1) and shed to the southwest of Dalguise House (285 sq m)); swimming pool extension to the southeast of Dalguise House (250 sq m); lean-to structures to the south of the walled garden (142 sq m); part-demolition of Lower Ground Floor at Dalguise House (9 sq m); single storey extension to the south of the Coach House (29 sq m) and three ancillary single-storey structures (8 sq m, 8 sq m, and 31 sq m) within the yard; potting shed (13 sq m); removal of 2 No. glasshouses; and alterations to, including the creation of 3 No. opes and the removal of a 12.4 m section of the walled garden wall to the east); the construction of: 11 No. residential blocks (identified as: Block A (total GFA 2,015 sq m) 7 storey, comprising 19 No. apartment units (15 No. 1-beds, 4 No. 2-beds/4-persons) and a childcare facility (540 sq m over Ground and First Floor Levels); Block B (total GFA 3,695 sq m) 7 storey over undercroft car parking, comprising 48 No. apartment units (33 No. 1-beds, 1 No. 2-beds/3 persons, 14 No. 2-beds/4-persons); Block C (total GFA 3,695 sq m) 7 storey over undercroft car parking, comprising 48 No. apartment units (33 No. 1-beds, 1 No. 2-beds/3 persons, 14 No. 2-beds/4-persons); Block D (total GFA 4,325 sq m) 7 storey over basement level car park, comprising 52 No. apartment units (25 No. 1-beds, 26 No. 2-beds/4-persons, 1 No. 3-bed); Block E (total GFA 5,946 sq m) 9 storey over basement level car park, comprising 66 No. apartment units (40 No. 1-beds, 26 No. 2-beds/4-persons), with residents' support facilities (75 sq m) and residents' amenities (gym, yoga studio, residents' lounge/co-working space; lobby 485 sq m) at Ground Floor Level, residents' amenities (bookable rooms 42 sq m) at First Floor, and residents' amenities (residents' lounge; games room; screen room; private lounge; kitchen 350 sq m) with roof terrace (106 sq m) at Eighth Floor Level; Block F (total GFA 5,469 sq m) 7 storey over basement level car park, comprising 76 No. apartment units (46 No. 1-beds, 5 No. 2-beds/3-persons, 23 No. 2-beds/4-persons, 2 No. 3-beds); Block G (total GFA 5,469 sq m) 7 storey over basement level car park, comprising 76 No. apartment units (46 No. 1-beds, 5 No. 2-beds/3-persons, 23 No. 2-beds/4-persons, 2 No. 3-beds); Block H (total GFA 4,252 sq m) 5 storey over Lower Ground Floor, comprising 54 No. apartment units (30 No. 1-beds, 1 No. 2-beds/3-persons, 21 No. 2-beds/4-persons, 2 No. 3-beds); Block I1 (total GFA 1,038 sq m) 3 storey, comprising 12 No. apartment units (3 No. 1-beds, 3 No. 2-beds/3-persons, 6 No. 2-beds/4-persons); Block I2 (total GFA 1,038 sq m) 3 storey, comprising 12 No. apartment units (3 No. 1-beds, 3 No. 2-beds/3-persons, 6 No. 2-beds/4-persons); and Block J (total GFA 1,844 sq m) 4 storey, comprising 20 No. apartment units (13 No. 1-beds; 1 No. 2-bed/4-persons, 6 No. 3-beds));the refurbishment, adaptation and reuse of: two storey Dalguise Lodge (Entrance Lodge) (GFA 55 sq m) comprising residential support facilities; a single storey Gate Lodge (GFA 55 sq m) comprising 1 No. 1-bed unit; and two storey Coach House and single storey Stableman’s House (GFA 319 sq m) to provide 3 No. apartment units (1 No. 1-bed, 2 No. 2-bed/4 persons); the refurbishment, adaptation and change of use of Dalguise House (GFA 799 sq m) from a single residential dwelling to provide: 3 No. apartment units (2 No. studios and 1 No. 2-bed/3 person) at First Floor Level; a restaurant/cafe at Lower Ground Floor Level (GFA 273 sq m); and residents’ amenities at Ground Floor Level (library, residents’ lounge, events space, bar/bookable room, 157 sq m); works to the existing structures include: removal of existing internal partitions and doors, alterations to internal layout including provision of new partitions and doors to Dalguise Lodge (Entrance Lodge); the removal of the western chimney and internal chimney breast, removal of existing internal partitions and doors, and alterations to internal layout including provision of new partitions and doors to Gate Lodge (Brick Lodge); replacement of existing roof, windows and doors, non-original mezzanine floor and stairs of Coach House, creation of new internal and external opes, reconstruction of chimney, construction of new stairs, provision of new internal partitions and doors, replacement of the demolished single storey structure to south of Coach House with a 42 sq m single storey extension, including construction of a link between Coach House and Stableman’s House; replacement of existing roofs, windows, doors, creation of new external opes and provision of new internal partitions and doors to Stableman’s House; restoration of Coach House yard walls; removal of security bars from windows, internal partitions, doors, two secondary staircases, non-original fireplaces; and the reconfiguration of internal layout including introduction of new partitions, doors and fireplaces, in-fill of former secondary staircases; removal of an existing window at rear facade of Lower Ground Level, alterations to ope and replacement with a new external door; reinstatement of external wall fabric in place of demolished lean-to at the rear facade; and removal of external door to swimming pool on eastern facade and closure of ope; and creation of new external ope at Lower Ground Floor rear façade, provision of external plant (connected to the new ope by ducting), waste storage area, water tank at surface level adjoining the western façade, enclosed within a screen at Dalguise House).

The development will also consist of: the construction of a garden pavilion; the provision of balconies and terraces, communal open space including roof gardens, public open spaces, hard and soft landscaping, landscaping works including the removal of trees, alterations to boundaries; the provision of: 228 No. car parking spaces (148 No. at basement level; 19 No. at undercroft; and 61 No. at surface level); motorbike spaces; level changes; ESB Substations (at Block D and Block H); plant areas; waste storage areas; provision of cycle parking (including cargo bike spaces) at basement and surface level; signage/wayfinding; and all ancillary site development works above and below ground.

Provision is made in the landscaping proposals for potential future pedestrian and cycle connections that would facilitate permeability through the site boundaries with the residential estates of Arundel and Richmond Park, respectively, and the former Cheshire Home site, subject to agreement with those parties and/or Dún Laoghaire-Rathdown County Council, as appropriate.

4.2 Details of the Non-Hazardous Wastes to be Produced

There will be soil, stones, clay and made ground excavated to facilitate construction of new foundations, basement and underground services. The project engineers have estimated that 48,830 m^3 of material will need to be excavated to do so. It is currently envisaged that 48,748 m^3 of excavated material will be removed from site for appropriate reuse, recycling or disposal. The remaining material will be temporarily stockpiled for reuse as fill or for landscaping, where possible.

The following materials are intended to be salvaged and reused as part of the proposed development:

- 145m^2 of existing cobbles will be reused on site.
- Opportunities for mulching of 103 no. trees to be removed to facilitate the proposed development will be investigated for use in landscaping.
- 335m of cast iron railing.

During the construction phase there may be a surplus of building materials, such as timber off-cuts, broken concrete blocks, cladding, plastics, metals and tiles generated. There may also be excess concrete during construction which will need to be disposed of. Plastic and cardboard waste from packaging and supply of materials will also be generated. The contractor will be required to ensure that oversupply of materials is kept to a minimum and opportunities for reuse of suitable materials is maximised.

Waste will also be generated from construction workers e.g. organic / food waste, dry mixed recyclables (waste paper, newspaper, plastic bottles, packaging, aluminium cans, tins and Tetra Pak cartons), mixed non-recyclables and potentially sewage sludge from temporary welfare facilities provided on site during the C&D phases. Waste printer / toner cartridges, waste electrical and electronic equipment (WEEE) and waste batteries may also be generated infrequently from site offices.

4.3 Potential Hazardous Wastes Arising

4.3.1 Contaminated Soil

Ground investigations have been conducted by IGSL on the proposed development site and a Ground Investigations Report was issued in May 2022.

Samples underwent a Waste Acceptance Criteria (WAC) analyses in accordance with the RILTA Suite, which can be used to fully assess the waste disposal requirements of soils destined for disposal.

Included in the test suite are Heavy metals, Speciated TPH, Mineral Oil, BTEX, PCB and Total Organic Carbon (TOC) carried out on dry soil samples. Also included are leachate analyses, whereby leachate is generated in accordance with CEN 10:1 specification and this is tested for the presence of recognised contaminants including Heavy metals, Dissolved Organic Carbon (DOC) and Total Dissolved Solids (TDS). An Asbestos screen is also included in the RILTA Suite.

All samples returned readings below Inert Waste Landfill limits.

There exists a minor risk associated with the possibility of encountering contaminated soils during the de-commissioning and removal of the existing septic tank on site.

In the event that contaminated material is found on site, this material will need to be segregated from clean/inert material, tested and classified as either non-hazardous or hazardous in accordance with the EPA publication entitled 'Waste Classification: List of Waste & Determining if Waste is Hazardous or Non-Hazardous' [17] using the HazWasteOnline application (or similar approved classification method). The material will then need to be classified as clean, inert, non-hazardous or hazardous in accordance with the EC Council Decision 2003/33/EC [18], which establishes the criteria for the acceptance of waste at landfills.

In the event that asbestos containing materials are found, the removal will only be carried out by a suitably permitted waste contractor, in accordance with *S.I. No. 386 of 2006 Safety, Health and Welfare at Work (Exposure to Asbestos) Regulations 2006-2010.* All asbestos will be taken to a suitably licensed or permitted facility.

In the event that hazardous soil, or historically deposited waste is encountered during the C&D phases, the contractor will notify DLRCC and provide a Hazardous/Contaminated Soil Management Plan, to include estimated tonnages, description of location, any relevant mitigation, destination for disposal/treatment, in addition to information on the authorised waste collector(s).

4.3.2 Fuel/Oils

Fuels and oils are classed as hazardous materials; any on-site storage of fuel / oil, and all storage tanks and all draw-off points will be bunded and located in a dedicated, secure area of the site. Provided that these requirements are adhered to and the site crew are trained in the appropriate refuelling techniques, it is not expected that there will be any fuel / oil waste generated at the site.

4.3.3 Invasive Plant Species

A site walkover to determine the presence or absence of any invasive species was conducted Roughan & O'Donovan on the 20th of June and 5th of July 2021.This included a survey of the site, and around part of the outside perimeter to search for any schedule 3 invasive species, such as Japanese Knotweed *Fallopia japonica*, which is listed on the Third Schedule of the Birds and Habitats Regulations.

No third schedule invasive species were recorded during the site walkovers. If any third schedule invasive species are found on the site at a later date, a species-specific management plan will be created, and the necessary remediation measures will be undertaken.

4.3.4 Asbestos

An Asbestos Survey Report was prepared by Phoenix Environmental Safety Ltd. on the 8th August 2022.

During the asbestos survey at Dalguise House, the following asbestos containing materials were identified in the following locations:

Main house:

- Asbestos containing toilet cisterns were identified in the W/C's (no. 3)
- Asbestos containing floor tiles and bitumen adhesive was identified in the kitchen in the servants wing on the ground floor of the main house ($8m^2$ approx.)
- An asbestos containing rope seal was identified on the pipework in the basement kitchen pant room in the servant's wing
- Compressed Asbestos Fibre (CAF) gaskets were identified in the external boiler room

Rear Derelict Building:

- An asbestos containing cement board was identified on the ceiling ($12m^2$ approx.). Debris from the ceiling was found in the room underneath

Red Brick Gate Lodge:

- Asbestos containing textured coating was identified on the ceiling in the kitchen and living room

Gate Lodge At Road:

- An asbestos containing toilet cistern was identified in the ground floor toilet
- Asbestos containing floor tiles and adhesive were identified in the kitchen and living room ($18m^2$ approx.)
- Asbestos containing paper backed lino was identified in the kitchen ($6m^2$ approx.)

Removal of asbestos or asbestos containing materials (ACMs) will be carried out by a suitably qualified contractor and ACMs will only be removed from site by a suitably permitted/licenced waste contractor in accordance with *S.I. No. 386 of 2006 Safety, Health and Welfare at Work (Exposure to Asbestos) Regulations 2006-2010*. All material will be taken to a suitably licensed or permitted facility.

4.3.5 Other Known Hazardous Substances

Paints, glues, adhesives and other known hazardous substances will be stored in designated areas. They will generally be present in small volumes only and associated waste volumes generated will be kept to a minimum. Wastes will be stored in appropriate receptacles pending collection by an authorised waste contractor.

In addition, WEEE (containing hazardous components), printer toner / cartridges, batteries (Lead, Ni-Cd or Mercury) and / or fluorescent tubes and other mercury containing waste may be generated from during C&D activities or temporary site offices. These wastes, if generated, will be stored in appropriate receptacles in designated areas of the site pending collection by an authorised waste contractor.

5.0 ROLES AND RESPONSIBILITIES

The *Best Practice Guidelines on the Preparation of Resource Waste Management Plans for Construction and Demolition Projects* promotes that a RM should be appointed. The RM may be performed by number of different individuals over the life-cycle of the Project, however it is intended to be a reliable person chosen from within the Planning/Design/Contracting Team, who is technically competent and appropriately trained, who takes the responsibility to ensure that the objectives and measures within the Project RWMP are complied with. The RM is assigned the requisite authority to meet the objective and obligations of the RWMP. The role will include the important activities of conducting waste checks/audits and adopting construction methodology that is designed to facilitate maximum reuse and/or recycling of waste.

5.1 Role of the Client

The Client are the body establishing the aims and the performance targets for the project.

- The Client has commissioned the preparation and submission of a preliminary RWMP as part of the design and planning submission;
- The Client is to commission the preparation and submission of an updated RWMP as part of the construction tendering process;
- The Client will ensure that the RWMP is agreed on and submitted to the local authority prior to commencement of works on site;
- The Client is to request the end-of-project RWMP from the Contractor.

5.2 Role of the Client Advisory Team

The Client Advisory Team or Design Team is formed of architects, consultants, quantity surveyors and engineers and is responsible for:

- Drafting and maintaining the RWMP through the design, planning and procurement phases of the project;
- Appointing a RM to track and document the design process, inform the Design Team and prepare the RWMP;
- Including details and estimated quantities of all projected waste streams with the support of environmental consultants/scientists. This should also include data on waste types (e.g. waste characterisation data, contaminated land assessments, site investigation information) and prevention mechanisms (such as by-products) to illustrate the positive circular economy principles applied by the Design Team;
- Handing over of the RWMP to the selected Contractor upon commencement of construction of the development, in a similar fashion to how the safety file is handed over to the Contractor;
- Working with the Contractor as required to meet the performance targets for the project.

5.3 Future Role of the Contractor

The future construction contractors have not yet been decided upon for this RWMP. However, once select they will have major roles to fulfil. They will be responsible for:

- Preparing, implementing and reviewing the RWMP throughout the C&D phases (including the management of all suppliers and sub-contractors) as per the requirements of these guidelines;
- Identifying a designated and suitably qualified RM who will be responsible for implementing the RWMP;
- Identifying all hauliers to be engaged to transport each of the resources / wastes off-site;
- Implementing waste management policies whereby waste materials generated on site are to be segregated as far as practicable;
- Renting and operating a mobile-crusher to crush concrete for temporary reuse onsite during construction and reduce the amount of HGV loads required to remove material from site;
- Applying for the appropriate waste permit to crush concrete onsite;
- Identifying all destinations for resources taken off-site. As above, any resource that is legally classified as a 'waste' must only be transported to an authorised waste facility;
- End-of-waste and by-product notifications addressed with the EPA where required;
- Clarification of any other statutory waste management obligations, which could include on-site processing;
- Full records of all resources (both wastes and other resources) should be maintained for the duration of the project; and
- Preparing a RWMP Implementation Review Report at project handover.

6.0 KEY MATERIALS & QUANTITIES

6.1 Project Resource Targets

Project specific resource and waste management targets for the site have not yet been set and this information should be updated for these targets once these targets have been confirmed by the client. However, it is expected for projects of this nature that a minimum of 70% of waste is fully re-used, recycled or recovered. Target setting will inform the setting of project-specific benchmarks to track target progress. Typical Key Performance Indicators (KPIs) that may be used to set targets include (as per guidelines):

- Weight (tonnes) or Volume (m^3) of waste generated per construction value;
- Weight (tonnes) or Volume (m^3) of waste generated per construction floor area (m^2);
- Fraction of resource reused on site;
- Fraction of resource notified as by-product;
- Fraction of waste segregated at source before being sent off-site for recycling/recovery; and
- Fraction of waste recovered, fraction of waste recycled, or fraction of waste disposed.

6.2 Main Construction Waste Categories

The main non-hazardous and hazardous waste streams that could be generated by the construction activities at a typical site are shown in Table 6.1. The List of Waste (LoW) code (applicable as of 1 June 2015) (also referred to as the European Waste Code (EWC)) for each waste stream is also shown

Table 6.1 Typical waste types generated and LoW codes (individual waste types may contain hazardous substances)

Waste Material	LoW/EWC Code
Concrete, bricks, tiles, ceramics	17 01 01-03 & 07
Wood, glass and plastic	17 02 01-03
Treated wood, glass, plastic, containing hazardous substances	17-02-04*
Bituminous mixtures, coal tar and tarred products	17 03 01*, 02 & 03*
Metals (including their alloys) and cable	17 04 01-11
Soil and stones	17 05 03* & 04
Gypsum-based construction material	17 08 01* & 02
Paper and cardboard	20 01 01
Mixed C&D waste	17 09 04
Green waste	20 02 01
Electrical and electronic components	20 01 35 & 36
Batteries and accumulators	20 01 33 & 34
Liquid fuels	13 07 01-10
Chemicals (solvents, pesticides, paints, adhesives, detergents etc.)	20 01 13, 19, 27-30
Insulation materials	17 06 04
Organic (food) waste	20 01 08
Mixed Municipal Waste	20 03 01

** Individual waste type may contain hazardous substances*

7.0 WASTE MANAGEMENT

7.1 Demolition Waste Generation

The demolition stage will involve the demolition and part-demolition of existing structures (total demolition area 815 sq m), including: White Lodge a 2 storey house (192 sq m); swimming pool extension to the southeast of Dalguise House (250 sq m); residential garage and shed to the southwest of Dalguise House (285 sq m); lean-to structures to the south of the walled garden (13 sq m); part demolition of basement area at Dalguise House (8 sq m); part demolition at the Coach House (67 sq m); removal of a glasshouse; and alterations to and removal of sections of the walled garden. The decommissioning and removal of an existing septic tank on site is also proposed.

The demolition areas are identified in the planning drawings provided with the planning application. The anticipated demolition waste and rates of reuse, recycling / recovery and disposal are shown in Table 7.1 below.

Table 7.1 Estimated off-site reuse, recycle and disposal rates for demolition waste

Waste Type	Tonnes	Reuse/Recovery		Recycle		Disposal	
		%	Tonnes	%	Tonnes	%	Tonnes
Glass	44.0	0	0.0	85	37.4	15	6.6
Concrete, Bricks, Tiles, Ceramics	249.4	30	74.8	65	162.1	5	12.5
Plasterboard	19.6	30	5.9	60	11.7	10	2.0
Asphalts	4.9	0	0.0	25	1.2	75	3.7
Metals	73.4	5	3.7	80	58.7	15	11.0
Slate	39.1	0	0.0	85	33.3	15	5.9
Timber	58.7	10	5.9	60	35.2	30	17.6
Asbestos	1.2	0	0.0	0	0.0	100	1.2
Total	**490.2**		**90.2**		**339.6**		**60.4**

The decommissioning and removal of the septic tank will also constitute an additional <5 tonnes of concrete waste.

7.2 Construction Waste Generation

Table 7.2 shows the breakdown of C&D waste types produced on a typical site based on data from the EPA *National Waste Reports* [19] *and the joint EPA & GMIT study* [20].

Table 7.2 Waste materials generated on a typical Irish construction site

Waste Types	%
Mixed C&D	33
Timber	28
Plasterboard	10
Metals	8
Concrete	6
Other	15
Total	**100**

Table 7.3, below, shows the estimated construction waste generation for the proposed Project based on the gross floor area of construction and other information available to date, along with indicative targets for management of the waste streams. The estimated amounts for the main waste types (with the exception of soils and stones) are based on an average large-scale development waste generation rate per m^2, using the waste breakdown rates shown in Table 7.2. These have been calculated from the schedule of development areas provided by the architect.

Table 7.3 Predicted on and off-site reuse, recycle and disposal rates for construction waste

Waste Type	Tonnes	Reuse/Recovery		Recycle		Disposal	
		%	Tonnes	%	Tonnes	%	Tonnes
Mixed C&D	215.4	10	21.5	80	172.3	10	21.5
Timber	182.7	40	73.1	55	100.5	5	9.1
Plasterboard	65.3	30	19.6	60	39.2	10	6.5

Metals	52.2	5	2.6	90	47.0	5	2.6
Concrete	39.2	30	11.7	65	25.5	5	2.0
Other	97.9	20	19.6	60	58.7	20	19.6
Total	**652.6**		**148.1**		**443.1**		**61.3**

In addition to the waste streams in Table 6.4, there will be 48,830.070 m^3 of soil, stones, clay and made ground excavated to facilitate the construction of the basement, site levelling, construction of foundations, the installation of services and roads for the development and below ground services. It is currently envisaged that 48,748.241 m^3 of excavated material will be removed from site for appropriate reuse, recycling or disposal.

It should be noted that until final materials and detailed construction methodologies have been confirmed, it is difficult to predict with a high level of accuracy the construction waste that will be generated from the proposed works as the exact materials and quantities may be subject to some degree of change and variation during the construction process.

7.3 Proposed Resource and Waste Management Options

Waste materials generated will be segregated on-site, where it is practical. Where the on-site segregation of certain wastes types is not practical, off-site segregation will be carried out. There will be skips and receptacles provided to facilitate segregation at source, where feasible. All waste receptacles leaving the site will be covered or enclosed. The appointed waste contractor will collect and transfer the wastes as receptacles are filled. There are numerous waste contractors in the Dún Laoghaire-Rathdown region that provide this service.

All waste arisings will be handled by an approved waste contractor holding a current waste collection permit. All waste arisings requiring disposal off-site will be reused, recycled, recovered or disposed of at a facility holding the appropriate registration, permit or licence, as required.

During construction, some of the sub-contractors on site will generate waste in relatively low quantities. The transportation of non-hazardous waste by persons who are not directly involved with the waste business, at weights less than or equal to 2 tonnes, and in vehicles not designed for the carriage of waste, are exempt from the requirement to have a waste collection permit (per Article 30 (1) (b) of the Waste Collection Permit Regulations 2007, as amended). Any sub-contractors engaged that do not generate more than 2 tonnes of waste at any one time can transport this waste off-site in their work vehicles (which are not designed for the carriage of waste). However, they are required to ensure that the receiving facility has the appropriate COR / permit / licence.

Written records will be maintained by the contractor(s), detailing the waste arising throughout the C&D phases, the classification of each waste type, waste collection permits for all waste contactors who collect waste from the site and COR / permit / licence for the receiving waste facility for all waste removed off-site for appropriate reuse, recycling, recovery and / or disposal

Dedicated bunded storage containers will be provided for hazardous wastes which may arise, such as batteries, paints, oils, chemicals, if required.

The anticipated management of the main waste streams is outlined as follows:

Soil, Stone, Clay & Made Ground

The waste hierarchy states that the preferred option for waste management is prevention and minimisation of waste, followed by preparing for reuse and recycling / recovery, energy recovery (i.e. incineration) and, least favoured of all, disposal. The excavations are required to facilitate construction works so the preferred option (prevention and minimisation) cannot be accommodated for the excavation phase.

It is currently intended to re-use 145m^2 of existing cobbles will be reused on site.

If material is removed off-site it could be reused as a by-product (and not as a waste). If this is done, it will be done in accordance with Regulation 15 (By-products) (Previously Article 27 and referred to as Article 27 in this report) of S.I. No. 323/2020 - European Union (Waste Directive) Regulations 2020, which requires that certain conditions are met and that by-product notifications are made to the EPA via their online notification form. Excavated material should not be removed from site until approval from the EPA has been received. The potential to reuse material as a by-product will be confirmed during the course of the excavation works, with the objective of eliminating any unnecessary disposal of material.

The next option (beneficial reuse) may be appropriate for the excavated material, pending environmental testing to classify the material as hazardous or non-hazardous in accordance with the EPA *Waste Classification – List of Waste & Determining if Waste is Hazardous or Non-Hazardous* publication. Clean inert material may be used as fill material in other construction projects or engineering fill for waste licensed sites. Beneficial reuse of surplus excavation material as engineering fill may be subject to further testing to determine if materials meet the specific engineering standards for their proposed end use.

Any nearby sites requiring clean fill/capping material will be contacted to investigate reuse opportunities for clean and inert material. If any of the material is to be reused on another site as a by-product (and not as a waste), this will be done in accordance with Article 27. Similarly, if any soils/stones are imported onto the site from another construction site as a by-product, this will also be done in accordance with Article 27. Article 27 will be investigated to see if the material can be imported onto this site for beneficial reuse instead of using virgin materials.

If the material is deemed to be a waste, then removal and reuse / recovery / disposal of the material will be carried out in accordance with the *Waste Management Act 1996* as amended, the *Waste Management (Collection Permit) Regulations 2007* as amended and the *Waste Management (Facility Permit & Registration) Regulations 2007* as amended. Once all available beneficial reuse options have been exhausted, the options of recycling and recovery at waste permitted and licensed sites will be considered.

In the event that contaminated material is encountered and subsequently classified as hazardous, this material will be stored separately to any non-hazardous material. It will require off-site treatment at a suitable facility or disposal abroad via Transfrontier Shipment of Wastes (TFS).

Bedrock and On-Site Crushing

While it is not envisaged that bedrock will be encountered, if bedrock is encountered, it will not be crushed on site. Any excavated rock is expected to be removed off-site for appropriate reuse, recovery and / or disposal.

If bedrock is to be crushed on-site, the appropriate mobile waste facility permit will be obtained from DLRCC.

Silt & Sludge

During the C&D phases, silt and petrochemical interception will be carried out on run-off and pumped water from site works, where required. Sludge and silt will then be collected by a suitably licensed contractor and removed off-site.

Concrete Blocks, Bricks, Tiles & Ceramics

The majority of concrete blocks, bricks, tiles and ceramics generated as part of the construction works are expected to be clean, inert material and should be recycled, where possible. If concrete is to be crushed on-site, the appropriate mobile waste facility permit will be obtained from DLRCC.

Hard Plastic

As hard plastic is a highly recyclable material, much of the plastic generated will be primarily from material off-cuts. All recyclable plastic will be segregated and recycled, where possible.

Timber

Timber that is uncontaminated, i.e. free from paints, preservatives, glues, etc., will be disposed of in a separate skip and recycled off-site.

It is envisaged that 95 no. trees will be removed to facilitate the development. Opportunities for mulching of these trees on site will be investigated for use in landscaping.

Metal

Metals will be segregated, where practical, and stored in skips. Metal is highly recyclable and there are numerous companies that will accept these materials.

It is currently envisaged that 335m of existing cast iron railing will be reused on site.

Plasterboard

There are currently a number of recycling services for plasterboard in Ireland. Plasterboard from the C&D phases will be stored in a separate skip, pending collection for recycling. The site manager will ensure that oversupply of new plasterboard is carefully monitored to minimise waste.

Glass

Glass materials will be segregated for recycling, where possible.

Waste Electrical & Electronic Equipment (WEEE)

Any WEEE will be stored in dedicated covered cages / receptacles / pallets pending collection for recycling.

Other Recyclables

Where any other recyclable wastes, such as cardboard and soft plastic, are generated, these will be segregated at source into dedicated skips and removed off-site.

Non-Recyclable Waste

C&D waste which is not suitable for reuse or recovery, such as polystyrene, some plastics and some cardboards, will be placed in separate skips or other receptacles. Prior to removal from site, the non-recyclable waste skip / receptacle will be examined by a member of the waste team (see Section 9.0) to determine if recyclable materials have been placed in there by mistake. If this is the case, efforts will be made to determine the cause of the waste not being segregated correctly and recyclable waste will be removed and placed into the appropriate receptacle.

Asbestos Containing Materials

Any asbestos or ACMs found on-site should be removed by a suitably competent contractor and disposed of as asbestos waste. All asbestos removal work or encapsulation work must be carried out in accordance with *S.I. No. 589 of 2010 Safety, Health and Welfare at Work (Exposure to Asbestos) Regulations 2006-2010.*

Other Hazardous Wastes

On-site storage of any hazardous wastes produced (i.e. contaminated soil if encountered and / or waste fuels) will be kept to a minimum, with removal off-site organised on a regular basis. Storage of all hazardous wastes on-site will be undertaken so as to minimise exposure to on-site personnel and the public and to also minimise potential for environmental impacts. Hazardous wastes will be recovered, wherever possible, and failing this, disposed of appropriately.

On-Site Crushing

It is currently not envisaged that the crushing of waste materials will occur on-site. However, if the crushing of material is to be undertaken, a mobile waste facility permit will first be obtained from DLRCC and the destination of the accepting waste facility will be supplied to the DLRCC waste unit.

7.4 Tracking and Documentation Procedures for Off-Site Waste

All waste will be documented prior to leaving the site. Waste will be weighed by the contractor, either by a weighing mechanism on the truck or at the receiving facility. These waste records will be maintained on site by the nominated project RM (see Section 9.0).

All movement of waste and the use of waste contractors will be undertaken in accordance with the *Waste Management Act 1996* as amended, *Waste Management (Collection Permit) Regulations 2007* as amended and *Waste Management (Facility Permit & Registration) Regulations 2007* and amended. This includes the requirement for all waste contractors to have a waste collection permit issued by the NWCPO. The nominated project RM (see Section 9.0) will maintain a copy of all waste collection permits on-site.

If the waste is being transported to another site, a copy of the Local Authority waste COR / permit or EPA Waste / Industrial Emissions Licence for that site will be provided to the nominated project RM (see Section 9.0). If the waste is being shipped abroad, a copy of the Transfrontier Shipping (TFS) notification document will be obtained from DCC (as the relevant authority on behalf of all Local Authorities in Ireland) and kept on-site along with details of the final destination (COR, permits, licences, etc.). A receipt from the final destination of the material will be kept as part of the on-site waste management records.

All information will be entered in a waste management recording system to be maintained on-site.

8.0 ESTIMATED COST OF WASTE MANAGEMENT

An outline of the costs associated with different aspects of waste management is outlined below. The total cost of C&D waste management will be measured and will take into account handling costs, storage costs, transportation costs, revenue from rebates and disposal costs.

8.1 Reuse

By reusing materials on site, there will be a reduction in the transport and recycle / recovery / disposal costs associated with the requirement for a waste contractor to take the material off-site. Clean and inert soils, gravel, stones, etc., which cannot be reused on-site may be used as access roads or capping material for landfill sites, etc. This material is often taken free of charge or at a reduced fee for such purposes, reducing final waste disposal costs.

8.2 Recycling

Salvageable metals will earn a rebate, which can be offset against the costs of collection and transportation of the skips.

Clean, uncontaminated cardboard and certain hard plastics can also be recycled. Waste contractors will charge considerably less to take segregated wastes, such as recyclable waste, from a site than mixed waste.

Timber can be recycled as chipboard. Again, waste contractors will charge considerably less to take segregated wastes, such as timber, from a site than mixed waste.

8.3 Disposal

Landfill charges are currently at around €130 - €150 per tonne which includes a €75 per tonne landfill levy specified in the *Waste Management (Landfill Levy) Regulations 2015*. In addition to disposal costs, waste contractors will also charge a collection fee for skips.

Collection of segregated C&D waste usually costs less than municipal waste. Specific C&D waste contractors take the waste off-site to a licensed or permitted facility and, where possible, remove salvageable items from the waste stream before disposing of the remainder to landfill. Clean soil, rubble, etc., is also used as fill / capping material, wherever possible.

9.0 TRAINING PROVISIONS

A member of the construction team will be appointed as the RM to ensure commitment, operational efficiency and accountability in relation to waste management during the C&D phases of the development.

9.1 Resource Manager Training and Responsibilities

The nominated RM will be given responsibility and authority to select a waste team if required, i.e. members of the site crew that will aid them in the organisation, operation and recording of the waste management system implemented on site.

The RM will have overall responsibility to oversee, record and provide feedback to the client on everyday waste management at the site. Authority will be given to the RM to delegate responsibility to sub-contractors, where necessary, and to coordinate with suppliers, service providers and sub-contractors to prioritise waste prevention and material salvage.

The RM will be trained in how to set up and maintain a record keeping system, how to perform an audit and how to establish targets for waste management on site. The RM will also be trained in the best methods for segregation and storage of recyclable materials, have information on the materials that can be reused on site and be knowledgeable in how to implement this RWMP.

9.2 Site Crew Training

Training of site crew in relation to waste is the responsibility of the RM and, as such, a waste training program should be organised. A basic awareness course will be held for all site crew to outline the RWMP and to detail the segregation of waste materials at source. This may be incorporated with other site training needs such as general site induction, health and safety awareness and manual handling.

This basic course will describe the materials to be segregated, the storage methods and the location of the Waste Storage Areas (WSAs). A sub-section on hazardous wastes will be incorporated into the training program and the particular dangers of each hazardous waste will be explained.

10.0 TRACKING AND TRACING / RECORD KEEPING

Records should be kept for all waste material which leaves the site, either for reuse on another site, recycling or disposal. A recording system will be put in place to record the waste arisings on Site.

A waste tracking log should be used to track each waste movement from the site. On exit from the site, the waste collection vehicle driver should stop at the site office and sign out as a visitor and provide the security personnel or RM with a waste docket (or Waste Transfer Form (WTF) for hazardous waste) for the waste load collected. At this time, the security personnel should complete and sign the Waste Tracking Register with the following information:

- Date
- Time
- Waste Contractor
- Company waste contractor appointed by, e.g. Contractor or subcontractor name
- Collection Permit No.
- Vehicle Reg.
- Driver Name
- Docket No. (Issued at site and from receiving facility with corresponding numbers)
- Waste Type
- EWC / LoW

The waste vehicle will be checked by security personal or the RM to ensure it has the waste collection permit no. displayed and a copy of the waste collection permit in the vehicle before they are allowed to remove the waste from the site.

The waste transfer dockets will be transferred to the RM on a weekly basis and can be placed in the Waste Tracking Log file. This information will be forwarded onto the DLRCC Waste Regulation Unit when requested.

Each subcontractor that has engaged their own waste contractor will be required to maintain a similar waste tracking log with the waste dockets / WTF maintained on file and available for inspection on site by the main contractor as required. These subcontractor logs will be merged with the main waste log.

Waste receipts from the receiving waste facility will also be obtained by the site contractor(s) and retained. A copy of the Waste Collection Permits, CORs, Waste Facility Permits and Waste Licences will be maintained on site at all times and will be periodically checked by the RM. Subcontractors who have engaged their own waste contractors, should provide the main contractor with a copy of the waste collection permits and COR / permit / licence for the receiving waste facilities and maintain a copy on file, available for inspection on site as required.

11.0 OUTLINE WASTE AUDIT PROCEDURE

11.1 Responsibility for Waste Audit

The appointed RM will be responsible for conducting a waste audit at the site during the C&D phases of the proposed Project. Contact details for the nominated RM will be provided to the DLRCC Waste Regulation Unit after the main contractor is appointed and prior to any material being removed from site.

11.2 Review of Records and Identification of Corrective Actions

A review of all waste management costs and the records for the waste generated and transported off-site should be undertaken mid-way through the construction phase of the proposed Project.

If waste movements are not accounted for, the reasons for this should be established in order to see if and why the record keeping system has not been maintained. The waste records will be compared with the established recovery / reuse / recycling targets for the site. Each material type will be examined, in order to see where the largest percentage waste generation is occurring. The waste management methods for each material type will be reviewed in order to highlight how the targets can be achieved.

Upon completion of the C&D phase, a final report will be prepared, summarising the outcomes of waste management processes adopted and the total recycling / reuse / recovery figures for the development.

12.0 CONSULTATION WITH RELEVANT BODIES

12.1 Local Authority

Once construction contractors have been appointed and have appointed waste contractors, and prior to removal of any C&D waste materials off-site, details of the proposed destination of each waste stream will be provided to the DLRCC Waste Regulation Unit.

DLRCC will also be consulted, as required, throughout the excavation and C&D phases in order to ensure that all available waste reduction, reuse and recycling opportunities are identified and utilised and that compliant waste management practices are carried out.

12.2 Recycling / Salvage Companies

The appointed waste contractor for the main waste streams managed by the construction contractors will be audited in order to ensure that relevant and up-to-date waste collection permits and facility registrations / permits / licences are held. In addition, information will be obtained regarding the feasibility of recycling each material, the costs of recycling / reclamation, the means by which the wastes will be collected and transported off-site, and the recycling / reclamation process each material will undergo off-site.

13.0 REFERENCES

1. Waste Management Act 1996 as amended.
2. Environmental Protection Agency Act 1992 as amended.
3. Litter Pollution Act 1997 (S.I. No. 12 of 1997) as amended.
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9. DCCAE, *Whole of Government Circular Economy Strategy 2022-2023 'Living More, Using Less*' (2021).
10. The Circular Economy and Miscellaneous Provisions Act 2022
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14. *DLRCC, Dún Laoghaire-Rathdown County Council Development Plan 2022 – 2028.*
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17. EPA, *Waste Classification – List of Waste & Determining if Waste is Hazardous or Non-Hazardous* (2015).
18. Council Decision 2003/33/EC, establishing criteria and procedures for the acceptance of waste at landfills pursuant to Article 16 of and Annex II to Directive 1999/31/EC.
19. Environmental Protection Agency (EPA), *National Waste Database Reports 1998 – 2021*.
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APPENDIX 18.2

OPERATIONAL WASTE MANAGEMENT PLAN FOR A RESIDENTIAL DEVELOPMENT

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OPERATIONAL WASTE MANAGEMENT PLAN FOR A RESIDENTIAL DEVELOPMENT

AT

DALGUISE HOUSE, MONKSTOWN ROAD, MONKSTOWN, CO DUBLIN

Report Prepared For

GEDV Monkstown Owner Limited

Report Prepared By

David Doran, Senior Environmental Consultant
&
Chonaill Bradley, Principal Environmental Consultant

Our Reference

227501.0145WMR01

Date of Issue

18 July 2023

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Document History

Document Reference		Original Issue Date	
227501.0145WMR01		18 July 2023	
Revision Level	Revision Date	Description	Sections Affected

Record of Approval

Details	Written by	Approved by
Signature		
Name	David Doran	Chonaill Bradley
Title	Senior Environmental Consultant	Principal Environmental Consultant
Date	18 July 2023	18 July 2023

CONTENTS

1.0 INTRODUCTION

AWN Consulting Ltd. (AWN) has prepared this Operational Waste Management Plan (OWMP) on behalf of GEDV Monkstown Owner Limited. The proposed development comprises the demolition and part-demolition of existing structures onsite (total demolition area 815 sq m) and the construction of 493 No. residential units comprising: 3 No. three storey 3-bed terraced houses (GFA 569 sq m); 490 No. Build-to-Rent units, residential amenities and residential support facilities; a childcare facility; and restaurant/café and ancillary works at Dalguise House, Monkstown Road, Monkstown, Co Dublin.

This OWMP has been prepared to ensure that the management of waste during the operational phase of the proposed development is undertaken in accordance with current legal and industry standards including, the *Waste Management Act 1996* as amended [1], *Environmental Protection Agency Act 1992* as amended [2], *Litter Pollution Act 1997* as amended [3], the *'Eastern-Midlands Region (EMR) Waste Management Plan 2015 – 2021'* [4], *the* Draft National Waste Management Plan for a Circular Economy (NWMPCE) (2023) [5], *The Dún Laoghaire Rathdown County Council (Segregation, Storage and Presentation of Household and Commercial) Bye-Laws (2019)* [6] *and the Guidance Notes for Waste Management in Residential and Commercial Developments (2020)* [7]. In particular, this OWMP aims to provide a robust strategy for storing, handling, collection and transport of the wastes generated at site.

This OWMP aims to ensure maximum recycling, reuse and recovery of waste with diversion from landfill, wherever possible. The OWMP also seeks to provide guidance on the appropriate collection and transport of waste to prevent issues associated with litter or more serious environmental pollution (e.g. contamination of soil or water resources). The plan estimates the type and quantity of waste to be generated from the proposed development during the operational phase and provides a strategy for managing the different waste streams.

At present, there are no specific guidelines in Ireland for the preparation of OWMPs. Therefore, in preparing this document, consideration has been given to the requirements of national and regional waste policy, legislation and other guidelines.

2.0 OVERVIEW OF WASTE MANAGEMENT IN IRELAND

2.1 National Level

The Irish Government issued a policy statement in September 1998 titled as *'Changing Our Ways'* [8] which identified objectives for the prevention, minimisation, reuse, recycling, recovery and disposal of waste in Ireland. A heavy emphasis was placed on reducing reliance on landfill and finding alternative methods for managing waste. Amongst other things, Changing Our Ways stated a target of at least 35% recycling of municipal (i.e. household, commercial and non-process industrial) waste.

A further policy document *'Preventing and Recycling Waste – Delivering Change'* was published in 2002 [9]. This document proposed a number of programmes to increase recycling of waste and allow diversion from landfill. The need for waste minimisation at source was considered a priority.

This view was also supported by a review of sustainable development policy in Ireland and achievements to date, which was conducted in 2002, entitled *'Making Irelands Development Sustainable – Review, Assessment and Future Action'* [10]. This document also stressed the need to break the link between economic growth and waste generation, again through waste minimisation and reuse of discarded material.

In order to establish the progress of the Government policy document *Changing Our Ways*, a review document was published in April 2004 entitled *'Taking Stock and Moving Forward'* [11]. Covering the period 1998 – 2003, the aim of this document was to assess progress to date with regard to waste management in Ireland, to consider developments since the policy framework and the local authority waste management plans were put in place, and to identify measures that could be undertaken to further support progress towards the objectives outlined in *Changing Our Ways*.

In particular, *Taking Stock and Moving Forward* noted a significant increase in the amount of waste being brought to local authority landfills. The report noted that one of the significant challenges in the coming years was the extension of the dry recyclable collection services.

In September 2020, the Irish Government published a policy document outlining a new action plan for Ireland to cover the period of 2020-2025. This plan *'A Waste Action Plan for a Circular Economy'* [12] (WAPCE), was prepared in response to the 'European Green Deal' which sets a roadmap for a transition to a new economy, where climate and environmental challenges are turned into opportunities, replacing the previous national waste management plan *"A Resource Opportunity"* (2012).

The WAPCE sets the direction for waste planning and management in Ireland up to 2025. This reorientates policy from a focus on managing waste to a much greater focus on creating circular patterns of production and consumption. Other policy statements of a number of public bodies already acknowledge the circular economy as a national policy priority.

The policy document contains over 200 measures across various waste areas including circular economy, municipal waste, consumer protection and citizen engagement, plastics and packaging, construction and demolition, textiles, green public procurement and waste enforcement.

One of the first actions to be taken was the development of the Whole of Government Circular Economy Strategy 2022-2023 'Living More, Using Less' (2021) [13] to set a course for Ireland to transition across all sectors and at all levels of Government toward circularity and was issued in December 2021. It is anticipated that the Strategy will be updated in full every 18 months to 2 years.

The Circular Economy and Miscellaneous Provisions Act 2022 [14] was signed into law in July 2022. The Act underpins Ireland's shift from a "take-make-waste" linear model to a more sustainable pattern of production and consumption, that retains the value of resources in our economy for as long as possible and that will to significantly reduce our greenhouse gas emissions. The Act defines Circular Economy for the first time in Irish law, incentivises the use of recycled and reusable alternatives to wasteful, single-use disposable packaging, introduces a mandatory segregation and incentivised charging regime for commercial waste, streamlines the national processes for End-of-Waste and By-Products decisions, tackling the delays which can be encountered by industry, and supporting the availability of recycled secondary raw materials in the Irish market, and tackles illegal fly-tipping and littering.

Since 1998, the Environmental Protection Agency (EPA) has produced periodic 'National Waste (Database) Reports' [15] detailing, among other things, estimates for household and commercial (municipal) waste generation in Ireland and the level of recycling, recovery and disposal of these materials. The *2020 National Waste Statistics web resource*, which is the most recent study published, along with the national waste statistics web resource (December 2022) reported the following key statistics for 2020:

- **Generated –** Ireland produced 3,210,220 t of municipal waste in 2020. This is a 4% increase since 2019. This means that the average person living in Ireland generated 645 kg of municipal waste in 2020.
- **Managed –** Waste collected and treated by the waste industry. In 2020, a total of 3,180,620 t of municipal waste was managed and treated.
- **Unmanaged –**Waste that is not collected or brought to a waste facility and is, therefore, likely to cause pollution in the environment because it is burned, buried or dumped. The EPA estimates that 29,600 t was unmanaged in 2020.
- **Recovered –** The amount of waste recycled, used as a fuel in incinerators, or used to cover landfilled waste. In 2020, around 84% of municipal waste was recovered – an increase from 83% in 2019.
- **Recycled –** The waste broken down and used to make new items. Recycling also includes the breakdown of food and garden waste to make compost. The recycling rate in 2020 was 41%, which is up from 37% in 2019.
- **Disposed –** 16% of municipal waste was landfilled in 2020. This is an increase from 15% in 2019.

2.2 Regional Level

The proposed development is located in the Local Authority area of Dún Laoghaire Rathdown County Council (DLRCC).

The *EMR Waste Management Plan 2015 – 2021* is the regional waste management plan for the DLRCC area published in May 2015. Currently the EMR and other regional waste management plans are under review and the Regional Waste Management Planning Offices have issued the new draft NWMPCE in June 2023.

The current regional plan sets out the following strategic targets for waste management in the region:

- Achieve a recycling rate of 50% of managed municipal waste by 2020; and
- Reduce to 0% the direct disposal of unprocessed residual municipal waste to landfill (from 2016 onwards) in favour of higher value pre-treatment processes and indigenous recovery practices.

Municipal landfill charges in Ireland are based on the weight of waste disposed. In the Leinster Region, charges are approximately €130 – €150 per tonne of waste which includes a €75 per tonne landfill levy introduced under the *Waste Management (Landfill Levy) (Amendment) Regulations 2015.*

The *Dún Laoghaire-Rathdown County Development Plan 2022 – 2028* [16] sets out a number of policies for the Dún Laoghaire-Rathdown area in line with the objectives of the waste management plan.

Proposed waste policies with a particular relevance to the proposed development are as follows:

Policy Objective EI12: Resource Management

It is a Policy Objective to implement the Eastern-Midlands Region Waste Management Plan 2015-2021 and subsequent plans, in supporting the transition from a waste management economy towards a circular economy, to enhance employment and increase the value recovery and recirculation of resources. Underpinning this objective is the requirement to conform to the European Union and National Waste Management Hierarchy of the most favoured options for waste as illustrated below subject to economic and technical feasibility and Environmental Assessment.

Policy Objective EI13: Waste Management Infrastructure, Prevention, Reduction, Reuse and Recycling

- To support the principles of the circular economy, good waste management and the implementation of best international practice in relation to waste management in order for the County and the Region to become self-sufficient in terms of resource and waste management and to provide a waste management infrastructure that supports this objective.

- To provide for civic amenity facilities and bring centres as part of an integrated waste collection system in accessible locations throughout the County and promote the importance of kerbside source segregated collection of household and commercial waste as the best method to ensure the quality of waste presented for recycling is preserved.

- To ensure any waste amenity facilities adhere to the Waste Regional Offices Waste Management Infrastructure siting guidelines.

- To develop a County wide network of multi material recycling centres, bring centres and a re-use centre and to require the provision of adequately-sized recycling facilities in new commercial and large-scale residential developments, where appropriate.

- To require the inclusion of such centres in all large retail developments to maximise access by the public. To ensure new developments are designed and constructed in line with the Council's Guidelines for Waste Storage Facilities

Policy Objective EI14: Hazardous Waste

It is a Policy Objective to adhere to the recommendations of the 'National Hazardous Waste Management Plan 2014-2020' and any subsequent plan, and to co-operate with other agencies, to plan, organise, authorise and supervise the disposal of hazardous waste streams, including hazardous waste identified during construction and demolition projects.

2.3 Legislative Requirements

The primary legislative instruments that govern waste management in Ireland and applicable to the project are:

- Waste Management Act 1996 as amended;
- Environmental Protection Agency Act 1992 as amended;
- Litter Pollution Act 1997 as amended;
- Planning and Development Act 2000 as amended [17]; and
- Circular Economy and Miscellaneous Provisions Act 2022.

These Acts and subordinate Regulations enable the transposition of relevant European Union Policy and Directives into Irish law.

One of the guiding principles of European waste legislation, which has in turn been incorporated into the *Waste Management Act 1996* as amended and subsequent Irish legislation, is the principle of *"Duty of Care"*. This implies that the waste producer is responsible for waste from the time it is generated through until its legal disposal (including its method of disposal.) As it is not practical in most cases for the waste producer to physically transfer all waste from where it is produced to the final disposal area, waste contractors will be employed to physically transport waste to the final waste disposal site.

It is therefore imperative that the residents, crèche tenants and the proposed facilities management company undertake on-site management of waste in accordance with all legal requirements and employ suitably permitted/licenced contractors to undertake off-site management of their waste in accordance with all legal requirements. This includes the requirement that a waste contactor handle, transport and reuse/recover/recycle/dispose of waste in a manner that ensures that no adverse environmental impacts occur as a result of any of these activities.

A collection permit to transport waste must be held by each waste contractor which is issued by the National Waste Collection Permit Office (NWCPO). Waste receiving facilities must also be appropriately permitted or licensed. Operators of such facilities cannot receive any waste, unless in possession of a Certificate of Registration (COR) or waste permit granted by the relevant Local Authority under the *Waste Management (Facility Permit & Registration) Regulations 2007* as amended or a waste or IE (Industrial Emissions) licence granted by the EPA. The COR/permit/licence held will specify the type and quantity of waste able to be received, stored, sorted, recycled, recovered and/or disposed of at the specified site.

2.3.1 Dún Laoghaire-Rathdown County Council Waste Bye-Laws

*The DLRCC "*Dún Laoghaire-Rathdown County Council *(Storage, Presentation and Segregation of Household and Commercial Waste) Bye-Laws (2019)"* were bought into force on the 1st of February 2020. These Bye-laws repeal the previous DLRCC waste Bye-laws. The Bye-laws set a number of enforceable requirements on waste holders with regard to storage, separation and presentation of waste within the DLRCC functional area. Key requirements under these Bye-laws of relevance to the proposed development include the following:

- Kerbside waste presented for collection shall not be presented for collection earlier than 6.00 pm on the day immediately preceding the designated waste collection day;
- All containers used for the presentation of kerbside waste and any uncollected waste shall be removed from any roadway, footway, footpath or any other public place no later than 10:00am on the day following the designated waste collection day, unless an alternative arrangement has been approved in accordance with bye-law 4;
- Documentation, including receipts, is obtained and retained for a period of no less than one year to provide proof that any waste removed from the premises has been managed in a manner that conforms to these bye-laws, to the Waste Management Act and, where such legislation is applicable to that person, to the European Union (Household Food Waste and Bio-Waste) Regulations 2015; and
- Adequate access and egress onto and from the premises by waste collection vehicles is maintained.

Provisions affecting Multi-user Buildings, Apartment Blocks, etc.:

A management company, or another person if there is no such company, who exercises control and supervision of residential and/or commercial activities in multi-unit developments, mixed-use developments, flats or apartment blocks, combined living/working spaces or other similar complexes shall ensure that:

a. *separate receptacles of adequate size and number are provided for the proper segregation, storage and collection of recyclable kerbside waste, residual kerbside waste and food waste,*

b. *the receptacles referred to in paragraph (a) are located both within any individual apartment and at the place where waste is stored prior to its collection,*

c. *any place where waste is to be stored prior to collection is secure, accessible at all times by tenants and other occupiers and is not accessible by any other person other than an authorised waste collector,*

d. *written information is provided to each tenant or other occupier about the arrangements for waste separation, segregation, storage and presentation prior to collection,*

e. *an authorised waste collector is engaged to service the receptacles referred to in this section of these bye-laws, with documentary evidence, such as receipts, statements or other proof of payment, demonstrating the existence of this engagement being retained for a period of no less than two years. Such evidence shall be presented to an authorised person within a time specified in a written request from either that person or from another authorised person employed by Dún Laoghaire-Rathdown County Council,*

f. *receptacles for kerbside waste are presented for collection on the designated waste collection day,*

g. *adequate access and egress onto and from the premises by waste collection vehicles is maintained*

The full text of the Waste Bye-Laws is available from the DLRCC website.

2.4 Local Authority Guidelines

DLRCC's Waste Management Division have issued *Guidance Notes for Waste Management Planning for Residential and Commercial Developments* (2022) which provide good practice guidance for the storage and collection of waste for new build high density developments. The objective of this advice is to provide good practice guidance for the storage and collection of waste for new build high density developments to allow developers to demonstrate to local planning and waste management authorities that they have considered how the design and operation of waste management services will enable the occupiers and managing agents of new developments to manage waste arising through the lifetime of the development.

The document is designed to assist developers in considering measures required to maximise the reuse, recycling and recovery of waste in the operational lifetime of the development and give specific reference to best practice and associated legislation including minimising the carbon footprint of occupiers and services provided.

The ultimate goal of the guidelines is that the implemented waste strategy will achieve a 70% reuse and recovery target in accordance with the European Commission's proposal to introduce 70% reuse and recycling targets for municipal waste by 2030 and while also providing sufficient flexibility to support future targets and legislative requirements.

Waste storage issues should be considered at the initial apartment design stage, taking full account of this guidance note, to ensure access for all (including people with disabilities) in a brightly lit, safe and well-signed area, spacious enough for easy manoeuvrability, good ventilation and ready access if required for the control of potential vermin.

Where storage is provided in a basement area, sufficient access and egress must be provided to enable receptacles to be moved easily from the storage area to an appropriate bin staging point within the curtilage of the development in accordance with Dún Laoghaire-Rathdown County Council (Segregation, Storage And Presentation Of Household And Commercial Waste) Bye-Laws, 2019, Section 9, or any revision thereof.

The guidance notes provide requirements for five main areas of operational waste management:

A. Common Waste Storage Area Design
B. Requirements Within Residential units
C. Initial Waste Management
D. Waste Collection System
E. Requirements for Selection of Separate Staging Area for Bin Collection Where Required.

This OWMP has been prepared to demonstrate exactly that and aims to do that in a comprehensive manner.

The guidelines and form are available on the DLRCC website.

2.5 Regional Waste Management Service Providers and Facilities

Various contractors offer waste collection services in the DLRCC region. Details of waste collection permits (granted, pending and withdrawn) for the region are available from the NWCPO.

As outlined in the regional waste management plan, there is a decreasing number of landfills available in the region. Only three municipal solid waste landfills remain operational and are all operated by the private sector. There are a number of other licensed and permitted facilities in operation in the region including waste transfer stations, hazardous waste facilities and integrated waste management facilities. There are two existing thermal treatment facilities, one in Duleek, Co. Meath and a second facility in Poolbeg in Dublin.

The DLRCC Eden Park Recycling Centre, located c. 2.13km east of the development site, can be used by residents of the proposed development for other household waste streams. There is also a bring bank located c. 420m south east of the development on Monkstown Avenue, where glass and aluminium cans can be deposited.

A copy of all CORs and waste permits issued by the Local Authorities are available from the NWCPO website and all waste/IE licenses issued are available from the EPA.

3.0 DESCRIPTION OF THE PROJECT

3.1 Location, Size and Scale of the Development

GEDV Monkstown Owner Limited intends to apply for a seven year permission for development on a site of c. 3.58 hectares at Dalguise House (Protected Structure RPS No. 870), Monkstown Road, Monkstown, County Dublin, A94 D7D1 (the lands include the following structures identified as Garage (A94 N3A1); Gate Lodge (aka Brick Lodge) (A94 R9T1); Dalguise Lodge (aka Entrance Lodge) (No. 71 Monkstown Rd, A94 TP46); White Lodge (A94 V6V9)); and on-street car parking in front of Nos. 6 and 7 Purbeck (A94 C586 and A94 HT99, respectively), with the provision of vehicular and pedestrian access and egress at two points on Monkstown Road: the existing entrance to Dalguise; and at Purbeck.

Alterations will be made at Purbeck including the relocation of 4 No. existing car parking spaces to facilitate the construction of a new vehicular and pedestrian bridge over the Stradbrook Stream.

The development, with a total gross floor area of approximately 47,382 sq m (including a basement of 5,396 sq m and undercroft parking of 1,403 sq m) (of which some 46,154 sq m is new build, and 1,228 sq m retained existing buildings), will consist of the construction of 493 No. residential units, consisting of 486 No. new build and 7 No.

residential units (the latter within existing structures (repurposed from Dalguise House, Gate Lodge (Brick Lodge) and Coach House)).

The residential provision will comprise: 3 No. three storey 3-bed terraced houses (GFA 569 sq m), and 490 No. Build-to-Rent units (consisting of 2 No. studio units; 289 No. 1-beds; 20 No. 2-beds/3 persons; 166 No. 2-beds/4-persons; and 13 No. 3-beds) (with an option for the use of 4 No. of the BTR Units to cater for short-term stays of up to 14 days at any one time to cater inter alia for visitors and short-term visits to residents of the overall scheme) residential amenities and residential support facilities; a childcare facility; and restaurant/café.

The development will consist of: the demolition and partial demolition of existing structures (total demolition area 967 sq m, comprising: two residential properties (White Lodge (A94 V6V9), a 2 storey house (192 sq m); and a residential garage (A94 N3A1) and shed to the southwest of Dalguise House (285 sq m)); swimming pool extension to the southeast of Dalguise House (250 sq m); lean-to structures to the south of the walled garden (142 sq m); part-demolition of Lower Ground Floor at Dalguise House (9 sq m); single storey extension to the south of the Coach House (29 sq m) and three ancillary single-storey structures (8 sq m, 8 sq m, and 31 sq m) within the yard; potting shed (13 sq m); removal of 2 No. glasshouses; and alterations to, including the creation of 3 No. opes and the removal of a 12.4 m section of the walled garden wall to the east); the construction of: 11 No. residential blocks (identified as: Block A (total GFA 2,015 sq m) 7 storey, comprising 19 No. apartment units (15 No. 1-beds, 4 No. 2-beds/4-persons) and a childcare facility (540 sq m over Ground and First Floor Levels); Block B (total GFA 3,695 sq m) 7 storey over undercroft car parking, comprising 48 No. apartment units (33 No. 1-beds, 1 No. 2-beds/3 persons, 14 No. 2-beds/4-persons); Block C (total GFA 3,695 sq m) 7 storey over undercroft car parking, comprising 48 No. apartment units (33 No. 1-beds, 1 No. 2-beds/3 persons, 14 No. 2-beds/4-persons); Block D (total GFA 4,325 sq m) 7 storey over basement level car park, comprising 52 No. apartment units (25 No. 1-beds, 26 No. 2-beds/4-persons, 1 No. 3-bed); Block E (total GFA 5,946 sq m) 9 storey over basement level car park, comprising 66 No. apartment units (40 No. 1-beds, 26 No. 2-beds/4-persons), with residents' support facilities (75 sq m) and residents' amenities (gym, yoga studio, residents' lounge/co-working space; lobby 485 sq m) at Ground Floor Level, residents' amenities (bookable rooms 42 sq m) at First Floor, and residents' amenities (residents' lounge; games room; screen room; private lounge; kitchen 350 sq m) with roof terrace (106 sq m) at Eighth Floor Level; Block F (total GFA 5,469 sq m) 7 storey over basement level car park, comprising 76 No. apartment units (46 No. 1-beds, 5 No. 2-beds/3-persons, 23 No. 2-beds/4-persons, 2 No. 3-beds); Block G (total GFA 5,469 sq m) 7 storey over basement level car park, comprising 76 No. apartment units (46 No. 1-beds, 5 No. 2-beds/3-persons, 23 No. 2-beds/4-persons, 2 No. 3-beds); Block H (total GFA 4,252 sq m) 5 storey over Lower Ground Floor, comprising 54 No. apartment units (30 No. 1-beds, 1 No. 2-beds/3-persons, 21 No. 2-beds/4-persons, 2 No. 3-beds); Block I1 (total GFA 1,038 sq m) 3 storey, comprising 12 No. apartment units (3 No. 1-beds, 3 No. 2-beds/3-persons, 6 No. 2-beds/4-persons); Block I2 (total GFA 1,038 sq m) 3 storey, comprising 12 No. apartment units (3 No. 1-beds, 3 No. 2-beds/3-persons, 6 No. 2-beds/4-persons); and Block J (total GFA 1,844 sq m) 4 storey, comprising 20 No. apartment units (13 No. 1-beds; 1 No. 2-bed/4-persons, 6 No. 3-beds));the refurbishment, adaptation and reuse of: two storey Dalguise Lodge (Entrance Lodge) (GFA 55 sq m) comprising residential support facilities; a single storey Gate Lodge (GFA 55 sq m) comprising 1 No. 1-bed unit; and two storey Coach House and single storey Stableman's House (GFA 319 sq m) to provide 3 No. apartment units (1 No. 1-bed, 2 No. 2-bed/4 persons); the refurbishment, adaptation and change of use of Dalguise House (GFA 799 sq m) from a single residential dwelling to provide: 3 No. apartment units (2 No. studios and 1 No. 2-bed/3 person) at First Floor Level; a restaurant/cafe at Lower Ground Floor Level (GFA 273 sq m); and residents' amenities at Ground Floor Level (library, residents' lounge, events space, bar/bookable room, 157 sq m); works to the existing structures include: removal of existing internal partitions and doors, alterations to internal layout including provision of new partitions and doors to Dalguise Lodge (Entrance Lodge); the removal of the western chimney and internal chimney breast, removal of existing internal partitions and doors, and alterations to internal layout including provision of new partitions and doors to Gate Lodge (Brick Lodge); replacement of existing roof, windows and doors, non-original mezzanine floor and stairs of Coach House, creation of new internal and external opes, reconstruction of chimney, construction of new stairs, provision of new internal partitions and doors, replacement of the demolished single storey structure to south of Coach House with a 42 sq m single storey extension, including construction of a link between Coach House and Stableman's House; replacement of existing roofs, windows, doors, creation of new external opes and provision of new internal partitions and doors to Stableman's House; restoration of Coach House yard walls; removal of security bars from windows, internal partitions, doors, two secondary staircases, non-original fireplaces; and the reconfiguration of internal layout including introduction of new partitions, doors and fireplaces, in-fill of former secondary staircases; removal of an existing window at rear facade of Lower Ground Level, alterations to ope and replacement with a new external door; reinstatement of external wall fabric in place of demolished lean-to at the rear facade; and removal of external door to swimming pool on eastern facade and closure of ope; and creation of new external ope at Lower Ground Floor rear façade, provision of external plant (connected to the new ope by ducting), waste storage area, water tank at surface level adjoining the western façade, enclosed within a screen at Dalguise House).

The development will also consist of: the construction of a garden pavilion; the provision of balconies and terraces, communal open space including roof gardens, public open spaces, hard and soft landscaping, landscaping works including the removal of trees, alterations to boundaries; the provision of: 228 No. car parking spaces (148 No. at basement level; 19 No. at undercroft; and 61 No. at surface level); motorbike spaces; level changes; ESB Substations (at Block D and Block H); plant areas; waste storage areas; provision of cycle parking (including cargo bike spaces) at basement and surface level; signage/wayfinding; and all ancillary site development works above and below ground.

Provision is made in the landscaping proposals for potential future pedestrian and cycle connections that would facilitate permeability through the site boundaries with the residential estates of Arundel and Richmond Park, respectively, and the former Cheshire Home site, subject to agreement with those parties and/or Dún Laoghaire-Rathdown County Council, as appropriate.

3.2 Typical Waste Categories

The typical non-hazardous and hazardous wastes that will be generated at the proposed development will include the following:

- Dry Mixed Recyclables (DMR) - includes wastepaper (including newspapers, magazines, brochures, catalogues, leaflets), cardboard and plastic packaging, metal cans, plastic bottles, aluminium cans, tins and Tetra Pak cartons;
- Organic waste – food waste and green waste generated from plants/flowers;
- Glass; and
- Mixed Non-Recyclable (MNR)/General Waste.

In addition to the typical waste materials that will be generated at the development on a daily basis, there will be some additional waste types generated in small quantities which will need to be managed separately including:

- Green/garden waste may be generated from internal plants / flowers;
- Batteries (both hazardous and non-hazardous);

- Waste electrical and electronic equipment (WEEE) (both hazardous and non-hazardous);
- Printer cartridges/toners;
- Chemicals (paints, adhesives, resins, detergents, etc.);
- Light bulbs;
- Textiles (rags);
- Waste cooking oil (if any generated by the residents or crèche tenants);
- Furniture (and from time to time other bulky wastes); and
- Abandoned bicycles.

Wastes should be segregated into the above waste types to ensure compliance with waste legislation and guidance while maximising the re-use, recycling and recovery of waste with diversion from landfill wherever possible.

3.3 European Waste Codes

In 1994, the *European Waste Catalogue* [18] and *Hazardous Waste List* [19] were published by the European Commission. In 2002, the EPA published a document titled the *European Waste Catalogue and Hazardous Waste List* [20], which was a condensed version of the original two documents and their subsequent amendments. This document has recently been replaced by the EPA '*Waste Classification – List of Waste & Determining if Waste is Hazardous or Non-Hazardous'* [21] which became valid from the 1st June 2015. This waste classification system applies across the EU and is the basis for all national and international waste reporting, such as those associated with waste collection permits, CORs, permits and licences and EPA National Waste Database.

Under the classification system, different types of wastes are fully defined by a code. The List of Waste (LoW) code (also referred to as European Waste Code or EWC) for typical waste materials expected to be generated during the operation of the proposed development are provided in Table 3.1 below.

Table 3.1 Typical Waste Types Generated and LoW Codes

Waste Material	LoW/EWC Code
Paper and Cardboard	20 01 01
Plastics	20 01 39
Metals	20 01 40
Mixed Non-Recyclable Waste	20 03 01
Glass	20 01 02
Biodegradable Kitchen Waste	20 01 08
Oils and Fats	20 01 25
Textiles	20 01 11
Batteries and Accumulators*	20 01 33* - 34
Printer Toner/Cartridges*	20 01 27* - 28
Green Waste	20 02 01
WEEE*	20 01 35*-36
Chemicals (solvents, pesticides, paints & adhesives, detergents, etc) *	20 01 13*/19*/27*/28/29*30
Bulky Wastes	20 03 07

** Individual waste type may contain hazardous materials*

4.0 ESTIMATED WASTE ARISINGS

A waste generation model (WGM) developed by AWN, has been used to predict waste types, weights and volumes arising from operations within the proposed development. The WGM incorporates building area and use and combines these with other data including Irish and US EPA waste generation rates.

The estimated quantum/volume of waste that will be generated from the residential units has been determined based on the predicted occupancy of the units, while the modelling methodology used to determine waste generation rates for the crèche and restaurant/cafe unit is based on waste production rates per m^2 floor area.

The estimated waste generation for the development for the main waste types is presented in Tables 4.1 and 4.2.

Table 4.1 Estimated Waste Generation for Residential Units

Waste Type	Waste Volume (m^3 / week)							
	3-bed house (individual)	Block A	Block B	Block C	Block D	Block E	Block F	Block G
Organic Waste	0.02	0.25	0.67	0.67	0.68	0.92	1.02	1.02
Dry Mixed Recyclables	0.14	1.71	4.60	4.60	4.98	6.49	7.25	7.25
Glass	0.00	0.05	0.13	0.13	0.13	0.18	0.20	0.20
Mixed Non-Recyclables	0.07	0.99	2.67	2.67	2.37	3.41	3.81	3.81
Total	**0.23**	**3.00**	**8.07**	**8.07**	**8.16**	**11.00**	**12.28**	**12.28**

Table 4.2 Estimated Waste Generation for Residential Units, Crèche and Restaurant/Cafe

Waste Type	Waste Volume (m^3 / week)						
	Block H	Block I1	Block I2	Block J	Coach House	Crèche	Restaurant/ Cafe
Organic Waste	0.75	0.19	0.19	0.28	0.05	0.05	0.20
Dry Mixed Recyclables	5.31	1.36	1.36	1.96	0.33	1.65	0.47
Glass	0.14	0.04	0.04	0.05	0.01	0.01	0.01
Mixed Non-Recyclables	2.79	0.71	0.71	1.03	0.16	0.90	0.61
Total	**8.99**	**2.30**	**2.30**	**3.31**	**0.54**	**2.61**	**1.29**

The DLRCC *Guidance Notes for Waste Management in Residential and Commercial Developments* recommends calculating residential waste using Section 4.7 of *BS5906:2005 Waste Management in Buildings – Code of Practice* [22]*.* The predicted total waste generated from the residential units based on the Code of Practice is c. 62.76 m^3 per week for the residential units. Whereas the AWN waste generation model estimates c. 79.76 m^3 per week from the residential units. AWN's modelling methodology is based on data from recent published data and data from numerous other similar developments in Ireland and based on AWN's experience it is a more representative estimate of the likely waste arisings from the development.

5.0 WASTE STORAGE AND COLLECTION

This section provides information on how waste generated within the development will be stored and how the waste will be collected from the development. This has been prepared with due consideration of the proposed site layout as well as best practice standards, local and national waste management requirements including those of DLRCC. In particular, consideration has been given to the following documents:

- BS 5906:2005 Waste Management in Buildings – Code of Practice;
- DLRCC Guidance Notes for Waste Management in Residential and Commercial Developments;
- DLRCC, Dún Laoghaire Rathdown County Council Segregation, Storage and Presentation of Household and Commercial Waste) Bye-laws (2019).
- EMR Waste Management Plan 2015 – 2021;
- Draft NWMPCE 2003; and
- DoHLGH, Sustainable Urban Housing: Design Standards for New Apartments, Guidelines for Planning Authorities (2020) [23].

Five (5 no.) Waste Storage Areas (WSAs) have been allocated in the design of this development for residential use. One (1 no.) WSA has been allocated for use for residents in Blocks A, B and C, located at purbeck level. One (1 no.) WSA has been allocated for use for residents in Blocks D and G located at site lower/basement level, where the WSA is located. One (1 no.) WSA has been allocated for use for residents in Blocks E and F located at site lower/basement level, where the WSA is located. One (1 no.) WSA has been allocated for use for the residents in Block H and I1, located at garden level. One (1 no.) WSA has been allocated for use for the residents in Block I2, and J, and Coach House, located at garden level.

One (1 no.) WSA has been allocated for use by the crèche unit. This WSA is located within the residential WSA at Purbeck level. The creche will have it own bins boxed off and locked at all times to avoid cross contamination with residential waste.

One (1 no.) WSA has been allocated for use by the restaurant/cafe unit only. This WSA is located in close proximity to the restaurant/cafe unit.

Residents in houses with external access to the rear of the property will store waste in bins at the back of the house. Houses where external access to the rear of the property is unavailable, will store waste at the front of the unit, shielded from view of the road.

The location of the WSAs can be viewed on the drawings submitted with the planning application under separate cover.

Using the estimated waste generation volumes in Tables 4.1 and 4.2, the waste receptacle requirements for MNR, DMR, organic waste and glass have been established for the residential, crèche and restaurant/café WSAs. These are presented in Table 5.1. The WSAs have been appropriately sized to accommodate the weekly waste requirements for waste receptacles.

Table 5.1 Waste storage requirements for proposed development

Area/Use	Bins Required			
	MNR*	DMR**	Organic	Glass
3-bed house (individual) WSA	1 x 240L	1 x 240L	1 x 120L	Bring Bank
Blocks A B and C WSA	6 x 1100L	10 x 1100L	7 x 240L	2 x 240L
Blocks D and G WSA	7x 1100L	11 x 1100L	8 x 240L	2 x 240L
Blocks E and F WSA	7x 1100L	12 x 1100L	8 x 240L	2 x 240L
Block H and I1 WSA	4 x 1100L	6 x 1100L	4 x 240L	1 x 240L
Block I2 J and Coach House	2 x 1100L	4 x 1100L	3 x 240L	1 x 240L
Creche WSA	1 x 1100L	2 x 1100L	1 x 120L	1 x 120L
Restaurant/Café WSA	1 x 1100L	1 x 1100L	1 x 240L	1 x 240L

*Note: * = Mixed Non-Recyclables*
*** = Dry Mixed Recyclables*

The waste receptacle requirements have been established from distribution of the total weekly waste generation estimate into the holding capacity of each receptacle type.

Receptacles for organic, mixed dry recyclable, glass and mixed non-recyclable waste will be provided in the WSAs prior to first occupation of the development i.e. prior to the first residential unit being occupied.

This Plan will be provided to each resident from first occupation of the development i.e. once the first residential unit is occupied. This Plan will be supplemented, as required, by the property management company with any new information on waste segregation, storage, reuse and recycling initiatives that are subsequently introduced.

Waste storage receptacles as per Tables 5.1 and 5.2 above (or similar appropriate approved containers) will be provided by the facility management company in the WSAs.

The types of bins used will vary in size, design and colour dependent on the appointed waste contractor. However, examples of typical receptacles to be provided in the WSAs are shown in Figure 5.1. All waste receptacles used will comply with the SIST

EN 840-1:2020 and SIST EN 840-2:2020 standard for performance requirements of mobile waste containers, where appropriate.

Figure 5.1 Typical waste receptacles of varying size (240L and 1100L)

Facilities management may use a commercially available mini compactor for the DMR and MNR waste streams in the Blocks D, E, F and G combined WSA at site lower/basement level, referred to as an Epac compactor in this OWMP. Currently there are two separate WSAs servicing these four blocks.

This option will significantly reduce the volume of waste and as such the number of bins stored on site and the number of bins that will need to be transported for collection. It compresses/compacts the waste into 2m^3 and 3m^3 bags.

Alternative options can be considered in future by the facilities management company, as technologies are developed. A potential WSA for Blocks D, E, F and G would be a combination of the space currently allocated to the Blocks D and G WSA and Blocks E and F WSA. These two WSAs have been sized to accommodate bins (which take up more space than other waste management technologies) in order to ensure the Blocks D, E, F and G are not reliant on a particular technology or contactor.

The Epac compactor referred to is a compactor that compresses/compacts the waste into 2m^3 and 3m^3 skip bags (also called Flexible Intermediate Bulk Containers or FIBCs). A photo of the Epac mini compactor is provided as Figure 5.2.

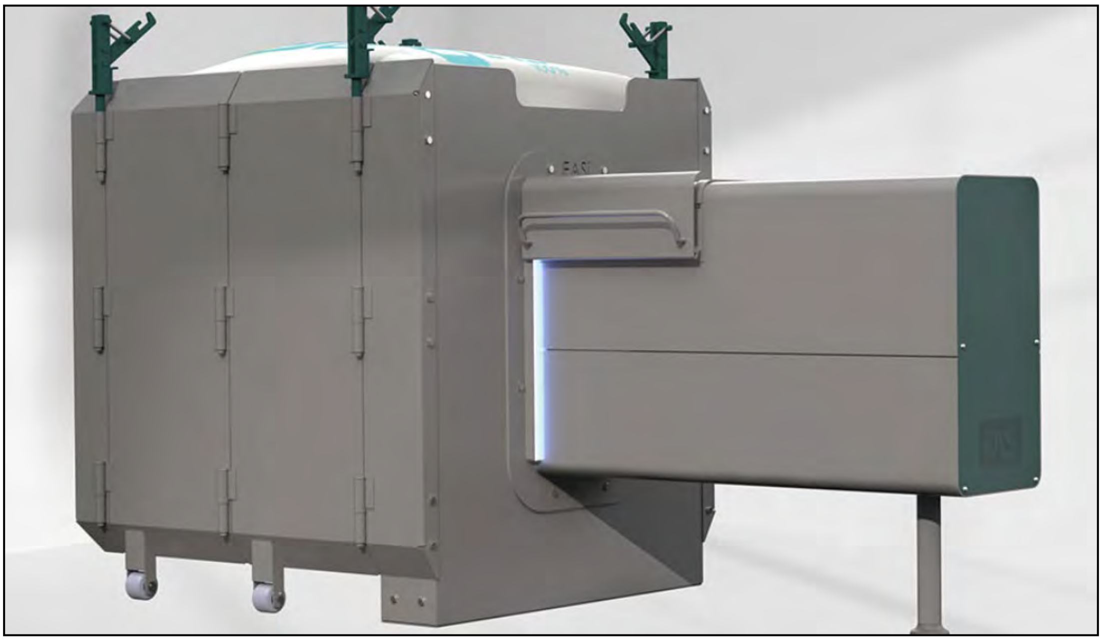

Figure 5.2 Photo of an Epac Mini Compactor (*Source:* bnmrecyling Website)

5.1 Waste Storage – Individual Houses

Residents in individual houses will be required to segregate their waste into the following waste categories within their own units:

- DMR;
- MNR;
- Glass; and
- Organic waste.

Facilities management will supply all residents with a document that shall clearly state the methods of source waste segregation, storage, reuse and recycling initiatives that shall apply within the development.

Provision will be made in all residential units to accommodate 3 no. bin types to facilitate waste segregation at source. An example of a potential 3 bin storage system is provided in Figure 5.3 below.

Figure 5.3 Example three bin storage system to be provided within the unit design

Residents with external access to the rear of the property will store waste in bins at the back of the house. Houses where external access to the rear of the property is unavailable will store waste at the front of the unit, shielded from view of the road. Residents will be required to place their segregated waste materials into these bins as necessary.

It is anticipated that DMR, MNR and organic waste will be collected on a weekly basis. Residents will be required to take glass to the nearest bring bank. Other waste materials such as textiles, batteries, printer toner/cartridges and WEEE may be generated infrequently by the residents. Residents will be required to identify suitable temporary storage areas for these waste items within their own units and dispose of them appropriately. Further details on additional waste types can be found in Section 5.6.

5.2 Waste Storage – Residential Apartment Units

Residents will be required to segregate their waste into the following main waste categories within their own units:

- DMR;
- MNR;
- Glass; and

- Organic waste.

Facilities management will supply all residents with a document that shall clearly state the methods of source waste segregation, storage, reuse and recycling initiatives that shall apply within the development.

Provision will be made in all residential units to accommodate 3 no. bin types to facilitate waste segregation at source. An example of a potential 3 bin storage system is provided in Figure 5.3 above in Section 5.1.

Residents will be required to take their segregated waste materials to their designated WSA and deposit their segregated waste into the appropriate bins. The location of all WSAs can be viewed in Appendix 1 and are illustrated in the drawings submitted with the planning application under separate cover.

Each bin / container in the residential WSAs will be clearly labelled and colour coded to avoid cross contamination of the different waste streams. Signage will be posted above or on the bins to show exactly which waste types can be placed in each bin.

Access to the residential WSA will be restricted to authorised residents, facilities management and waste contractors by means of a key or electronic fob access.

Other waste materials such as textiles, batteries, printer toner/cartridges and WEEE may be generated infrequently by the residents. Residents will be required to identify suitable temporary storage areas for these waste items within their own units and dispose of them appropriately. Further details on additional waste types can be found in Section 5.6.

5.3 Waste Storage – Crèche Unit

Staff will be required to segregate their waste into the following waste categories within their own units:

- DMR;
- MNR;
- Glass; and
- Organic waste.

As required, the staff will need to bring segregated DMR, MNR, glass and organic waste to the dedicated crèche WSA.

The crèche WSA will be located within the residential WSA space and will have its own separate bins which will be boxed off and locked to prevent cross contamination with residential waste.

Each bin/container in the WSA will be clearly labelled and colour coded to avoid cross contamination of the different waste streams. Signage will be posted above or on the bins to show exactly which waste types can be placed in each bin.

Access to the WSA will be restricted to authorised crèche staff and facilities management by means of a key or electronic fob access.

Based on the recommended bin requirements in Table 5.2, DMR, MNR and organic waste will be required to be collected weekly and glass will be collected as required.

Other waste materials such as textiles, batteries, printer toner/cartridges and WEEE may be generated infrequently by the crèche tenants. Crèche tenants will be required to identify suitable temporary storage areas for these waste items within their own units and dispose of them appropriately. Further details on additional waste types can be found in Section 5.6.

5.4 Waste Storage – Restaurant / Café Unit

Tenants will be required to segregate their waste into the following waste categories within their own unit:

- DMR;
- MNR;
- Glass; and
- Organic waste.

The restaurant/cafe unit is located at basement level. The restaurant/cafe WSA is located at ground floor level.

The restaurant/cafe unit will be required to store waste temporarily in its unit and will then transport it on a daily basis or as required to the WSA. The location of the WSA can found on the plans submitted with the application.

Each bin/container in the WSA will be clearly labelled and colour coded to avoid cross contamination of the different waste streams. Signage will be posted above or on the bins to show exactly which waste types can be placed in each bin.

Access to the WSA will be restricted to authorised staff, facilities management and the waste contractor by means of a key or electronic fob access.

Based on the recommended bin requirements in Table 5.1, DMR, MNR, organic and glass bins will be collected on a weekly basis.

If any kitchens are allocated in the unit's area, this will contribute a significant portion of the volume of waste generated on a daily basis, and as such it is important that adequate provision is made for the storage and transfer of waste from these areas to the WSA.

If kitchens are required it is anticipated that waste will be generated in kitchens throughout the day, primarily at the following locations:

- Food Storage Areas (i.e. cold stores, dry store, freezer stores and stores for decanting of deliveries);
- Meat Preparation Area;
- Vegetable Preparation Area;
- Cooking Area;
- Dish-wash and Glass-wash Area; and
- Bar Area.

Small bins will be placed adjacent to each of these areas for temporary storage of waste generated during the day. Waste will then be transferred from each of these areas to the appropriate waste store within their unit.

Other waste materials such as textiles, batteries, printer toner/cartridges, textiles, lightbulbs, furniture / bulk items and WEEE may be generated infrequently by the commercial tenants. The restaurant/cafe tenant will be required to identify suitable temporary storage areas for these waste items within their own units and dispose of them appropriately. Further details on additional waste types can be found in Section 5.6

5.5 Waste Collection

There are numerous private contractors that provide waste collection services in the DLRCC area. All waste contractors servicing the proposed development must hold a valid waste collection permit for the specific waste types collected. All waste collected must be transported to registered/permitted/licensed facilities only.

Waste receptacles from the proposed development will be brought to designated staging areas prior to collection. From here, the bins will be brought to the waste collection vehicle for emptying. Following this, the waste receptacles will be returned to the staging area from where they will be promptly returned to their respective WSAs. The staging areas are such that they will not obstruct traffic or pedestrians (allowing a footway path of at least 1.8m, the space needed for two wheelchairs to pass each other) as is recommended in the Design Manual for Urban Roads and Streets (2019) [24].

The location of the staging areas / collection points can be viewed in Appendix 1 and are illustrated in drawings submitted with the planning application under separate cover.

A bin truck autotracking has also be undertaken and can be seen in Appendix 2.

It is recommended that bin collection times/days are staggered to reduce the number of bins required to be emptied at once and the time the waste vehicle is onsite. This will be determined during the process of appointment of a waste contractor.

5.6 Additional Waste Materials

In addition to the typical waste materials that are generated on a daily basis, there will be some additional waste types generated from time to time that will need to be managed separately. A non-exhaustive list is presented below.

<u>Green Waste</u>
Green waste may be generated from internal plants / flowers. Green waste generated from internal plants / flowers can be placed in the organic waste bins. If substantial green waste is produced by the crèche tenants it can be removed by a landscape contractor.

<u>Batteries</u>
A take-back service for waste batteries and accumulators (e.g. rechargeable batteries) is in place in order to comply with the S.I. No. 283/2014 - European Union (Batteries and Accumulators) Regulations 2014, as amended. In accordance with these regulations, consumers are able to bring their waste batteries to their local civic amenity centre or can return them free of charge to retailers which supply the equivalent type of battery, regardless of whether or not the batteries were purchased at the retail outlet and regardless of whether or not the person depositing the waste battery purchases any product or products from the retail outlet.

The crèche and restaurant/cafe tenants cannot use the civic amenity centre. They must segregate their waste batteries and either avail of the take-back service provided by retailers or arrange for recycling / recovery of their waste batteries by a suitably permited / licenced contractor. Facilties management may arrange collection, depending on the agreement.

<u>Waste Electrical and Electronic Equipment (WEEE)</u>
The WEEE Directive (Directive 2002/96/EC) and associated Waste Management (WEEE) Regulations have been enacted to ensure a high level of recycling of electronic and electrical equipment. In accordance with the regulations, consumers can bring their waste electrical and electronic equipment to their local recycling centre.

In addition, consumers can bring back WEEE within 15 days to retailers when they purchase new equipment on a like for like basis. Retailers are also obliged to collect WEEE within 15 days of delivery of a new item, provided the item is disconnected from all mains, does not pose a health and safety risk and is readily available for collection.

As noted above, the crèche and restaurant/cafe tenants cannot use the civic amenity centre. They must segregate their WEEE and either avail of the take-back / collection service provided by retailers or arrange for recycling / recovery of their WEEE by a suitably permited / licenced contractor. Facilties management may arrange collection, depending on the agreement.

Printer Cartridge / Toners

It is recommended that a printer cartridge / toner bin is provided in the crèche and restaurant/cafe units, where appropriate. The crèche and restaurant/cafe tenants will be required to store this waste within their unit and arrange for return to retailers or collection by an authorised waste contractor, as required.

Waste printer cartridge / toners generated by residents can usually be returned to the supplier free of charge or can be brought to a civic amenity centre.

Chemicals

Chemicals (such as solvents, paints, adhesives, resins, detergents, etc) are largely generated from building maintenance works. Such works are usually completed by external contractors who are responsible for the off-site removal and appropriate recovery / recycling / disposal of any waste materials generated.

Any waste cleaning products or waste packaging from cleaning products generated in the crèche and restaurant/cafe units that is classed as hazardous (if they arise) will be appropriately stored within the tenant's own space. Facilties management may arrange collection, depending on the agreement.

Any waste cleaning products or waste packaging from cleaning products that are classed as hazardous (if they arise) generated by the residents should be brought to a civic amenity centre.

Light Bulbs

Waste light bulbs (fluorescent, incandescent and LED) may be generated by lighting at the crèche unit. It is anticipated that the crèche and restaurant/cafe tenants will be responsible for the off-site removal and appropriate recovery / disposal of these wastes. Facilties management may arrange collection, depending on the agreement.

Light bulbs generated by residents should be taken to the nearest civic amenity centre for appropriate storage and recovery / disposal.

Textiles

Where possible, waste textiles should be recycled or donated to a charity organisation for reuse. The crèche and restaurant/cafe tenants and residents will be responsible for disposing of waste textiles appropriately.

Waste Cooking Oil

If the crèche and restaurant/cafe tenants use cooking oil, waste cooking oil will need to be stored within the unit on a bunded area or spill pallet and regular collections by a dedicated waste contractor will need to be organised as required. Under sink grease traps will be installed in any cooking space.

If the residents generate waste cooking oil, this can be brought to a civic amenity centre or placed in the organic bin.

Furniture & Other Bulky Waste Items
Furniture and other bulky waste items (such as carpet, etc.) may occasionally be generated by the residents, crèche tenant and restaurant/cafe tenant. The collection of bulky waste will be arranged, as required by the crèche and restaurant/cafe tenants. If residents wish to dispose of furniture, this can be brought a civic amenity centre.

Abandoned Bicycles
Bicycle parking areas are planned for the development. As happens in other developments, residents sometimes abandon faulty or unused bicycles, and it can be difficult to determine their ownership. Abandoned bicycles should be donated to charity if they arise or facilties management may arrange collection by a licensed waste contractor.

5.7 Waste Storage Area Design

The WSAs will be designed and fitted-out to meet the requirements of relevant design Standards, including:

- Be fitted with a non-slip floor surface;
- Provide ventilation to reduce the potential for generation of odours;
- Provide suitable lighting – a minimum Lux rating of 220 is recommended;
- Appropriate sensor controlled lighting;
- Be easily accessible for people with limited mobility;
- Be restricted to access by nominated personnel only;
- Be supplied with hot or cold water for disinfection and washing of bins;
- Be fitted with suitable power supply for power washers;
- Have a sloped floor to a central foul drain for bins washing run-off;
- Have appropriate graphical and written signage placed above and on bins indicating correct use;
- Have access for potential control of vermin, if required;
- Robust design of doors to bin area incorporating steel sheet covering where appropriate; and
- Be fitted with CCTV for monitoring.

The facility management company will be required to maintain bins and storage areas in good condition as required by the DLRCC *Waste Bye*-Laws.

5.8 Facility Management Responsibilities

Facilities Management of Greystar Developments are executed directly by Greystar staff.

It shall be the responsibility of Greystar / the Facilities Management Company to ensure that all domestic waste generated by apartment residents is managed to ensure correct storage prior to collection by an appropriately permitted waste management company.

Greystar / Facilities Management should provide the following items in accordance with the DLRCC *the Guidance Notes for Waste Management in Residential and Commercial Developments:*

- Provision of a Waste Management Plan document, prepared by the Greystar / Facilities Management Company to all residential units, which shall clearly state the methods of source waste segregation, storage, reuse and recycling initiatives that shall apply to the management of the development;
- Provision and maintenance of appropriate graphical signage to inform residents of their obligation to reduce waste, segregate waste and in the correct bin;

- Preparation of an annual waste management report for all residential units;
- Designation of access routes to common waste storage areas to ensure safe access from the apartment units by mobility impaired persons;
- Provision of an appropriately qualified and experienced staff member, who will be responsible for all aspects of waste management at the development;
- Daily inspection of waste storage areas and signing of a daily check list, which shall be displayed within the area; and
- Maintenance of a weekly register, detailing the quantities and breakdown of wastes collected from the development and provision of supporting documentation by the waste collector to allow tracking of waste recycling rates.

6.0 CONCLUSIONS

In summary, this OWMP presents a waste strategy that complies with all legal requirements, waste policies and best practice guidelines and demonstrates that the required storage areas have been incorporated into the design of the development.

Implementation of this OWMP will ensure a high level of recycling, reuse and recovery at the development. All recyclable materials will be segregated at source to reduce waste contractor costs and ensure maximum diversion of materials from landfill, thus achieving the targets set out in the *EMR Waste Management Plan 2015 – 2021*.

Adherence to this plan will also ensure that waste management at the development is carried out in accordance with the requirements outlined in the DLRCC Guidance Notes for Waste Management in Residential and Commercial Developments, the *DLRCC Waste Bye-Laws* and DLRCC *Guidance Notes for Waste Management in Large Residential and Commercial Developments*.

The waste strategy presented in this document will provide sufficient storage capacity for the estimated quantity of segregated waste. The designated area for waste storage will provide sufficient room for the required receptacles in accordance with the details of this strategy.

7.0 REFERENCES

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2. Litter Pollution Act 1997 (Act No. 12 of 1997) as amended;
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7. DLRCC, Guidance Notes for Waste Management in Residential and Commercial Developments (2020).
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18. European Waste Catalogue - Council Decision 94/3/EC (as per Council Directive 75/442/EC).
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24. Department of Transport, Tourism and Sport and Department of Housing, Planning and Local Government, *Design Manual for Urban Roads and Streets* (2019).

APPENDIX 1: WASTE STORAGE AREAS AND STAGINGAREAS/COLLECTION POINTS

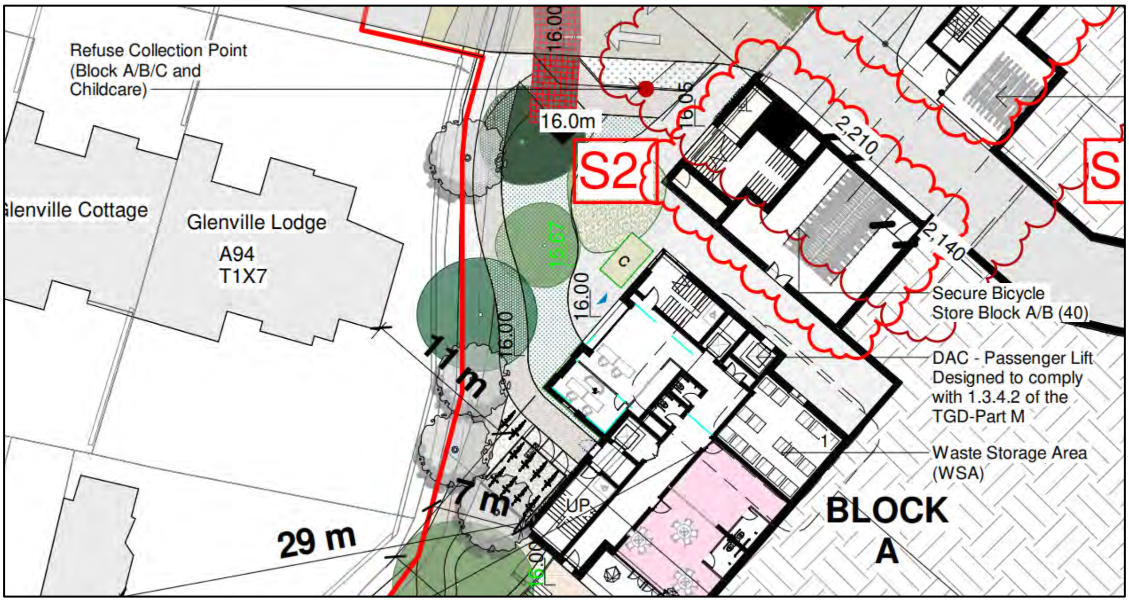

Figure 1 *Refuse Storage and Collection Point for Block A, B, C and Childcare*

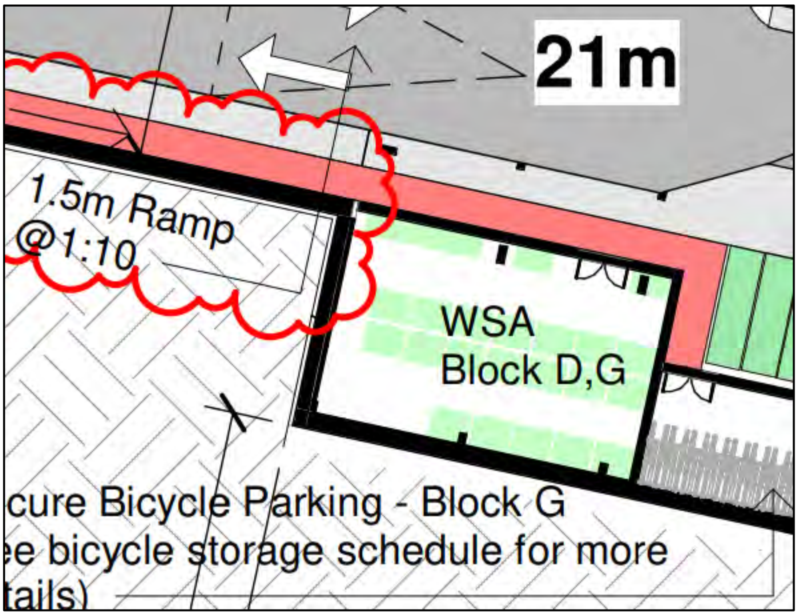

Figure 2 *Refuse Storage for Block D and G*

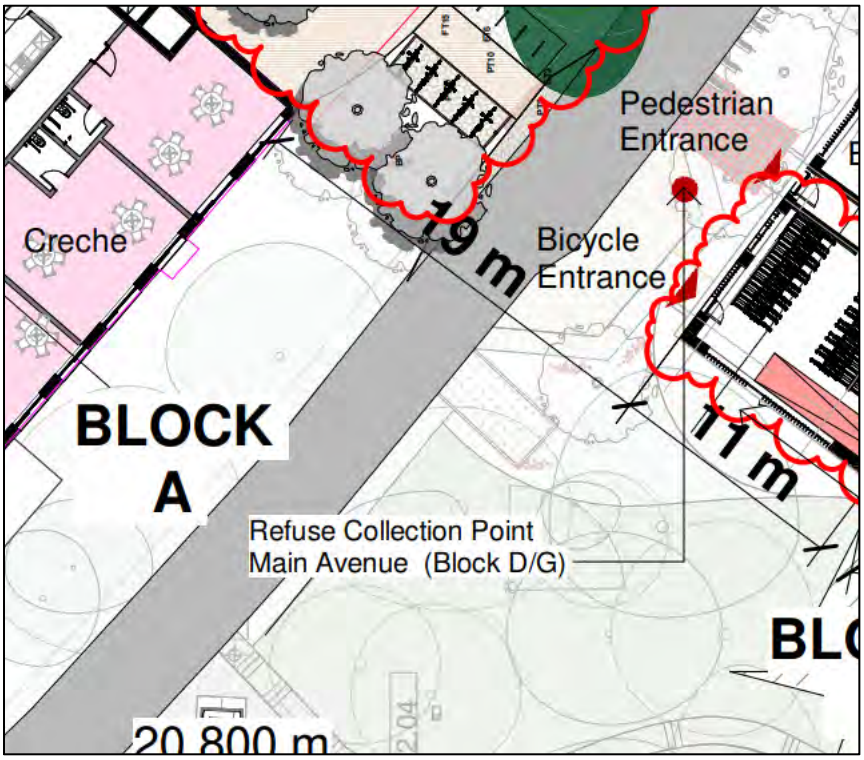

Figure 3 *Refuse Collection Point for Block D and G*

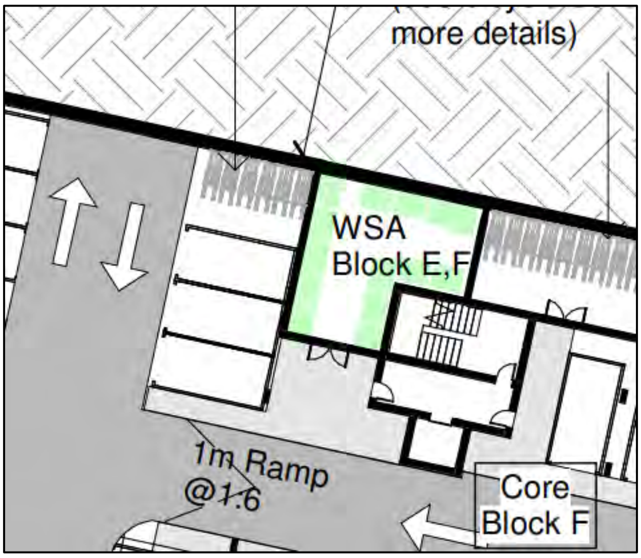

Figure 4 *Refuse Storage for Block E and F*

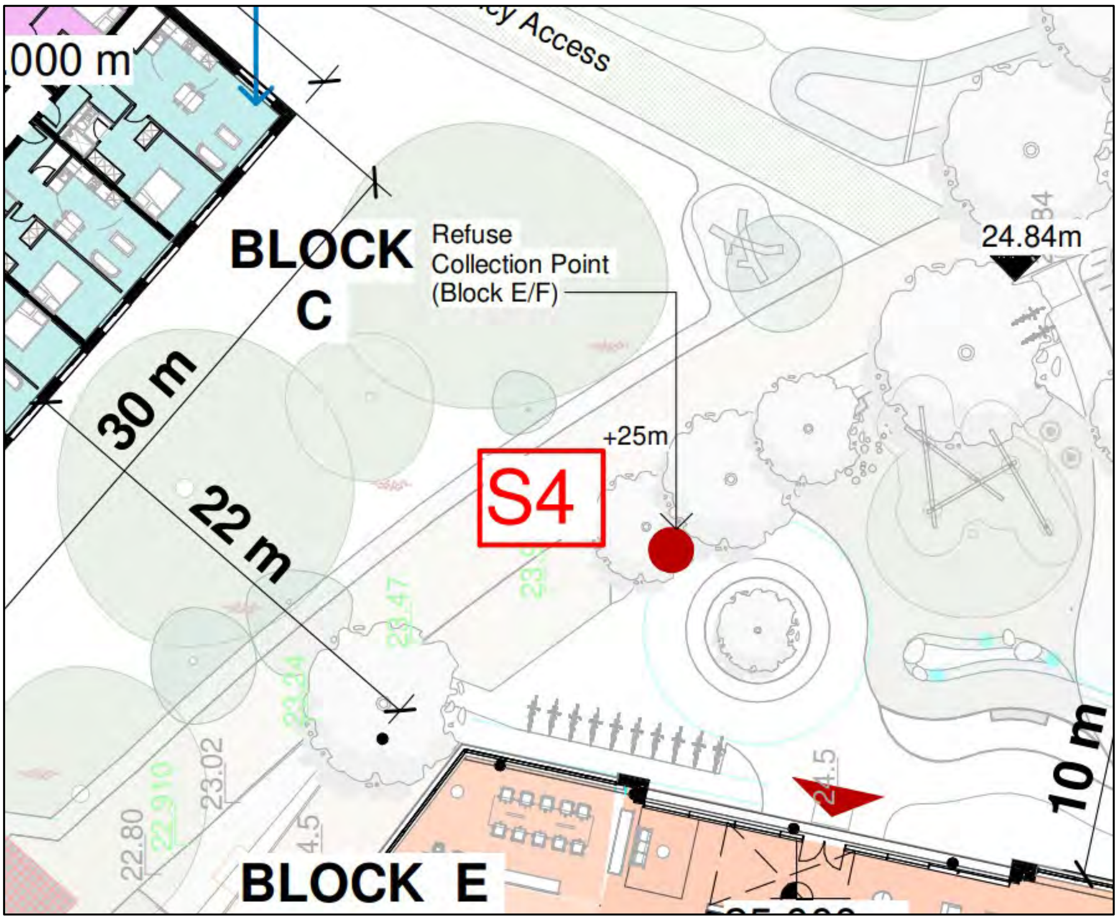

Figure 5 *Refuse Collection Point for Block E and F*

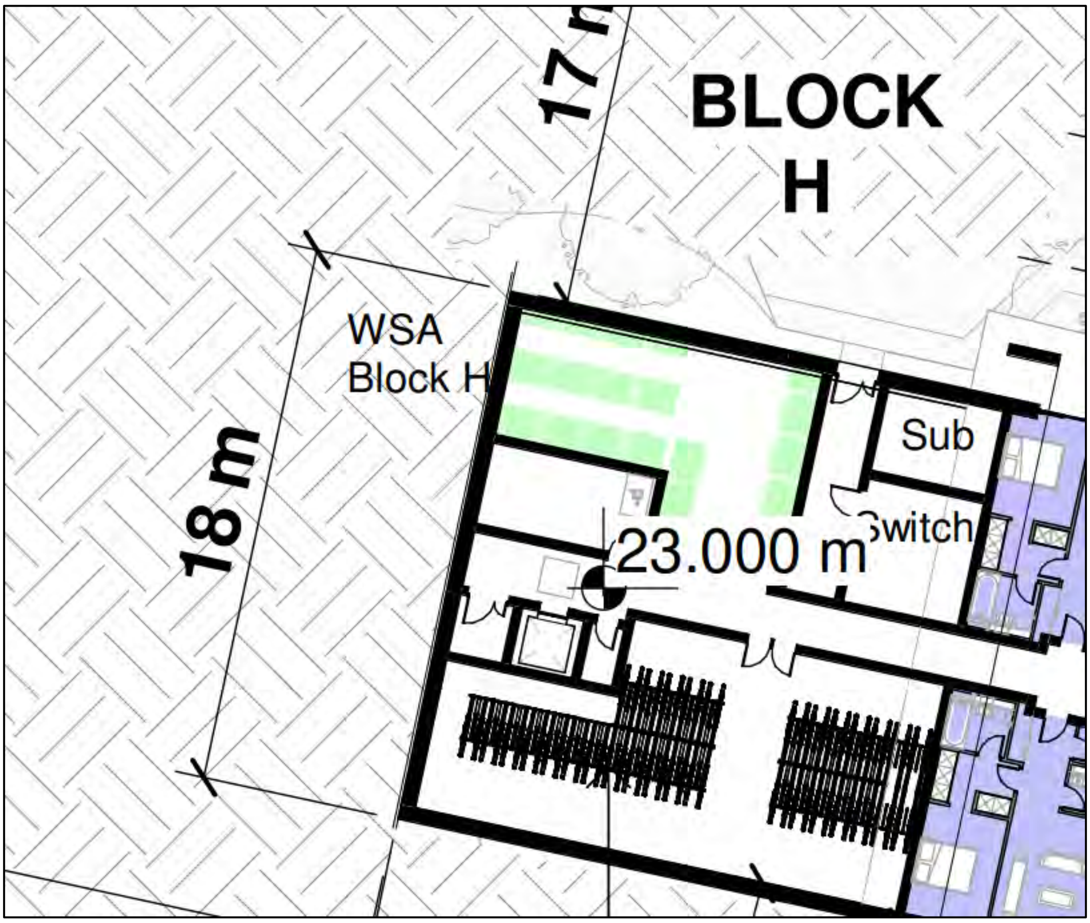

Figure 6 *Refuse Storage for Block H*

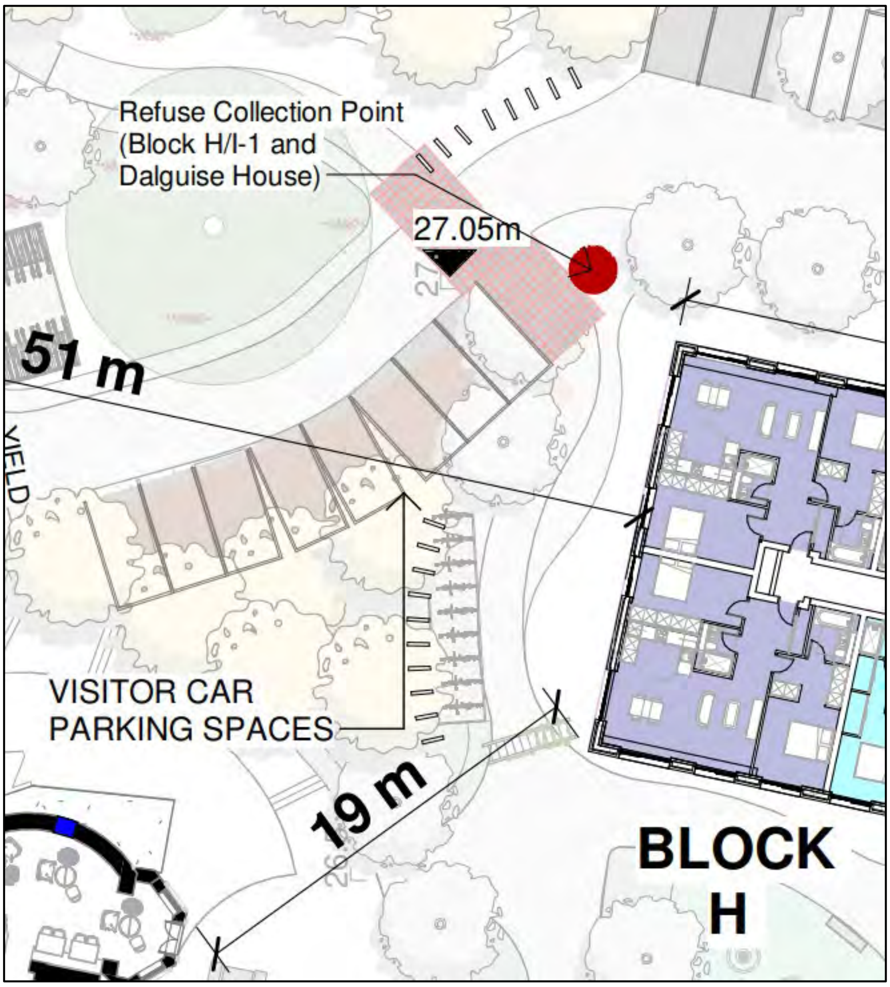

Figure 7 *Refuse Collection Point for Block H and I-1*

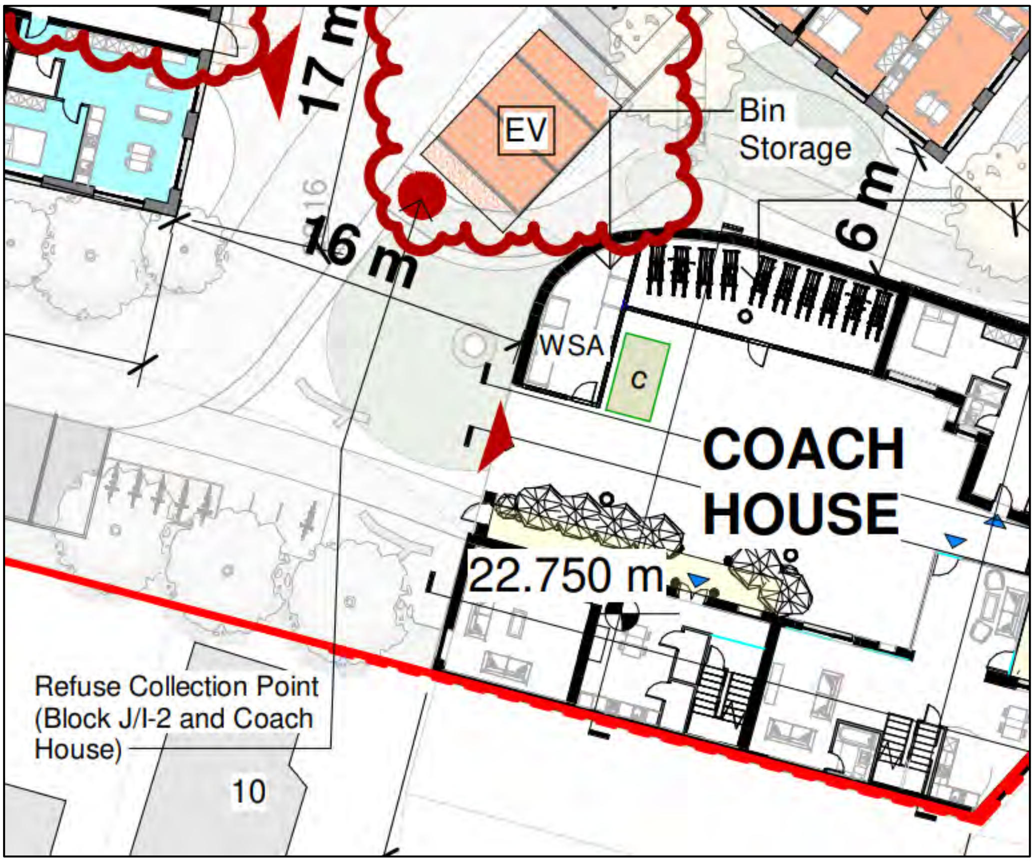

Figure 8 *Refuse Collection Point for Block J and I-2 and Coach House WSA*

APPENDIX 2: WASTE COLLECTION ROUTE

Figure 9 Bin Truck Auto-tracking

APPENDIX 18.3

ASBESTOS SURVEY REPORT

Phoenix Environmental Safety Ltd.

ASBESTOS SURVEY REPORT

(Refurbishment / Demolition Survey)

Client: Greystar Ireland,
Quayside Quarter, North Dock, Dublin 1

Location: Dalguise House,
Monkstown Road, Monkstown, Co. Dublin

Date: 8th August 2022

Report No. PE22-842

Graigueswood, Freshford, Co. Kilkenny

Tel: 056 8832414
Fax: 056 8832950

admin@phoenixenv.ie
www.phoenixenv.ie

Client: Greystar Ireland, Quayside Quarter, North Dock, Dublin 1

Property: Dalguise House, Monkstown Road, Monkstown, Co. Dublin

Asbestos Survey Type: Refurbishment/Demolition Asbestos Survey

Survey Company: Phoenix Environmental Safety Ltd.

Surveyors: Eoghan Hickey

Testing Laboratory: G & L Consultancy Ltd.

Date of Survey: 4th August 2022

Date of Survey Report: 8th August 2022

Report issue: Final

Signed: Eoghan Hickey Date: 8th August 2022

This report cannot be used for contractual or engineering purposes unless this sheet is signed where indicated by Surveyor. The report must also be designated `final` on the signatory sheet.

Please note that Phoenix Environmental Safety Ltd. cannot be held responsible for the way in which the Client interprets or acts upon the results. The report must be read in its entirety including any appendices. Phoenix Environmental Safety Ltd. accepts no responsibility for sub-division of this report. All measurements in this report are approximate and therefore should not be used by the asbestos removal contractor for pricing purposes. The asbestos removal contractors should ascertain for themselves, by site measurements and inspection, the exact nature and extent of the work to be done.

The survey information should be used to help in the tendering process for removal of ACMs from the building before work starts. The survey report should be supplied by the client to designers and contractors who may be bidding for the work, so that the asbestos risks can be addressed. In this type of survey, where the asbestos is identified so that it can be removed (rather than to manage it), the survey does not normally assess the condition of the asbestos, other than to indicate areas of damage or where additional asbestos debris may be present. However, where the asbestos removal may not take place for some time, the ACMs' condition will need to be assessed and the materials managed.

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SUMMARY

Following a request made by Greystar Ireland, we have produced this Refurbishment/Demolition Asbestos Survey report for Dalguise House, Monkstown Road, Monkstown, Co. Dublin with the aim of finding asbestos containing materials (ACMs) within the scope of the asbestos survey.

The scope of the asbestos survey was confined to all accessible areas of the main house, gate lodges, modern buildings, stable block, derelict buildings at the rear of the site, glasshouses and wall garden, which is due for refurbishment and part demolition works.

During the asbestos survey at Dalguise House, the following asbestos containing materials were identified in the following locations:

MAIN HOUSE

- Asbestos containing toilet cisterns were identified in the W/C's (3)
- Asbestos containing floor tiles and bitumen adhesive was identified in the kitchen in the servants wing on the ground floor of the main house (8m^2 approx.)
- An asbestos containing rope seal was identified on the pipework in the basement kitchen pant room in the servant's wing
- Compressed Asbestos Fibre (CAF) gaskets were identified in the external boiler room

REAR DERELICT BUILDING

- An asbestos containing cement board was identified on the ceiling (12m^2 approx.). Debris from the ceiling was found in the room underneath

RED BRICK GATE LODGE

- Asbestos containing textured coating was identified on the ceiling in the kitchen and living room

GATE LODGE AT ROAD

- An asbestos containing toilet cistern was identified in the ground floor toilet
- Asbestos containing floor tiles and adhesive were identified in the kitchen and living room (18m^2 approx.)
- Asbestos containing paper backed lino was identified in the kitchen (6m^2 approx.)

See Appendix C & F for more details

INTRODUCTION

Background

Asbestos has been used extensively in the building industry for over one hundred years and has proved to be an excellent product for a variety of uses, having many qualities such as insulation, fire and chemical resistance to name a few. Its suitability across a wide range of uses and its relatively cheap cost made it very popular, with over 3,000 different asbestos products having been recorded.

The use of asbestos containing materials (ACM's) was most prevalent between the 1950's and 1970's when it provided an economic, easy to use and versatile material. Unfortunately, given the constitution and make up of asbestos it can give rise to microscopic airborne fibres being released into the working environment. The fibres have carcinogenic properties caused by inhalation of the fibres which can get lodged in the lining of the lungs causing disease and death.

Scope & Purpose

Greystar Ireland have commissioned Phoenix Environmental Safety Ltd. to undertake an asbestos survey at Dalguise House, Monkstown Road, Monkstown, Co. Dublin. The aim of the survey was to locate and identify the presence of asbestos containing materials (ACM's) or suspected ACM's. This report provides a record and assessment of the extent and characteristics of ACM's and is based on information made available on the 4th August 2022.

This particular survey comprised of a Refurbishment / Demolition Survey, carried out in accordance with S.I. No. 386 of 2006 Safety, Health and Welfare at Work (Exposure to Asbestos) Regulations 2006, the Health and Safety Executive's (UK) guidance document HSG 264 (Asbestos: The Survey Guide) and HSG 227 (A Comprehensive Guide to managing Asbestos in Premises).

This means that:

- As far as reasonably practicable, locate and describe all ACM's in all reasonably accessible areas within the scope of the survey
- A sampling programme is undertaken to identify possible ACM's and estimates of the volumes and the surface areas of ACM made
- A record of the condition of the ACM's or where additional asbestos debris may be expected to be present is produced

Refurbishment / Demolition Surveys (formerly type 3 surveys)

This type of survey is necessary prior to any refurbishment (including "minor") or demolition work being carried out. These "refurbishment / demolition" surveys will be much more intrusive and destructive compared with management surveys as their intention is to locate all the ACMs so that they can be removed before the refurbishment or demolition takes place. Refurbishment/demolition surveys are required as necessary when the needs or use of the building changes and the fabric of the building will be disturbed or complex fixed plant and equipment are to be dismantled.

The purpose of the report is to:

- Enable the client to take appropriate precautions so that people who work at Dalguise House during the forthcoming refurbishment works are not exposed to asbestos-related health risks
- Provide information to assist the client in developing and implementing an action plan before any refurbishment works or demolition is carried out

Presentation of Findings

Data Sheets

A series of data sheets have been prepared to provide assessments and recommendations for each of the locations where samples were taken. These data sheets are presented in Appendix C.

Figures

The schematic diagrams presented in Appendix F at the rear of this document shows the locations of all of the asbestos containing materials detected during the asbestos survey.

Caveats

All reasonable steps have been taken to ensure that the contents and findings of this report are true and accurate. Though as stated below, further undetected ACM's may still be present within the premises. The client should therefore be aware of his responsibilities for identifying, locating, removing and/or managing all ACM's within the premises, and for notifying the appropriate authorities where necessary.

Refurbishment / Demolition Surveys

This type of survey employs the use of destructive sampling techniques of an unfamiliar site. Although every effort is made to locate all asbestos containing materials, it is impossible to rule out the possibility that undiscovered asbestos materials may be present. If the building is to undergo major refurbishment or demolition, it is recommended that the persons carrying out the work are made aware of this and take sufficient precautions, as may be appropriate, to ensure the health and safety of their own employees and any other parties who may be affected by the works.

APPENDIX A

ASBESTOS MATERIALS IN BUILDINGS

Sprayed coatings applied in Ireland were typically a mixture of hydrated asbestos cement containing up to 85% asbestos, mainly amosite but crocidolite and mixtures have been used. Primarily used for anti-condensation and acoustic control and fire protection to structural steelwork. It is a friable material but if in a good condition and unlikely to be disturbed presents no immediate danger; however it is likely to release fibres, if disturbed especially during repair and maintenance work. As it ages the binding medium of sprayed asbestos may degrade with the consequent release of more fibres.

Thermal insulation to boilers, vessels, pipe work, valves, pumps etc also known as hand applied lagging. Lagging may have a protective covering of cloth, tape, paper, metal or a surface coating of cement. All types of asbestos may be found in lagging and the content can vary between 15 and 85% asbestos with the protective papers being up to 100% chrysotile. The likelihood of fibre release depends upon its composition, friability and state of repair, but it is particularly susceptible to damage and disturbance through maintenance work or the action of water leaks.

Asbestos insulating boards usually contain between 15 to 40% amosite, although boards may be found to contain other types of asbestos and in other quantities. Insulating boards were developed in the 1950s to provide an economical, lightweight, fire resisting insulating material. As insulation board is semi-compressed it is more likely to release fibres as a result of damage or abrasion. Work on asbestos insulation board can give rise to high levels of asbestos fibre.

Asbestos cement products as in roofing slates, wall cladding, permanent shuttering, flue, rain water and vent pipes generally contain 10 to 15% of asbestos fibre bounded in Portland cement, some flexible boards contain a small proportion of cellulose. All three types of asbestos have been used in the manufacture of asbestos cement. The asbestos fibres in asbestos cement are usually firmly bound in the cement matrix and will be released only if the material is mechanically damaged or as it deteriorates with age.

Ropes and yarns are usually high in asbestos content, approaching 100% and all three types of asbestos have been used in their manufacture. They were used as in the pipe lagging process and in pipe jointing and also for packing materials as in heat/fire resistant boiler, oven and flue sealing or anywhere thermal of fire protection was required. The risk of fibre release depends upon the structure of the material; bonded gasket material is unlikely to release asbestos but an unbonded woven material may give rise to high fibre release especially if when damaged or frayed.

Cloth thermal insulation and lagging, including fire resistant blankets, mattresses and protective curtains, gloves, aprons, overalls etc. All types of asbestos have been used in the manufacture but since the mid 60's the majority has been chrysotile, the content of which can be up to 100 %.

Millboard, paper and CAF gaskets usually have an asbestos content approaching 100% with all three types of asbestos being used in their manufacture. They were used for insulation of electrical equipment and for thermal insulation. Asbestos paper has been used as a laminate for fireproofing to various fibre panels. These materials are on some occasions not well bonded and will release asbestos fibres if subject to abrasion and wear.

Bitumen felts and coatings may contain asbestos either bound in the bitumen matrix or as an asbestos paper liner. These materials are not likely to present a hazard during normal installation or use, but should be removed and disposed of in compliance with any regulation applicable.

Thermoplastic floor tiles can contain up to 25% asbestos usually chrysotile, PVC vinyl floor tiles and unbacked PVC flooring normally 7-10% chrysotile and asbestos paper backed PVC flooring the paper backing may contain up to 100% chrysotile. Fibre release is not normally an issue but may occur when the material is cut or subjected to abrasion.

Textured coatings. Decorative coatings on walls and ceilings usually contain 3-5% chrysotile. Fibre release may occur when subjected to abrasion.

Mastics, sealants, putties and floor tile adhesives may contain small amounts of asbestos. The only possible risk is from sanding of hardened material when appropriate precautions should be taken.

Reinforced plastic and resin composites, used for toilet cisterns, seats, banisters, stair nosings, window seals, lab bench tops, brake shoes and clutches in machines. The plastics usually contain 1-10% chrysotile and were used in for example car batteries to improve the acid resistance. Resins may contain between 20 and 50% amosite, but because of its composition fibre release is likely to be low.

Nomenclature

ASBESTOS FIBRE TYPE COMMON NAMES	
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	N/A
Fibrous Anthophyllite	N/A
Fibrous Tremolite	N/A

APPENDIX B

RESULTS OF LABORATORY ANALYSIS

G&L Consultancy Ltd
Specialists in Asbestos Management

BULK MATERIAL SAMPLE REPORT

Reference No:	J665620	Client Order No:	N/A
Date Received:	5 Aug 2022		
Client Name and Address:	Phoenix Environmental Safety Ltd (IE), Graigueswood, Freshford, Co. Kilkenny, Ireland		
Site Address:	Dalguise House Site, Monkstown, Co. Dublin		
Sampling Officer:	Phoenix Environmental Safety Ltd (IE)		
Date of Analysis:	5 Aug 2022		
Analyst:	Andy Webster		
Approving Officer:	Emily Richardson	Signed:	
Issue Date:	8 Aug 2022		

ANALYSIS RESULTS

Sampling carried out by our own officers follows the procedures documented in our internal method M3: The Sampling of Bulk Materials, for Analysis to Determine the Presence of Asbestos. These samples have been analysed in accordance with internal method M2: The Identification of Asbestos, within Bulk Materials, by the Use of Optical Microscopy. Both these internal methods are based on the standard method as outlined in the HSE Document 'Asbestos: The analysts' guide for sampling, analysis and clearance procedures. Any deviations from these standard methods will be recorded in this report. No responsibility is taken for sampling that is not carried out by own officers. Opinions and interpretations expressed herein are outside the scope of our UKAS accreditation. Any comments regarding percentage content is outside the scope of our UKAS accreditation. The material classification is the opinion of the analyst, based on the samples' appearance, as received, and may not accurately reflect the source material on site. Where 'Trace Asbestos' has been reported, only 1 or 2 fibres or fibre bundles have been identified and analysed as asbestos following a thorough examination of the sample. All samples are analysed at one of our UKAS accredited laboratories in Somerset or Northern Ireland. This report must not be reproduced, except in full, without the written permission of the laboratory. These samples will be retained within this laboratory for a period of six months prior to disposal at a licensed asbestos disposal site, unless the client makes alternative arrangements. For advice concerning these materials, risk assessments, removal procedures or information regarding the current legislation for work with asbestos containing materials, please contact G&L Consultancy Ltd.

Site Ref	Lab Ref	Description	Analysis Result	Classification
S1	BS194672	Main House - 1st floor - w/c - cistern	Chrysotile	Reinforced Composite
S2	BS194673	Main House - 1st floor - servant wing - bedroom - lino	No Asbestos Detected	Not Applicable
S3	BS194674	Main House - Ground floor - Servant wing - corridor - floor tile (beige)	No Asbestos Detected	Not Applicable
S4	BS194675	Main House - Ground floor - servant wing - kitchen - floor tile & adhesive	Chrysotile	Reinforced Composite + Well Bound Material

G&L Consultancy Ltd
54A Huntly Road, Banbridge, Co. Down, Northern Ireland, BT32 3UA
Tel: 028 4062 3566 **Email:** ni@gnl.org.uk **Web:** www.gnl.org.uk

UKAS TESTING 2083

BULK MATERIAL SAMPLE REPORT (CONTINUATION)

Site Ref	Lab Ref	Description	Analysis Result	Classification
S5	BS194676	Main House - Basement - servants wing - under stairs - lino	No Asbestos Detected	Not Applicable
S6	BS194677	Main House - Basement - kitchen plant room - pipework insulation	No Asbestos Detected	Not Applicable
S7	BS194678	Main House - Basement - kitchen plant room - pipework - rope	Chrysotile	Asbestos Textiles/Paper
S8	BS194679	Main House - boiler room - flange - gasket	Chrysotile	Asbestos Textiles/Paper
S9	BS194680	Glasshouse - window - putty	No Asbestos Detected	Not Applicable
S10	BS194681	Rear derelict buildings - ceiling - cement board	Chrysotile	Asbestos Cement
S11	BS194682	Red brick gate lodge - kitchen - ceiling - textured coating	Chrysotile	Textured Coating
S12	BS194683	Gate lodge at road - living room - floor tile	Chrysotile	Reinforced Composite + Well Bound Material
S13	BS194684	Gate lodge at road - kitchen - lino	Chrysotile	Asbestos Textiles/Paper

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J665620 Version 1

APPENDIX C

ASBESTOS DATA SHEETS

Dalguise House, Monkstown Road, Monkstown, Co. Dublin

PHOENIX ENVIRONMENTAL SAFETY LTD.

ASBESTOS DATA SHEET

Created By	Eoghan Hickey
Date	8th August 2022
Site Details	Dalguise House, Monkstown Road, Monkstown, Co. Dublin
Client Name	Greystar Ireland
Survey Type	R/D Asbestos Survey
Site Ref	PE 22-842
Building Ref.	Main House
Location	W/C's – cisterns
Extent/ Amount	3

Survey Date	4.8.2022	Sample No.	BS 194672
Survey Company	Phoenix Environmental Safety Ltd.		
Testing Laboratory.	G & L Consultancy Ltd.		

	MATERIAL ASSESSMENT		PRIORITY ASSESSMENT
Product type	Toilet Cistern	Normal occupant activity	
Extent of damage	Low	Likelihood of disturbance	N/A
Surface treatment	Composite material	Human exposure potential	N/A
Asbestos type	Amosite	Maintenance activity	N/A
	Material assessment score: N/A	TOTAL SCORE: N/A	Priority assessment score: N/A

CONCLUSIONS AND RECOMMENDATIONS

The resin toilet cisterns identified in the W/C's on the 1st floor and ground floor in the main house contains Amosite (brown) asbestos fibres. Resin products may contain between 20 and 50% asbestos fibres

The asbestos containing toilet cisterns should be removed by an asbestos removal contractor and disposed of as asbestos waste before the refurbishment works commence

See Appendix F for more details

All asbestos removal work must be carried out in accordance with S.I. No. 386 of 2006 Safety, Health and Welfare at Work (Exposure to Asbestos) Regulations 2006-2010

DETAIL OF THE ASBESTOS CONTAINING TOILET CISTERNS

Toilet cistern in the 1st floor W/C in the **servant's** wing

Toilet cistern in the ground floor W/C behind the stairs

PHOENIX ENVIRONMENTAL SAFETY LTD.

ASBESTOS DATA SHEET

Created By	Eoghan Hickey
Date	8th August 2022
Site Details	Dalguise House, Monkstown Road, Monkstown, Co. Dublin
Client Name	Greystar Ireland
Survey Type	R/D Asbestos Survey
Site Ref	PE 22-842
Building Ref.	Main House
Location	Ground Floor – kitchen
Extent/ Amount	8m² approx.

Survey Date	4.8.2022	Sample No.	BS 194675
Survey Company	Phoenix Environmental Safety Ltd.		
Testing Laboratory.	G & L Consultancy Ltd.		

	MATERIAL ASSESSMENT		PRIORITY ASSESSMENT
Product type	Floor Tile & Adhesive	Normal occupant activity	
Extent of damage	Low	Likelihood of disturbance	N/A
Surface treatment	Composite & well bound material	Human exposure potential	N/A
Asbestos type	Chrysotile	Maintenance activity	N/A
	Material assessment score: N/A	TOTAL SCORE: N/A	Priority assessment score: N/A

CONCLUSIONS AND RECOMMENDATIONS

The floor tiles and bitumen adhesive identified in the ground floor kitchen on the **servant's** wing contain Chrysotile (white) asbestos fibres. Thermoplastic floor tiles can contain up to 25% asbestos fibres. Bitumen adhesives contain a small quantity of asbestos fibres.

The asbestos containing floor tiles and adhesive should be removed by an asbestos removal contractor and disposed of as asbestos waste before the refurbishment works commence.

See Appendix F for more details

All asbestos removal work must be carried out in accordance with S.I. No. 386 of 2006 Safety, Health and Welfare at Work (Exposure to Asbestos) Regulations 2006-2010

PHOENIX ENVIRONMENTAL SAFETY LTD.

ASBESTOS DATA SHEET

Created By	Eoghan Hickey
Date	8th August 2022
Site Details	Dalguise House, Monkstown Road, Monkstown, Co. Dublin
Client Name	Greystar Ireland
Survey Type	R/D Asbestos Survey
Site Ref	PE 22-842
Building Ref.	Main House
Location	Basement – plant room
Extent/ Amount	1.5 linear meters approx.

Survey Date	4.8.2022	Sample No.	BS 194678
Survey Company	Phoenix Environmental Safety Ltd.		
Testing Laboratory.	G & L Consultancy Ltd.		

	MATERIAL ASSESSMENT		PRIORITY ASSESSMENT
Product type	Rope Seal	Normal occupant activity	
Extent of damage	Low	Likelihood of disturbance	N/A
Surface treatment	Unsealed	Human exposure potential	N/A
Asbestos type	Chrysotile	Maintenance activity	N/A
	Material assessment score: N/A	TOTAL SCORE: N/A	Priority assessment score: N/A

CONCLUSIONS AND RECOMMENDATIONS

The rope seals identified on the pipework in the basement kitchen plant room contain Chrysotile (white) asbestos fibres. Rope seals can contain up to 100% asbestos fibres

The asbestos containing rope seals should be removed by an asbestos removal contractor and disposed of as asbestos waste before the refurbishment works commence

See Appendix F for more details

All asbestos removal work must be carried out in accordance with S.I. No. 386 of 2006 Safety, Health and Welfare at Work (Exposure to Asbestos) Regulations 2006-2010

PHOENIX ENVIRONMENTAL SAFETY LTD.

ASBESTOS DATA SHEET

Created By	Eoghan Hickey
Date	8th August 2022
Site Details	Dalguise House, Monkstown Road, Monkstown, Co. Dublin
Client Name	Greystar Ireland
Survey Type	R/D Asbestos Survey
Site Ref	PE 22-842
Building Ref.	Main House
Location	Boiler Room
Extent/ Amount	1 per flange

Survey Date	4.8.2022	Sample No.	BS 194679
Survey Company	Phoenix Environmental Safety Ltd.		
Testing Laboratory.	G & L Consultancy Ltd.		

	MATERIAL ASSESSMENT		PRIORITY ASSESSMENT
Product type	CAF Gasket	Normal occupant activity	
Extent of damage	Low	Likelihood of disturbance	N/A
Surface treatment	Sealed	Human exposure potential	N/A
Asbestos type	Chrysotile	Maintenance activity	N/A
	Material assessment score: N/A	TOTAL SCORE: N/A	Priority assessment score: N/A

CONCLUSIONS AND RECOMMENDATIONS

The Compressed Asbestos Fibre (CAF) gaskets identified between the flanges in the boiler room contain Chrysotile (white) asbestos fibres. CAF Gaskets contain almost 100% asbestos fibres, with a small amount of binder

The CAF Gasket should be removed by an asbestos removal contractor and disposed of as asbestos waste before the refurbishment works commence.

See Appendix F for more details

All asbestos removal work must be carried out in accordance with S.I. No. 386 of 2006 Safety, Health and Welfare at Work (Exposure to Asbestos) Regulations 2006-2010

Rear derelict buildings

PHOENIX ENVIRONMENTAL SAFETY LTD.

ASBESTOS DATA SHEET

Created By	Eoghan Hickey
Date	8th August 2022
Site Details	Dalguise House, Monkstown Road, Monkstown, Co. Dublin
Client Name	Greystar Ireland
Survey Type	R/D Asbestos Survey
Site Ref	PE 22-842
Building Ref.	Rear Derelict Building
Location	Ceiling
Extent/ Amount	12m² approx.

Survey Date	4.8.2022	Sample No.	BS 194681
Survey Company	Phoenix Environmental Safety Ltd.		
Testing Laboratory.	G & L Consultancy Ltd.		

	MATERIAL ASSESSMENT		PRIORITY ASSESSMENT
Product type	Cement Board	Normal occupant activity	
Extent of damage	High	Likelihood of disturbance	N/A
Surface treatment	Unsealed	Human exposure potential	N/A
Asbestos type	Chrysotile	Maintenance activity	N/A
	Material assessment score: N/A	TOTAL SCORE: N/A	Priority assessment score: N/A

CONCLUSIONS AND RECOMMENDATIONS

The cement sheeting identified on the ceiling of the rear derelict building contains Chrysotile (white) asbestos fibres. Asbestos cement products usually contain between 10-15% asbestos fibres, bound in Portland cement

The cement board may be left in situ and managed in place. However, if the forthcoming refurbishment works are likely to disturb the ceiling, the asbestos containing cement board should be removed by an asbestos removal contractor and disposed of as asbestos waste before the refurbishment works commence.

See Appendix F for more details

All asbestos removal work must be carried out in accordance with S.I. No. 386 of 2006 Safety, Health and Welfare at Work (Exposure to Asbestos) Regulations 2006-2010

DETAIL OF THE ASBESTOS CEMENT BOARDS

Asbestos cement ceiling board in the rear derelict building

Asbestos cement board debris in the rear derelict building

Red Brick Gate Lodge

PHOENIX ENVIRONMENTAL SAFETY LTD.

ASBESTOS DATA SHEET

Created By	Eoghan Hickey
Date	8th August 2022
Site Details	Dalguise House, Monkstown Road, Monkstown, Co. Dublin
Client Name	Greystar Ireland
Survey Type	R/D Asbestos Survey
Site Ref	PE 22-842
Building Ref.	Red Brick Gate Lodge
Location	Kitchen & Living Room
Extent/ Amount	25m^2 approx.

Survey Date	4.8.2022	Sample No.	BS 194682
Survey Company	Phoenix Environmental Safety Ltd.		
Testing Laboratory.	G & L Consultancy Ltd.		

	MATERIAL ASSESSMENT		PRIORITY ASSESSMENT
Product type	Textured Coating	Normal occupant activity	
Extent of damage	Low	Likelihood of disturbance	N/A
Surface treatment	Painted	Human exposure potential	N/A
Asbestos type	Chrysotile	Maintenance activity	N/A
	Material assessment score: N/A	TOTAL SCORE: N/A	Priority assessment score: N/A

CONCLUSIONS AND RECOMMENDATIONS

The textured coating identified on the ceilings in the kitchen and living room in the Red Brick Gate Lodge contains Chrysotile (white) asbestos. Asbestos textured coating usually contains between 3-5% asbestos fibres

The asbestos containing textured coating should be removed by an asbestos removal contractor and disposed of as asbestos waste before the refurbishment works commence.

See Appendix F for more details

All asbestos removal work must be carried out in accordance with S.I. No. 386 of 2006 Safety, Health and Welfare at Work (Exposure to Asbestos) Regulations 2006-2010

Gate Lodge at Road

PHOENIX ENVIRONMENTAL SAFETY LTD.

ASBESTOS DATA SHEET

Created By	Eoghan Hickey
Date	8th August 2022
Site Details	Dalguise House, Monkstown Road, Monkstown, Co. Dublin
Client Name	Greystar Ireland
Survey Type	R/D Asbestos Survey
Site Ref	PE 22-842
Building Ref.	Gate Lodge at Road
Location	W/C
Extent/ Amount	1 Toilet Cistern

Survey Date	4.8.2022	Sample No.	
Survey Company	Phoenix Environmental Safety Ltd.		
Testing Laboratory.	G & L Consultancy Ltd.		

	MATERIAL ASSESSMENT		PRIORITY ASSESSMENT
Product type	Resin Toilet Cistern	Normal occupant activity	
Extent of damage	Low	Likelihood of disturbance	N/A
Surface treatment	Composite material	Human exposure potential	N/A
Asbestos type	Amosite (presumed)	Maintenance activity	N/A
	Material assessment score: N/A	TOTAL SCORE: N/A	Priority assessment score: N/A

CONCLUSIONS AND RECOMMENDATIONS

The resin toilet cistern identified in the main house was presumed to contain Amosite (brown) asbestos fibres. Resin products may contain between 20 and 50% asbestos fibres

The asbestos containing toilet cistern should be removed by an asbestos removal contractor and disposed of as asbestos waste before the refurbishment works commence

See Appendix F for more details

All asbestos removal work must be carried out in accordance with S.I. No. 386 of 2006 Safety, Health and Welfare at Work (Exposure to Asbestos) Regulations 2006-2010

PHOENIX ENVIRONMENTAL SAFETY LTD.

ASBESTOS DATA SHEET

Created By	Eoghan Hickey
Date	8th August 2022
Site Details	Dalguise House, Monkstown Road, Monkstown, Co. Dublin
Client Name	Greystar Ireland
Survey Type	R/D Asbestos Survey
Site Ref	PE 22-842
Building Ref.	Gate Lodge at Road
Location	Kitchen & Living Room
Extent/ Amount	$18m^2$ approx.

Survey Date	4.8.2022	Sample No.	BS 194683
Survey Company	Phoenix Environmental Safety Ltd.		
Testing Laboratory.	G & L Consultancy Ltd.		

	MATERIAL ASSESSMENT		PRIORITY ASSESSMENT
Product type	Floor Tile & bitumen adhesive	Normal occupant activity	
Extent of damage	Low	Likelihood of disturbance	N/A
Surface treatment	Composite & well bound material	Human exposure potential	N/A
Asbestos type	Chrysotile	Maintenance activity	N/A
	Material assessment score: N/A	TOTAL SCORE: N/A	Priority assessment score: N/A

CONCLUSIONS AND RECOMMENDATIONS

The floor tiles and bitumen adhesive identified in the kitchen and living room contain Chrysotile (white) asbestos fibres. Thermoplastic floor tiles can contain up to 25% asbestos fibres. Bitumen adhesives contain a small quantity of asbestos fibres

The asbestos containing floor tiles and bitumen adhesive should be removed by an asbestos removal contractor and disposed of as asbestos waste before the refurbishment works commence

See Appendix F for more details

All asbestos removal work must be carried out in accordance with S.I. No. 386 of 2006 Safety, Health and Welfare at Work (Exposure to Asbestos) Regulations 2006-2010

PHOENIX ENVIRONMENTAL SAFETY LTD.

ASBESTOS DATA SHEET

Created By	Eoghan Hickey
Date	8th August 2022
Site Details	Dalguise House, Monkstown Road, Monkstown, Co. Dublin
Client Name	Greystar Ireland
Survey Type	R/D Asbestos Survey
Site Ref	PE 22-842
Building Ref.	Gate Lodge at Road
Location	Kitchen
Extent/ Amount	6m² approx.

Survey Date	4.8.2022	Sample No.	BS 194684
Survey Company	Phoenix Environmental Safety Ltd.		
Testing Laboratory.	G & L Consultancy Ltd.		

	MATERIAL ASSESSMENT		PRIORITY ASSESSMENT
Product type	Asbestos paper	Normal occupant activity	
Extent of damage	Low	Likelihood of disturbance	N/A
Surface treatment	Well bound material	Human exposure potential	N/A
Asbestos type	Chrysotile	Maintenance activity	N/A
	Material assessment score: N/A	TOTAL SCORE: N/A	Priority assessment score: N/A

CONCLUSIONS AND RECOMMENDATIONS

The paper backed linoleum identified on the floor in the kitchen contains Chrysotile (white) asbestos fibres. Asbestos paper can contain up to 100% asbestos fibres

The asbestos containing lino should be removed by an asbestos removal contractor and disposed of as asbestos waste before the refurbishment works commence

See Appendix F for more details

All asbestos removal work must be carried out in accordance with S.I. No. 386 of 2006 Safety, Health and Welfare at Work (Exposure to Asbestos) Regulations 2006-2010

APPENDIX D

NON ASBESTOS CONTAINING MATERIALS

Slates on the main roof

Water tanks in the attic in the main house

NON ASBESTOS CONTAINING MATERIALS

Lath and mortar ceilings in the main house

Floor covering in the 1st floor bedroom in the main house

NON ASBESTOS CONTAINING MATERIALS

Floor tiles in the corridor on the ground floor in the main house

Lino under the stairs in the basement in the main house

NON ASBESTOS CONTAINING MATERIALS

Pipework insulation in the basement kitchen plant room in the main house

Boiler unit in the external boiler room in the main house

NON ASBESTOS CONTAINING MATERIALS

Putty on the glass in the glasshouses

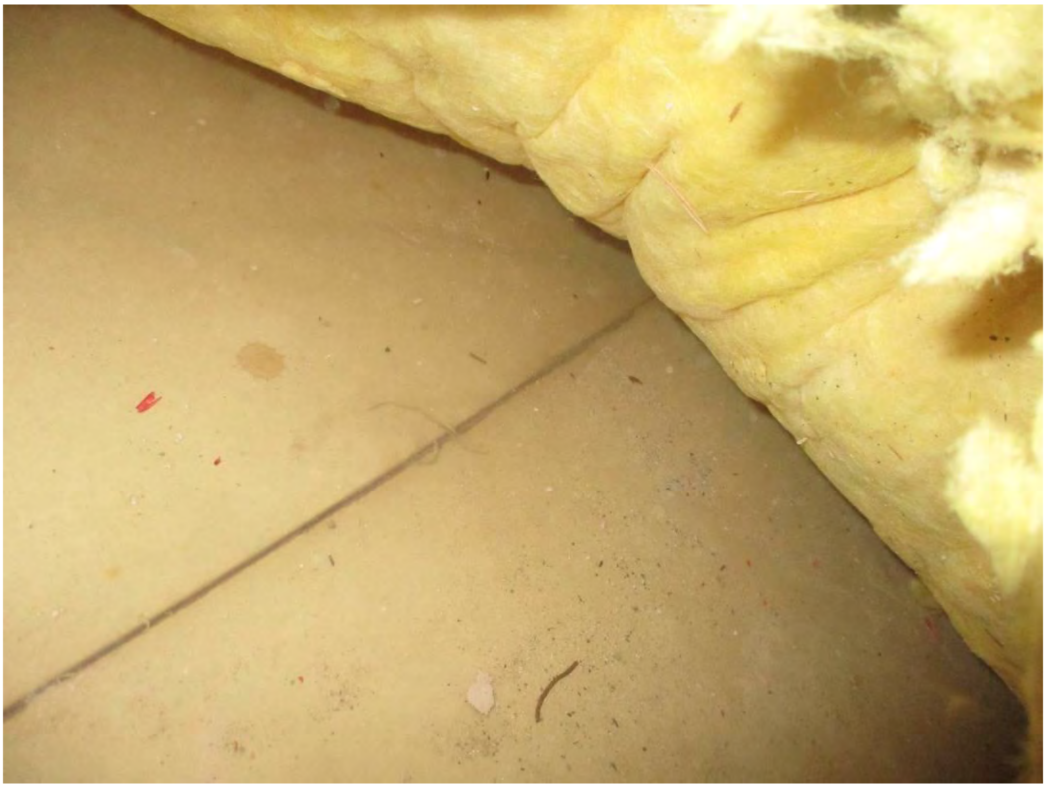
Natural slates on the roof of the rear derelict buildings

NON ASBESTOS CONTAINING MATERIALS

Natural slates on the roof of the swimming pool

Natural slates on the roof of the stable block

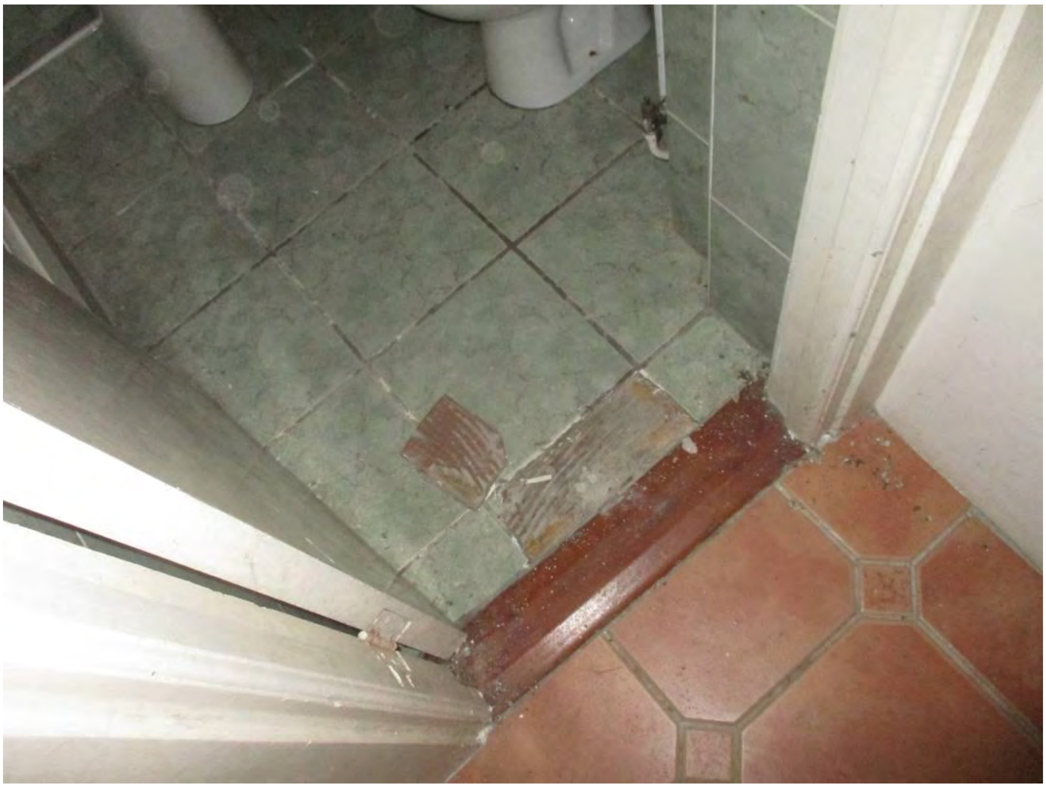
NON ASBESTOS CONTAINING MATERIALS



Plasterboard and fibre glass insulation in the occupied gate lodge

Ceramic tiles in the kitchen in the occupied gate lodge

NON ASBESTOS CONTAINING MATERIALS



Ceramic tiles in the kitchen in the red brick gate lodge

Ceiling tiles in the living room in the gate lodge at the road

APPENDIX E

NON ACCESSIBLE LOCATIONS

- The below gate lodge was occupied and in use during the survey. Intrusive sampling was kept to a minimum where possible so as not to damage the integrity of the house and its finishes

- No inspection was carried on flues, ducts, voids and similar enclosed areas, the access to which would necessitate the use of specialist equipment or tools, or which would have caused damage to decorations, fixtures, fittings or the structure of the building

- Floors which could not be easily lifted and resealed e.g. ceramic tiles, wet-room floors and timber flooring, were only visually inspected in the live areas

- No access was possible to the 1st floor of the gate lodge on the road as the building was in very poor condition and not deemed safe to enter

- No inspection of live electrical or mechanical plant or similar requiring the attendance of a specialist engineer was carried out

- No inspection of any areas requiring specialist access equipment other than telescopic ladder was carried out

- Samples have not been taken where the act of sampling would endanger the surveyors or affect the functional integrity of the item concerned

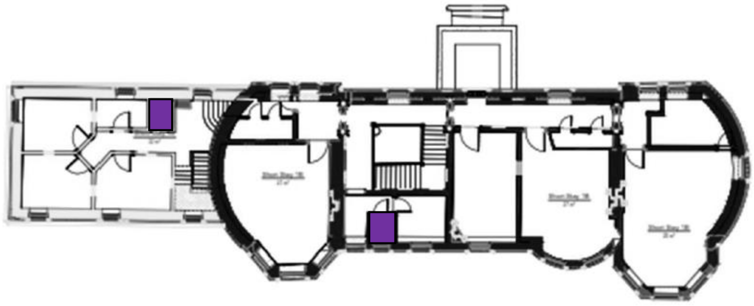
- All contractors working on site should always remain vigilant to the possibility that other asbestos containing materials may be concealed within the fabric of the building or equipment. If any suspect asbestos containing materials are uncovered during the course of the work, works must stop in that area and the suspect material should be sampled and analysed immediately for the presence of asbestos

APPENDIX F

FLOOR PLANS & LOCATION OF ASBESTOS CONTAINING MATERIALS

Schematic diagram only Not to scale 8th August 2022	Dalguise House, Monkstown, Co. Dublin

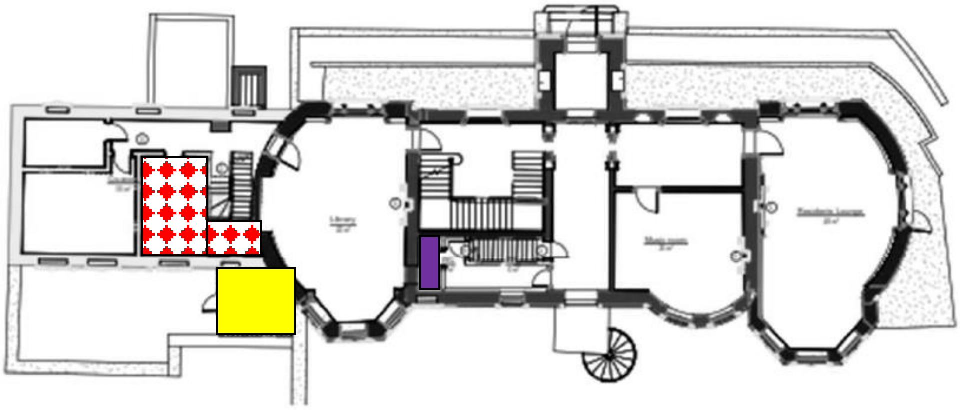
MAIN HOUSE - FIRST FLOOR PLAN



	Area where asbestos containing toilet cisterns were identified

Schematic diagram only Not to scale 8th August 2022	Dalguise House, Monkstown, Co. Dublin

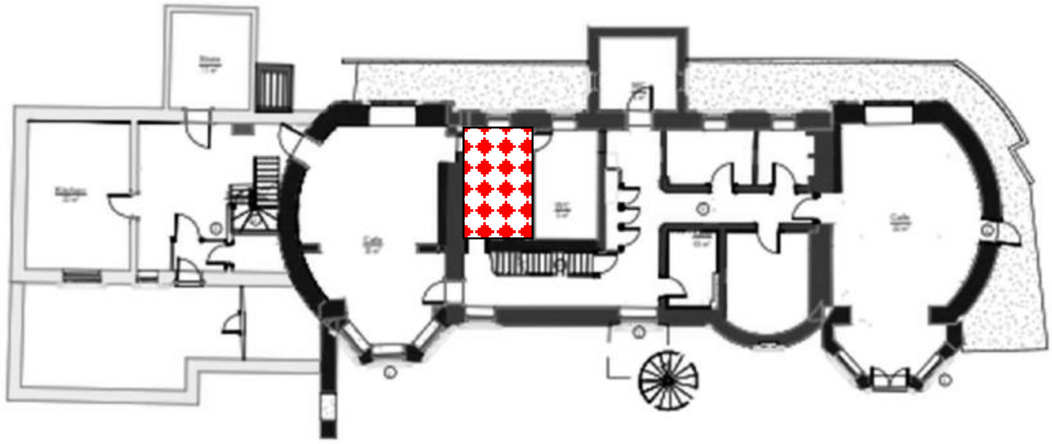
MAIN HOUSE - GROUND FLOOR PLAN

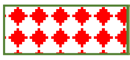


	Area where asbestos containing floor tiles & bitumen adhesive was identified
	Area where asbestos containing toilet cistern was identified
	Area where asbestos containing CAF gasket was identified

Schematic diagram only Not to scale 8th August 2022	Dalguise House, Monkstown, Co. Dublin

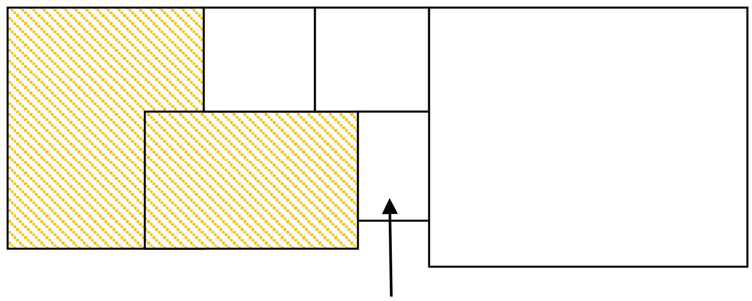
MAIN HOUSE - BASEMENT FLOOR PLAN

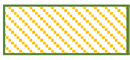


	Area where asbestos containing rope was identified on pipework

Schematic diagram only Not to scale 8th August 2022	Dalguise House, Monkstown, Co. Dublin

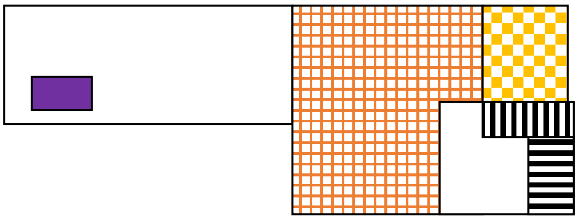
RED BRICK GATE LODGE - FLOOR PLAN



	Area where asbestos containing textured coating was identified

Schematic diagram only Not to scale 8th August 2022	Dalguise House, Monkstown, Co. Dublin

GATE LODGE AT ROAD - FLOOR PLAN



	Area where asbestos containing floor tile and bitumen adhesive was identified
	Area where asbestos containing toilet cistern was identified
	Area where asbestos containing paper backed linoleum was identified
	Please Note: no access to 1st floor due to unsafe floors

APPENDIX 22.1

SCHEDULE OF ENVIRONMENTAL COMMITMENTS / MITIGATION MEASURES

	Table 22.1: Schedule of Proposed Environmental Commitments	
Mitigation/ Monitoring No.	**Description of Mitigation/Environmental Commitment**	**Phase**
Population and Human Health (Chapter 7)		
Mitigation		
P_1	To ensure there is no impact on Seapoint Beach (local amenity), all works in proximity to the Stradbrook Stream will follow best practice guidance, as per the following documents: • Guidelines for the crossing of Watercourses During Construction of National Road Schemes (TII, 2008). • Guidelines on Protection of Fisheries during Construction Works in and adjacent to Waters (IFI, 2016). • C532 Control of water pollution from construction sites: guidance for consultants and contractors (CIRIA, 2001).	Construction
P_2	To ensure there is no impact on Seapoint Beach (local amenity), as per the project specific Construction Management Plan: Prior to commencement on site, as part of the overall Construction Management Plan for the works detailed meetings will be conducted between the relevant members of the appointed Design team, the Main Contractor for the project and DLRCC so that site parameters can be agreed regarding the protection of the Stradbrook Stream for construction spillages including soil run off, silts and general pollutants resulting from construction activities. The "Guidelines on Protection of Fisheries during Construction Works in and adjacent to Waters" 2016 produced by Inland Fisheries Ireland must be used as a baseline publication in the protection of the Stradbrook Stream and surrounds and the detailed recommendations contained within should be adhered to where applicable.	Construction

	Pre-construction, the Contractor must establish, with the assistance of an approved testing consultant, a series of recommended baseline levels in the stream such as existing pollution levels, water quality etc, During the construction works, continuous monitoring must be carried out to confirm that established water quality levels have not dropped below specified/agreed levels set in conjunction with the OPW/ Inland Fisheries and the Local Authority. The existing Irish Water/ DLRCC main foul line running adjacent to the Stradbrook Stream must be protected at all times from excessive discharge. Agreement 26 regarding such discharges, if permitted, will be confirmed with the relevant Statutory bodies prior to commencement on site. The requirements of the DLRCC document “Special Requirements for the protection of Water Quality in the Management of Civil Engineering Contacts” must be adhered to during the construction phase of the development particularly in proximity to the Stradbrook Stream, subject to agreed adjustments, where permissible, with the Local Authority. Some baseline considerations to be taken during the proposed works are: • Double silt fences will be installed along the extent of works adjacent to the Stradbrook Stream to contain any potential silt or sediment run-off • Stockpiling, temporary or otherwise, of construction material or topsoil will be prohibited within 10m of the watercourse ,in order to minimize sources of sediment runoff. • Site compounds shall not be located within 5m of the Stradbrook Stream, if required in that location, fuel storage, temporary or otherwise, shall be permitted within site compounds areas and not within 10m of the watercourse at these locations. • In order to limit the potential for pollution due to run-off from construction, all run off waters must be directed through sedimentation ponds prior to discharge. These ponds must be in place prior to the main construction works. The purpose of a temporary sedimentation basin/pond is to provide an area where sediment laden runoff is allowed to pond and suspended solids are allowed to settle	

P_3	A Traffic Management Plan will be prepared by the contractor and agreed with Dún Laoghaire Rathdown County Council's Transportation Department and An Garda Siochana, to mitigate any impact of construction on the surrounding road network and hence the local population.	Construction
P_4	In order to mitigate the potential dust-related health impacts during the construction phase, a dust minimisation plan will be formulated. This plan will draw upon best practice mitigation measures from Ireland, the UK and the USA to ensure the highest level of mitigation possible.	Construction
P_5	With regard to construction activities, best practice control measures for noise and vibration from construction sites are found within BS 5228 (2009 +A1 2014) *Code of Practice for Noise and Vibration Control on Construction and Open Sites Parts 1 and 2*. Whilst construction noise and vibration impacts are expected to vary during the construction phase depending on the distance between the activities and noise sensitive buildings, the contractor will ensure that all best practice noise and vibration control methods will be used, as necessary in order to ensure impacts at off-site NSLs are minimised. The best practice measures set out in BS 5228-1 and BS 5228-2 includes guidance on several aspects of construction site mitigation measures, including, but not limited to: • selection of quiet plant; • noise control at source; • screening; and, • liaison with the public.	Construction
P_6	Due to the potential for out of hours works, there is the potential for associated lighting impacting on neighbouring residents. Any lighting being used at night on site during construction should be considerate of the impacts it might have on adjoining neighbours. The lights will not be left on overnight. If lighting is required during construction the lights will only be illuminating work areas when necessary and will avoid illuminating any adjoining properties. Construction activities will vary depending on the phase of construction.	Construction
P_7	As detailed in Chapter 9 (Land, Soils, Geology and Hydrogeology) of this EIAR, appropriate waste management practises will be implemented to avoid leaks/spills/runoff/accidental release or escape of fuels, oils and	Operational

	lubricants, bulk liquid cement, contaminated leachate into the ground, and hence avoid impacts to the Stradbrook Stream which may result in impacts to Seapoint Beach (local amenity).	
P_8	As detailed in Chapter 10 (Hydrology) of this EIAR, mitigation measures include a surface water drainage system for rainwater from the roofs and roads which will consist of a petrol interceptor, ponds, swales, rain gardens and attenuation tanks, prior to discharge to the Stradbrook Stream. All foul water will be pumped to Ringsend WWTP for treatment. As previously mentioned, during high rainfall, overflows of foul water occur at Seapoint pumping station Maintenance of the Stradbrook Stream will be undertaken to ensure flow is maintained and risk of flooding is not increased by removing blockages and routine clearing.	Operational
P_9	The proposed development will implement SuDS measures across the development in compliance with the requirements of the Greater Dublin Strategic Drainage Study reducing runoff volumes, pollution concentration and enhancing groundwater recharge, and therefore will have a positive impact on the catchment, and contribute to avoiding impacts to the Stradbrook Stream which may result in impacts to Seapoint Beach (local amenity).	Operational
P_10	Best practice guidance details an assessment methodology to derive appropriate noise limits at the nearest noise sensitive properties that must be achieved in order to ensure the effect of plant noise is acceptable. To achieve these noise limits consideration will be given, at the detailed design stage, to a variety of mitigation measures and forms of noise control techniques..	Operational

Mitigation/ Monitoring No.	Description of Mitigation/Environmental Commitment	Phase
Biodiversity (Chapter 8)		
Mitigation		
B_1	The contractor will appoint a suitably qualified Ecological Clerk of Works (ECoW) for the duration of the construction contract to ensure that the mitigation and monitoring proposed in this chapter are implemented during the construction phase. The EcoW will have at least five years' experience in ecological consultancy. The contractor will also appoint a bat specialist who holds NPWS licences to disturb bat roosts and handle bats in the course of normal survey work. The EcoW and the bat specialist role may be undertaken by the same person provided they have the necessary qualifications and experience.	Pre-Construction
B_2	Any lighting being used at night on site during construction should be considerate of the impacts it might have on nocturnal species in the area. The lights will not be left on overnight. If lighting is required during construction the lights will only be illuminating work areas when necessary and will avoid illuminating any woodland habitats and trees.	Construction
B_3	Trees which are being retained will be protected by fencing in accordance with BS 5837:2012, as defined in the '*Tree Survey, Arboricultural Impact Assessment and Tree Protection Scheme to BS 5837:2012'* report, which is included as part of the planning application. See Part 5 – Tree Protection Scheme of the report for full descriptions of the tree protection measures that will be implemented during the construction phase of the proposed development. An Arborist be retained as required by the principal contractor to monitor and advise on any works within the Root Protection Area (RPA) of retained trees to ensure successful tree retention and planning compliance. All recommendations contained in the '*Tree Survey, Arboricultural Impact Assessment and Tree Protection Scheme to BS 5837:2012*' will be followed.	Pre-Construction
B_4	The mitigation measures presented in other chapters of this EIAR, including, but not limited to Chapter 9 'Land, Soils, Hydrology and Hydrogeology', Chapter 10 'Hydrology' and Chapter 13 'Landscape and Visual' as well as the CEMP and the Tree Protection Plan will be implemented in full.	Construction
B_5	All works in proximity to the Stradbrook Stream will follow best practice guidance, as per the following documents: ○ *Guidelines for the crossing of Watercourses During Construction of National Road Schemes* (TII, 2008); and,	Construction

	○ *Guidelines on Protection of Fisheries during Construction Works in and adjacent to Waters* (IFI, 2016). ○ *C532 Control of water pollution from construction sites: guidance for consultants and contractors* (CIRIA, 2001).	
B_6	Double silt fences will be installed along the extent of works adjacent to the Stradbrook Stream to contain any potential silt or sediment run-off	Construction and Operational
B_7	Stockpiling, temporary or otherwise, of construction material or topsoil will be prohibited within 10m of the watercourse ,in order to minimize sources of sediment runoff.	Construction and Operational
B_8	Site compounds shall not be located within 5m of the Stradbrook Stream, if required in that location, fuel storage, temporary or otherwise, shall be permitted within site compounds areas and not within 10m of the watercourse at these locations.	Construction and Operational
B_9	In order to limit the potential for pollution due to run-off from construction, all run off waters will be directed through sedimentation ponds prior to discharge. These ponds will be in place prior to the main construction works. The purpose of a temporary sedimentation basin/pond is to provide an area where sediment laden runoff is allowed to pond and suspended solids are allowed to settle.	Construction and Operational
B_10	All groundwater pumped out of the excavations will be diverted to a settlement pond to remove silt, before being discharged into the foul sewer.	Construction and Operational
B_11	When working in or near the surface water and the application of in-situ materials cannot be avoided, the use of alternative materials such as biodegradable shutter oils shall be used;	Construction
B_12	Any plant operating close to the water will require special consideration on the transport of concrete from the point of discharge from the mixer to final discharge into the delivery pipe (tremie). Care will be exercised when slewing concrete skips or mobile concrete pumps over or near the watercourses;	Construction
B_13	Placing of concrete in or near the watercourses will be carried out only under the supervision of a suitably qualified Environmental Manager;	Construction
B_14	There will be no hosing into surface water drains of spills of concrete, cement, grout or similar materials. Such spills shall be contained immediately, and runoff prevented from entering watercourses ;	Construction
B_15	Concrete waste and wash-down water will be contained and managed on site to prevent pollution of the watercourses;	Construction
B_16	On-site concrete batching and mixing activities will only be allowed at the identified construction compound;	Construction
B_17	Washout from concrete lorries, with the exception of the chute, will not be permitted on site and will only take place at the construction compound (or other appropriate facility designated by the supplier);	Construction

B_18	Chute washout will be carried out at designated locations only. These locations will be signposted. The Concrete Plant and all Delivery Drivers will be informed of their location with the order information and on arrival on site; and,	Construction
B_19	Chute washout locations will be provided with appropriate designated, contained impermeable area and treatment facilities including adequately sized settlement tanks. The clear water from the settlement tanks shall be pH corrected prior to discharge (which shall be by means of one of the construction stage settlement facilities) or alternatively disposed of as waste in accordance with the Contractor's Waste Management Plan.	Construction
B_20	Method statements that are prepared for the works will be reviewed / approved by the Client Project Manager and were necessary the relevant Environmental Specialist. All method statements for works in, near or liable to impact on a waterway must have prior agreement with IFI and NPWS.	Construction
B_21	Surface runoff from the compound will be minimised by ensuring that the paved/ impervious area is minimised. All surface water runoff will be intercepted and directed to appropriate treatment systems (settlement facilities and oil trap) for the removal of pollutants and/or silt prior to discharge. The site compound will be fenced off as part of the site establishment period.	Construction
B_22	Fuel storage tanks shall have secondary containment provided by means of an above ground bund to capture any oil leakage.	Construction
B_23	Storage tanks and associated provision, including bunds, will conform to the current best practice for oil storage and will be undertaken in accordance with Best Practice Guide BPGCS005 – Oil Storage Guidelines (Enterprise Ireland).	Construction
B_24	Wastewater drainage from all site offices and construction facilities will be contained and disposed of in an appropriate manner to prevent water pollution and in accordance with the relevant statutory requirements.	Construction
B_25	The landscape design has been carefully co-ordinated to retain as many high-value trees as possible. There are currently 346 No. trees on the proposed development site. 102 No. trees will be lost to the proposed development. Of these 102 No. trees, 73 No. are considered to be low-quality trees (Category 'C') representing 77% of trees lost, 26 No. are good-quality trees (Category 'B'), representing 27% of trees lost and 3 No. are high-quality trees (Category 'A'), representing 1% of trees lost. There are 303 No. trees proposed in the landscape design with 147 No. of these with a girth greater than 30cm. In addition, 109 Category 'R' trees will be lost. Category R trees are trees that are deemed to be of no value within 10 years of the assessment and should be removed. It should be noted that the 'value' of a tree in the arboricultural assessment is not comparable to the biodiversity value of a tree, and is in fact often the inverse, however, in general, Category A and B trees are large trees and of higher biodiversity value.	Operational
B_26	The Landscape design for the proposed development includes tree, shrub, climber, swale and marginal planting around the site. Species selected includes native and nectar rich flowering plants to increase the	Operational

	availability of nectar for pollinators, and indirectly food for bats and birds. These species include, but are not limited to: Dog rose (*Rosa canina*), Crab apple (*Malus sylvestris*), Creeping blue blossom (*Ceanothus thyrsiflorus var. repens*), Mexican orange blossom (*Choidya ternata*), Mountain hydrangea (*Hydrangea serrata*), Snowdrop (*Galanthus nivalis*), Snake's head fritillary (*Fritillaria meleagris*) and Common camas (*Camassia quamash*).	
B_27	The landscape design includes an edible forest in the existing walled garden. This will mimic the stable ecosystem at the periphery of the site. The edible plants will be perennials specific to their location and climate and stacked in layers (eight layers in total). Each layer of this edible forest will have a high percentage of fruit, food and nut species. Species which will be planted includes: Sweet Chestnut (*Castanea sativa*), Walnut (*Juglans regia*), Plum (*Prunus domestica*), Apple (*Malus domestica*), Rosemary (*Rosmarinus officionalis*), Wild strawberry (*Fragaria vesca*), Wild garlic (*Allium ursinum*) and Blackberries (*Rubus allegheniensis*).	Operational
B_28	The landscape design also includes a pond on the western boundary. The pond has been designed to hold water year-round and have deeper areas to provide habitat for a range of freshwater species. The edges of the pond will be planted with native riparian species such as Purple loosestrife (*Lythrum salicaria*), Yellow flag iris (*Iris pseudacorus*) and Soft rush (*Juncus effusus*).	Operational
B_29	No laurel-leaved evergreens will be planted. This includes Cherry Laurel.	Operational
B_30	Three trees will be retained as ecopoles (Table 8-19). Transforming the trees into ecopoles will involve removing the tree crown to approximately 3m and using veteranisation techniques to create features that mimic an ancient tree. These techniques will create habitats for fungi, insects, birds and bats. Techniques include: • Coronette cutting of the main trunk, approx. 3 m high. • Vertical cuts & crevices • Hollows • Wounds	Operational
B_31	The public lighting has been designed will comply with the following: ○ Lux levels on roads and pathways will be set to the minimum required by BS 5489-1:2013, P4.	Operational

	○ Bollard lighting will be used in wooded areas which will avoid light spill above the horizontal. ○ Lighting outside the intended area of illumination will be minimised. Where light spill cannot be avoided, louvres, cowls or shields will be fitted to the columns. ○ Lighting will be LED and have no upward light spill (apart from intentional up-lighting) and a sharp horizontal cut off. ○ Lighting will be a warm-white colour of 2700K or less. ○ There will be no lighting on the pond. ○ Up-lighting will be limited to discreet points of interest.	
B_32	During the operational phase, rainwater from the roofs and roads will be conveyed directly to a surface water drainage system (designed following SUDS principles), which will include a petrol interceptor, a pond, swales and rain gardens, and attenuation tanks.	Operational
B_33	A pre-construction bat suitability assessment will be carried out prior to site clearance. Any moderate or high potential features will be examined by a suitably qualified bat specialist to ensure no bats are present.	Pre – Construction
B_34	A suitably qualified bat specialist is required to supervise the felling of all trees and the demolition of any buildings classified as having low to moderate suitability for supporting bat roosts, and which may contain features invisible from ground level. If any bats are found, they will be removed by the bat specialist and placed in a box and released on site at dusk.	Pre – Construction
B_35	Following the completion of the elements of the construction phase which could lead to the disturbance of a bat roost (to be dictated by the EcoW), 31 no. bat boxes will be placed on mature trees that will be retained. Twenty-six equates to one bat box for every tree and building with' low potential', and three bat boxes for every tree or building with 'moderate potential'. Schwegler type crevice bat boxes (available from www.nhbs.com) that are self-cleaning will be used. The bat boxes will be positioned by a suitably qualified bat specialist to maximise the likelihood of use.	Construction
B_36	These bat boxes will be protected during the construction phase of the project through the establishment of Root Protection Areas and any artificial lighting that will be used during this phase of the proposed development will avoid illuminating any of these trees at night.	Construction

B_37	The felling of trees and demolition of outbuildings will take place in the months of September to November inclusive, or in February and March in order to avoid the months when bats are most sensitive to disturbance. Note that this programme must also consider the presence of nesting birds.	Construction
B_38	The final lighting plan for the proposed development will be designed in accordance with *Bats and Lighting in the UK* (BCT, 2018). The design should consider this and only have as much lighting as necessary and should not exceed the baseline requirements	Pre-Operational
B_39	Site clearance during construction and tree and shrub maintenance during operation will take place outside the nesting bird season (1st March - 31st August inclusive). If site clearance is required during the nesting bird season, the area will be checked by a suitably qualified ecologist. If nesting birds are found to be present, the site clearance works will cease until the chicks have fledged, or, until the NPWS have been consulted to determine the course of action.	Construction
B_40	In order to protect the heronry from disturbance which could lead to nest abandonment, no site clearance works will commence during the pre-nesting and nesting season (February- July). The absence of active nests will be confirmed by the ECoW.	Construction
B_41	A Grey Heron Conservation Plan has been developed to ensure the protection of Grey Heron within the site and will be followed during both construction and operational phases of the proposed development. This Conservation Plan can be found in Appendix 8.4.	Construction and Operational
B_42	Fencing will be erected around the trees containing the heronry within the site as part of the tree protection plan. These will also serve to reduce disturbance close to the trees. The tree protection fencing will be retained for the duration of the construction phase.	Construction
B_43	Bird-friendly glass (e.g. ornilux) will be used on all windows, doors and glass facades in the new development which will increase the reflectivity of the windows and significantly reduce the risk of collision.	Operational
B_44	Twenty-five no. bird boxes will be erected.	Construction and Operational
B_45	Five no. 17A Schwegler Swift Nest Boxes (triple cavity) will be incorporated into the development. These will be positioned on the north faces of the buildings out of the prevailing wind and at least 4.5m high. The type and position should be confirmed by the ECoW. *Notes on the Common Swift and Setting up nest boxes* (Linda Huxley, 2014) provides guidance on setting up swift boxes.	Construction
B_46	Two No. Grey wagtail / Dipper nest boxes will be provided under the newly constructed bridge over the Stradbrook Stream.	Construction
B_47	All bird boxes will be positioned by the ECoW to maximise the likelihood of use.	Construction

B_48	The heronry will be surveyed during the breeding season for three consecutive years. The tree number of each tree containing a nest will be recorded (using the numbering convention in the tree report for this application), and any signs of activity will also be recorded. The results will be sent to the NPWS and Dún Laoghaire Rathdown County Council following each survey. Should a noticeable decline in the heronry be discovered, protective measures will be put in place, in consultation with the NPWS.	Operational
B_49	An Invasive Species Control and Management Plan has been developed in accordance with objective GIB28 of the County Development Plan (DLRCC, 2022) and can be found in Appendix 8.5. This management plan will be followed during construction to ensure invasive species are eradicated from the site and that all works shall be executed in accordance with best practice for biosecurity in construction.	Construction
B_50	All plant and equipment employed on the construction site (e.g. excavators) will be thoroughly cleaned down using a power washer unit prior to arrival on site to prevent the spread of IAPS.	Construction
B_51	All washing must be undertaken in areas with no potential to result in the spread of IAPS, as detailed in the Construction Environmental Management Plan.	Construction
B_52	Any soil and topsoil required on the site will be sourced from a stock that has been screened for the presence of any IAPS and where it is confirmed that none are present.	Construction
B_53	In advance of the works, the extent of Three-cornered Garlic established will be fenced off. Under the direction of the ECoW, the bulbs will be excavated by hand to avoid damaging the roots of nearby trees.	Pre-Construction
B_54	The bulbs will be broken up using a spade and buried on site to a minimum depth of 1 m.	Construction
B_55	The site will be resurveyed the following year to check if any plants have re-established. If Three-cornered Garlic is found, the process will be repeated until none re-appear.	Operational
B_56	If the infestation of Three-cornered Garlic cannot be eradicated prior to construction, it should be fenced off at the outset and the access prohibited except for monitoring for treatment purposes. All site staff shall be made aware of the Contractor’s Biosecurity Protocol and receive training in the importance of good site biosecurity.	Pre – Construction

Mitigation/ Monitoring No.	Description of Mitigation/Environmental Commitment	Phase
Land and Soils (Chapter 9)		
Mitigation		
LS_1	Appropriate due diligence to be undertaken in the sourcing of materials from responsible and audited suppliers, and in the testing of materials prior to use, to determine both suitability and presence of contaminated materials.	Construction
LS_2	If contamination is encountered in geology, soils or hydrogeology, suitable measures will be put in place to avoid mobilising the contamination based on the most appropriate industry best practice guidance for contaminated land management.	Construction
LS_3	The management of surplus excavated material or temporarily stored materials at the site compounds will be determined by the classification of the material (i.e., contaminated, or not, in line with the European Waste Catalogue and Hazardous Wate List, the Waste Management Act and the Hazardous Waste List), with mitigation measures implemented as appropriate.	Construction
LS_4	Hazardous material should be removed from site quickly. The quantities of hazardous waste being stored at any one time cannot exceed 25,000 litres of liquid waste or 40 m^3 of non-liquid waste. Further, the storage period must be less than six months.	Construction
LS_5	A suitable risk assessment for wet concreting will be completed prior to works being carried out which will include measures to prevent discharge of alkaline wastewaters or contaminated storm water to the underlying subsoil. This will include temporary bunds adjacent to concrete pours, dedicated piped temporary surface water drainage which will discharge to a public sewer (under of licence). Placing of concrete in or near the watercourses will be carried out only under the supervision of a suitably qualified independent Environmental Manager who will issue updates and action items to the Design Team.	Pre – Construction
LS_6	The pouring of concrete will take place within a designated area using a geo-synthetic material to prevent concrete runoff into the soil/ hydrogeology media. Wash down and washout of concrete transporting vehicles with the exception of the chute, will take place at an appropriate facility off site.	Construction
LS_7	Washout from concrete lorries, with the exception of the chute, will not be permitted on site and will only take place at the construction compound (or other appropriate facility designated by the supplier). Washout of the chute shall only be permitted at dedicated site compounds, and such areas shall not be within 10m of the watercourse.	Construction

LS_8	Chute washout locations will be provided with appropriate designated, contained impermeable area and treatment facilities including adequately sized settlement tanks. The clear water from the settlement tanks shall be pH corrected prior to discharge (which shall be by means of one of the construction stage settlement facilities) or alternatively disposed of as waste in accordance with the Contractor's Waste Management Plan.	Construction
LS_9	The guidance documents 'Control of Water Pollution from Construction Sites – Guidance for Consultants and Contractors' published by CIRIA (2001) and NRA Guidelines (2006) are to be adhered to.	Construction
LS_10	The storage of all fuels, other hydrocarbons and other chemicals shall be within the construction compound only and shall be in accordance with relevant legislation and best practice. In particular: • Fuel storage tanks shall have secondary containment provided by means of an above ground bund to capture any oil leakage. • Storage tanks and associated provision, including bunds, will conform to the current best practice for oil storage and will be undertaken in accordance with Best Practice Guide BPGCS005 – Oil Storage Guidelines (Enterprise Ireland).	Construction
LS_11	Preparation and implementation of a contingency plan for accidental leaks and spillages, in line with the CIRIA guidance 741 Environmental good practice on site.	Construction
LS_12	Excavation operations will be carried out such that surfaces will be designed with adequate falls, profiling and drainage to promote safe runoff and prevent ponding and flooding.	Construction
LS_13	An adequate supply of spill kits and hydrocarbon adsorbent packs will be stored at each work area. The Site Environmental Manager will maintain an inventory of spill kits on site to ensure all are properly equipped.	Construction
LS_14	As part of the site Environmental Induction Training all staff will be informed of the spill contingency plan and the location and use of the spill adsorbents.	Construction
LS_15	If a spillage does occur, the adsorbents will be treated as a hazardous waste and disposed of accordingly.	Construction
LS_16	Vehicles and equipment will be maintained by a suitably trained person and checked on a regular basis. Daily vehicle and equipment checks will include a visual assessment for oil or lubricant leaks prior to use.	Construction
LS_17	Vehicles will be parked on hardstanding areas overnight or when not in use, as applicable.	Construction
LS_18	Vehicles will minimise tracking over natural, exposed or unfinished surfaces, where practicable.	Construction
LS_19	Where practicable, compaction of any soil or subsoil which is to remain in situ in the works area will be avoided.	Construction

LS_20	Significant project vehicle and equipment movements will be along agreed predetermined routes along existing national, regional and local routes. Where compaction occurs due to truck movements and other construction activities on unfinished surfaces, remediation works will be undertaken to reinstate the ground to a condition if at least equal quality to the original surface.	Construction
LS_21	Re-fuelling of construction vehicles and the addition of hydraulic oils or lubricants to vehicles, will take place in a designated area (or where possible off the site) with appropriate hardstand and drainage.	Construction
LS_22	Drip trays will be placed underneath any standing machinery to prevent pollution by oil/fuel leaks during refuelling. Where practicable, cleaning and refuelling of vehicles and machinery will be carried out on an impermeable surface in designated areas.	Construction
LS_23	Good housekeeping in line with industry best practises (e.g. CIRIA) will be adhered to including daily site clean-ups, use of disposal bins, etc.).	Construction
LS_24	Movement of material to be minimised in order to reduce degradation of soil structure and generation of dust.	Construction
LS_25	All excavated material will, where possible, be reused as construction fill. The appointed contractor will ensure acceptability of the material for reuse for the proposed development with appropriate handling, processing and segregation of the material.	Construction
LS_26	Excavated soil materials will be stockpiled locally within the working area where possible, using an appropriate method to minimise the impacts of weathering. Care will be taken in reworking this material to minimise dust generation, hydrogeology infiltration and generation of runoff.	Construction
LS_27	Wastewater drainage from all site offices and construction facilities will be contained and disposed of in an appropriate manner to prevent water pollution and in accordance with the relevant statutory requirements.	Construction
LS_28	Direct, uncontrolled run-off from the site to the adjacent Stradbrook Stream during construction will not be permitted. As a further mitigation measure, double silt fences will be installed along the extent of works adjacent to the Stradbrook Stream to contain any potential accidental silt or sediment run-off.	Construction
LS_29	The dewatering strategy will pump any groundwater ingress from excavations to a series of settlement tanks. The groundwater quality shall be tested by a specialist third party sub-contractor, and the water shall discharge, under licence to the adjoining Public Sewer. The discharge of groundwater from the site to the adjacent Stradbrook Stream during construction will not be permitted.	Construction
LS_30	The site investigations to date do not indicate any contamination in the area of the existing septic tank to be removed, however, a Remediation Plan shall be implemented for the removal of the tank and backfill. This Plan will involve de-sludging the tank, demolition of concrete tank and removal to licenced facility and removal of buried piplines. Any contaminated material will be tested as per Waste Classification legislation and disposed of at a suitably licenced facility.	Construction

LS_31	During the operational phase, rainwater from the roofs and roads will be conveyed directly to a surface water drainage system (designed following SUDS principles), which will include a petrol interceptor, a ponds, swales and rain gardens, and attenuation tanks.	Operational
LS_32	Foul water from the proposed development will be pumped to Ringsend WWTP. This treatment facility is currently operating at levels in excess of its intended design capacity and is therefore, not in compliance with the European Union's Urban Wastewater Treatment Directive. Irish Water have begun to upgrade the current infrastructure to achieve compliance with the Urban Wastewater Treatment Directive (91/271/EEC), with aims to have these works completed in 2025.	Operational
LS_33	Implementation of appropriate waste management practises to minimise leachate into the ground.	Operational

Mitigation/ Monitoring No.	Description of Mitigation/Environmental Commitment	Phase
	Hydrology (Chapter 10)	
	Mitigation	
H_1	All works in proximity to the Stradbrook Stream will follow best practice guidance, as per the following documents: • Guidelines for the crossing of Watercourses During Construction of National Road Schemes (TII, 2008). • Guidelines on Protection of Fisheries during Construction Works in and adjacent to Waters (IFI, 2016). • C532 Control of water pollution from construction sites: guidance for consultants and contractors (CIRIA, 2001). • C648 Control of water pollution from linear construction projects. Site guide (C649 and C648) (CIRIA, 2006).	Construction
H_2	Direct, uncontrolled run-off from the site to the adjacent Stradbrook Stream during construction will not be permitted. As a further mitigation measure double silt fences will be installed along the extent of works adjacent to the Stradbrook Stream to contain any potential silt or sediment run-off.	Construction

H_3	Stockpiling, temporary or otherwise, of construction material or topsoil will be prohibited within 10m of the watercourse, in order to minimize sources of sediment runoff.	Construction
H_4	Site compounds shall not be located within 5m of the Stradbrook Stream, if required in that location, fuel storage, temporary or otherwise, shall be permitted within site compounds areas and not within 10m of the watercourse at these locations.	Construction
H_5	In order to limit the potential for pollution due to run-off from construction, all run off waters will be directed through sedimentation ponds prior to discharge. These ponds must be in place prior to the main construction works. The purpose of a temporary sedimentation basin/pond is to provide an area where sediment laden runoff is allowed to pond and suspended solids are allowed to settle.	Construction
H_6	When working in or near the surface water and the application of in-situ materials cannot be avoided, the use of alternative materials such as biodegradable shutter oils shall be used.	Construction
H_7	Any plant operating close to the water will require special consideration on the transport of concrete from the point of discharge from the mixer to final discharge into the delivery pipe (tremie). Care will be exercised when slewing concrete skips or mobile concrete pumps over or near the watercourses.	Construction
H_8	Placing of concrete in or near the watercourses will be carried out only under the supervision of a suitably qualified Environmental Manager.	Construction
H_9	There will be no hosing into surface water drains of spills of concrete, cement, grout or similar materials. Such spills shall be contained immediately, and runoff prevented from entering watercourses.	Construction
H_10	Concrete waste and wash-down water will be contained and managed on site to prevent pollution of the watercourses.	Construction
H_11	On-site concrete batching and mixing activities will only be allowed at the identified construction compound.	Construction
H_12	Washout from concrete lorries, with the exception of the chute, will not be permitted on site and will only take place at the construction compound (or other appropriate facility designated by the supplier).	Construction
H_13	Chute washout will be carried out at designated locations only. These locations will be signposted. The Concrete Plant and all Delivery Drivers will be informed of their location with the order information and on arrival on site.	Construction
H_14	Chute washout locations will be provided with appropriate designated, contained impermeable areas and treatment facilities including adequately sized settlement tanks. The clear water from the settlement tanks shall be pH corrected prior to discharge (which shall be by means of one of the construction stage settlement facilities) or alternatively disposed of as waste in accordance with the Contractor's Waste Management Plan.	Construction

	Method statements that are prepared for the works will be reviewed / approved by the Client Project Manager and were necessary the relevant Environmental Specialist. All method statements for works in, near or liable to impact on a waterway must have prior agreement with IFI and NPWS.	
H_15	Surface runoff from the compound will be minimised by ensuring that the paved/ impervious area is minimised. All surface water runoff will be intercepted and directed to appropriate treatment systems (settlement facilities and oil trap) for the removal of pollutants and/or silt prior to discharge. The site compound will be fenced off as part of the site establishment period.	Construction
H_16	Fuel storage tanks shall have secondary containment provided by means of an above ground bund to capture any oil leakage.	Construction
H_17	Storage tanks and associated provision, including bunds, will conform to the current best practice for oil storage and will be undertaken in accordance with Best Practice Guide BPGCS005 – Oil Storage Guidelines (Enterprise Ireland).	Construction
H_18	Wastewater drainage from all site offices and construction facilities will be contained and disposed of in an appropriate manner to prevent water pollution and in accordance with the relevant statutory requirements.	Construction
H_19	The guidance documents 'Control of Water Pollution from Construction Sites – Guidance for Consultants and Contractors' published by CIRIA (2001) and NRA Guidelines (2006) are to be adhered to due to the close proximity to nearby watercourses.	Construction
H_20	Preparation and implementation of a contingency plan for accidental leaks and spillages, in line with the CIRIA guidance 741 Environmental good practice on site.	Construction
H_21	An adequate supply of spill kits and hydrocarbon adsorbent packs will be stored at each work area. The Site Environmental Manager will maintain an inventory of spill kits on site to ensure all are properly equipped.	Construction
H_22	As part of the site Environmental Induction Training all staff will be informed of the spill contingency plan and the location and use of the spill adsorbents.	Construction
H_23	Vehicles and equipment will be maintained by a suitably trained person and checked on a regular basis. Daily vehicle and equipment checks will include a visual assessment for oil or lubricant leaks prior to use.	Construction
H_24	Direct, uncontrolled run-off from the site to the adjacent Stradbrook Stream during construction will not be permitted. As a further mitigation measure, double silt fences will be installed along the extent of works adjacent to the Stradbrook Stream to contain any potential accidental silt or sediment run-off.	Construction
H_25	The dewatering strategy will pump any groundwater ingress from excavations to a series of settlement tanks. The groundwater quality shall be tested by a specialist third party sub-contractor, and the water shall discharge, under licence to the adjoining Public Sewer. The discharge of groundwater from the site to the adjacent Stradbrook Stream during construction will not be permitted.	Construction

H_26	The proposed construction works of the bridge will occur during Phase 1 and the temporary Contractor's compound, welfare facilities, set-down areas will not be located within the flood plain (see Figure 10-2). The construction works will progress, at all times ensure that the cross section of the stream or the flood plain lands are not compromised for an extended period. During the works, the weather forecast shall be closely monitored to identify any significant rainfall events which could pose a risk to the works or surrounding areas.	Construction
H_27	During the operational phase, rainwater from the roofs and roads will be conveyed directly to a surface water drainage system (designed following SUDS principles), which will include a petrol interceptor, a ponds, swales and rain gardens, and attenuation tanks.	Operational
H_28	Foul water from the proposed development will be pumped to Ringsend WWTP. This treatment facility is currently operating at levels in excess of its intended design capacity and is therefore, not in compliance with the European Union's Urban Wastewater Treatment Directive. Irish Water have begun to upgrade the current infrastructure to achieve compliance with the Urban Wastewater Treatment Directive (91/271/EEC), with aims to have these works completed in 2025.	Operational
H_29	Implementation of appropriate maintenance of the Stradbrook Stream watercourse and associated culverts to ensure flow is maintained and risk of flooding is not increased. This will include the removal of blockages and conduct of routine clearing.	Operational

Mitigation/ Monitoring No.	Description of Mitigation/Environmental Commitment	Phase
Air Quality and Climate (Chapter 11)		
Mitigation		
AC_1	Hard surface roads will be swept to remove mud and aggregate materials from their surface while any un-surfaced roads will be restricted to essential site traffic.	Construction
AC_2	Any road that has the potential to give rise to fugitive dust must be regularly watered, as appropriate, during dry and/or windy conditions.	Construction
AC_3	Vehicles exiting the site shall make use of a wheel wash facility where appropriate, prior to entering onto public roads.	Construction
AC_4	Vehicles using site roads will have their speed restricted, and this speed restriction must be enforced rigidly. On any un-surfaced site road, this will be 20 kph.	Construction
AC_5	Public roads outside the site will be regularly inspected for cleanliness and cleaned as necessary.	Construction

AC_6	Material handling systems and site stockpiling of materials will be designed and laid out to minimise exposure to wind. Water misting or sprays will be used as required if particularly dusty activities are necessary during dry or windy periods.	Construction
AC_7	During movement of materials both on and off-site, trucks will be stringently covered with tarpaulin at all times. Before entrance onto public roads, trucks will be adequately inspected to ensure no potential for dust emissions.	Construction
AC_8	The prevention of on-site or delivery vehicles from leaving engines idling, even over short periods.	Construction
AC_9	Minimising waste of materials due to poor timing or over ordering on site will aid to minimise the embodied carbon footprint of the site.	Construction

Mitigation/ Monitoring No.	Description of Mitigation/Environmental Commitment	Phase
	Noise and Vibration (Chapter 12)	
	Mitigation	
N_1	*Noise Control at Source* If replacing a noisy item of plant is not a viable or practical option, consideration will be given to noise control "at source". This refers to the modification of an item of plant or the application of improved sound reduction methods in consultation with the supplier. For example, resonance effects in panel work or cover plates will be reduced through stiffening or application of damping compounds; rattling and grinding noises can often be controlled by fixing resilient materials in between the surfaces in contact. Referring to the potential noise generating sources for the works under consideration, the following best practice migration measures will be implemented: • The lifting of bulky items, dropping and loading of materials will be restricted to normal working hours. • Mobile plant should be switched off when not in use and not left idling. • For piling plant, noise reduction can be achieved by enclosing the driving system in an acoustic shroud.	Construction

	• For concrete mixers, control measures will be employed during cleaning to ensure no impulsive hammering is undertaken at the mixer drum. • For all materials handling ensure that materials are not dropped from excessive heights, lining drops chutes and dump trucks with resilient materials. • Demountable enclosures can also be used to screen operatives using hand tools and will be moved around site as necessary. All items of plant will be subject to regular maintenance. Such maintenance can prevent unnecessary increases in plant noise and can serve to prolong the effectiveness of noise control measures.	
N_2	*Piling* Piling is the construction activity which is most likely to cause disturbance. General guidance in relation to piling is outlined in the following paragraphs. Piling programmes will be arranged so as to control the amount of disturbance in noise and vibration sensitive areas at times that are considered of greatest sensitivity. If piling works are in progress on a site at the same time as other works of construction or demolition that themselves may generate significant noise and vibration, the working programme will be phased so as to prevent unacceptable disturbance at any time. Prior to construction the planner, developer, architect and engineer, as well as the local authority, will be made aware of the proposed method of working of the piling contractor. The piling contractor will in turn have evaluated any practicable and more acceptable alternatives that would economically achieve, in the given ground conditions, equivalent structural results. On typical piling sites the major sources of noise are essentially mobile and the noise received at any control points will therefore vary from day to day as work proceeds. The duration of piling works is typically relatively short in relation to the length of construction work as a whole, and the amount of time spent working near to noise sensitive areas can represent only a part of the piling period. Noise reduction can be achieved by enclosing the driving system in an acoustic shroud. For steady continuous noise, such as that generated by diesel engines, it may be possible to reduce the noise emitted by fitting a more effective exhaust silencer system or utilising an acoustic canopy to replace the normal engine cover. Impact noise when piling is being driven can be reduced by introducing a non-metallic dolly between the hammer and the driving helmet.	Construction

	Screening by barriers and hoardings is less effective than total enclosure but can be a useful adjunct to other noise control measures. For maximum benefit, screens should be close either to the source of noise (as with stationary plant) or to the listener. Removal of a direct line of sight between source and listener can be advantageous both physically and psychologically. In certain types of piling works there will be ancillary mechanical plant and equipment that may be stationary, in which case, care should be taken in location, having due regard also for access routes. When appropriate, screens or enclosures should be provided for such equipment.	
N_3	*Screening* Screening is an effective method of reducing the noise level at a receiver location and can be used successfully as an additional measure to all other forms of noise control. It is understood that the existing concrete perimeter wall will remain during the construction process and provide a degree of screening. In addition, careful planning of the site layout will also be considered. The placement of site buildings such as offices and stores will be used, where feasible, to provide noise screening when placed between the source and the receiver.	Construction
N_4	*Liaison with the Public* A designated environmental liaison officer will be appointed to site during construction works. Any noise complaints will be logged and followed up in a prompt fashion by the liaison officer. In addition, where a particularly noisy construction activity is planned or other works with the potential to generate high levels of noise, or where noisy works are expected to operate outside of normal working hours etc., the liaison officer will inform the nearest noise sensitive locations of the time and expected duration of the noisy works.	Construction
N_5	*Project Programme* The phasing programme will be arranged so as to control the amount of disturbance in noise and vibration sensitive areas at times that are considered of greatest sensitivity. During excavation/ piling or other high noise generating works are in progress on a site at the same time as other works of construction that themselves may generate significant noise and vibration, the working programme will be phased so as to prevent unacceptable disturbance at any time.	Construction
N_6	*Monitoring* Construction noise & vibration monitoring will be undertaken as described in Section 12.8.1 of this Chapter.	Construction
N_7	*General Good Practice*	Construction

	General good practice measures include: • The contractor will appoint a site representative responsible for matters relating to noise. • A noise and vibration monitoring specialist will be appointed to periodically carry out independent monitoring of noise and vibration during random intervals and at sensitive locations for comparison with limits and background levels. • All ancillary pneumatic percussive tools shall be fitted with mufflers or silences of the type recommended by the manufacturers, and where commercially available, dampened tools and accessories shall be used.	
N_8	Duct mounted attenuators on the atmosphere side of air moving plant.	Operational
N_9	Splitter attenuators or acoustic louvres providing free ventilation to internal plant areas.	Operational
N_10	Solid barriers screening any external plant.	Operational
N_11	Anti-vibration mounts on reciprocating plant.	Operational
N_12	All mechanical plant items e.g. motors, pumps etc. shall be regularly maintained to ensure that excessive noise generated any worn or rattling components is minimised.	Operational
N_13	Any new or replacement mechanical plant items, including plant located inside new or existing buildings, shall be designed so that all noise emissions from site do not exceed the noise limits outlined in this document.	Operational

Mitigation/ Monitoring No.	Description of Mitigation/Environmental Commitment	Phase
Landscape and Visual (Chapter 13)		
Mitigation		
No specific mitigation measures required		

Mitigation/ Monitoring No.	Description of Mitigation/Environmental Commitment	Phase
Cultural Heritage and Archaeology (Chapter 14)		
Mitigation		
CH_1	All topsoil stripping associated with the proposed development will be monitored by a suitably qualified archaeologist. If any features of archaeological potential are discovered during the course of the works further archaeological mitigation may be required, such as preservation in-situ or by record. Any further mitigation will require approval from the National Monuments Service of the DoHLGH.	Construction
CH_2	Prior to the commencement of construction, an underwater wade survey will be carried out on the section of the stream to be affected by the construction of a new access bridge. This will be carried out under licence to the DoHLGH. Dependent on the results of the assessment, further mitigation may be required such as preservation in-situ or by record and/or archaeological monitoring. Any further mitigation will require approval from the National Monuments Service of the DoHLGH.	Pre-Construction

Mitigation/ Monitoring No.	Description of Mitigation/Environmental Commitment	Phase
Architectural Heritage (Chapter 15)		
Mitigation		
AH_1	Careful location of the apartment blocks so as to retain the spatial centrality of Dalguise House itself and to allow views of the House to visitor as they approach along the historic carriage route, between Blocks D, E & F. The House defines the symmetrical relationship between Blocks F & G and has a direct axial relationship with Block E, the tallest. The new apartment blocks are located at such a distance from the house that its form can be still clearly seen and understood. The same is true of the relationship to the walled garden, in which Block H is pushed east so as to retain the legibility of the broad sweep of the brick wall on its inside face.	Construction/operation
AH_2	The special interest of the landscape of the grounds lies in the retention of half of a large landscaped oval which paired the house with Carrickbrennan House to the west. The eastern half of this oval is retained at Dalguise in the form of the graceful approach road. This route will be retained as the major circulation through the site to the south and this represents a significant retention of heritage	Construction/operation

	significance and mitigation of impact.	
AH_3	Fabric repair works to the two historic lodges the buildings will give rise to positive effects on the architectural heritage of these structures themselves and on the heritage of the Dalguise lands.	Construction
AH_4	Loss of any original fabric from the Dalguise House will be minimal and the removal of non-original fabric will give rise to positive effects.	Construction
AH_5	The provision of long-term sustainable use for Dalguise House is very significant as loss of use and essential and associated maintenance for a period of time threatens AH very quickly. This will give rise to 'significant' positive effects architectural heritage. Change from long term to short term residential use will have a moderate negative impact. The impact on the conservation significance of the house will therefore be moderately positive overall.	Construction/operation
AH_6	Works to the fabric of the walled garden will give rise to a positive effect on the architectural heritage of these structures themselves and on the heritage of the Dalguise lands. The introduction of an edible garden, referring back to historical use, will also generate a positive impact.	Construction/operation
AH_7	Works to the fabric the Stable Yard and Stable buildings will give rise to positive effects on the architectural heritage of these structures themselves and on the heritage of the Dalguise lands.	Construction
AH_8	The provision of long term sustainable use for the Stable Yard and Stable buildings structures will also give rise to 'moderate' positive effects architectural heritage	Operation

Mitigation/ Monitoring No.	Description of Mitigation/Environmental Commitment	Phase
Microclimate – Wind (Chapter 16)		
Mitigation		
W_1	Porous Mesh Panels to Balconies to Improve Pedestrian Comfort Porous mesh panels improve comfort levels compared with solid panels, as solid panels cause an increase in velocity over them which can cause discomfort. Porous mesh panels allow wind to partially penetrate, leading to reduced velocities. Exceptions to the Lawson Comfort and Safety Criteria were observed at high level balconies located on south and west facades, and close to the building corners. These balconies are higher than surrounding buildings and are more exposed to the prevailing winds. Mitigation measures for the balconies will be in form of porous mesh panels (50%-65% porosity) with a height of 1.5-1.8m on the sides of the balconies. This would only be required only for higher level balconies facing the south and west.	Construction
W_2	Soft Landscaping adjacent to Block H Mitigation has been provided in the form of evergreen soft landscaping in the areas between Block H and Dalguise House. With introduction of the recommended mitigation, all pedestrian spaces outlined above will be safe and comfortable for their intended purpose.	Construction

Mitigation/ Monitoring No.	Description of Mitigation/Environmental Commitment	Phase
Roads and Traffic (Chapter 17)		
Mitigation		
RT_1	Tracked excavators will be moved to and from the Site on low-loaders and will not be permitted to drive onto the adjacent roadway.	Construction
RT_2	The applicant shall at all times keep all public and private roads and footpaths entirely free of excavated materials, debris and rubbish.	Construction
RT_3	Public roads outside the Site shall be regularly inspected for cleanliness, as a minimum on a daily basis, and cleaned as necessary. A road sweeper will be made available to ensure that public roads are kept free of debris.	Construction
RT_4	The applicant shall be responsible for and make good any damages to existing roads or footpaths caused by his own contractors or suppliers transporting to and from the Site.	Construction
RT_5	The contractor shall confine his activities to the area of the Site occupied by the works and the builders' compound, as far as practicably possible, during any particular phase of the works.	Construction
RT_6	All construction workers will be encouraged to use public transport, and also to car share where appropriate through the implementation of mobility management practices at the construction stage. On site staff car parking will also be provided to ensure no construction workers will be required to park on adjacent roads or streets.	Construction
RT_7	No daytime or night-time parking of site vehicles or construction staff vehicles will be permitted outside agreed areas.	Construction
RT_8	Construction work will be limited to normal working hours; that are 07.00 – 19.00 on weekdays and 08.00 – 14.00 on Saturdays. All deliveries of materials, plant and machinery to the Site and removals of waste or other material will take place within the permitted hours of work. Vehicle movements will be planned to ensure arrival and departure times are maintained inside the agreed working hours.	Construction
RT_9	Deliveries will be co-ordinated to prevent queuing of vehicles adversely affecting traffic flow and to minimise disruption to local traffic. They will be timed and coordinated to avoid conflict with collection of waste, other deliveries (particularly to adjoining owners), and rush hour traffic. Large deliveries will be scheduled outside peak traffic hours to minimise disruption.	Construction
RT_10	Properly designed and designated access and egress points to the construction site will be used to minimise impact on external traffic.	Construction

RT_11	Firm, level, and well-drained pedestrian walkways will be provided.	Construction
RT_12	Adequate visibility will be provided at the proposed access point to the proposed development off Monkstown Road.	Construction
RT_13	Footpaths will not be blocked resulting in pedestrians having to step onto the carriageway.	Construction
RT_14	The final Construction Traffic Management Plan with be submitted and agreed with the local authority prior to commencement.	Construction
RT_15	A Travel Plan / Mobility Management Plan has been prepared for the proposed development which includes mitigation measures to reduce usage of private cars and increase the use by residents and patrons within the development of more sustainable modes of travel, such as including good cycle parking provision, will further promote the greater use of sustainable travel modes. Successful implementation of the Travel Plan / Mobility Management Plan measures included will reduce the vehicular trip generation from the proposed development below that included for in the Transport Impact Assessment for the proposed development. For further details refer to the accompanying TIA and MMP.	Operational
RT_16	A Stage 1 Road Safety Audit (RSA) was undertaken on the design to identify any design deficiencies. This has been responded to and the issues raised addressed. A Stage 2 RSA should be undertaken on the Detailed Design to ensure that the final design is in accordance with the TII Road Safety Audit Guidelines (December 2017) prior to the commencement of construction. A Stage 3 post construction and pre-opening of the proposed development in accordance with RSA guidelines to address any potential road safety issues related to the completed scheme.	Operational
RT_17	During the operational phase of the development, it is projected that the adjoining road network can readily accommodate the additional traffic from the proposed development.	Operational
RT_18	The impact on the DART system will be negligible and the impact on the bus system will be accommodated by the ongoing rollout of the BusConnects programme, which is designed to cater for increasing bus patronage across the city.	Operational
RT_19	Wider national, regional and local policy objectives combined with planned investment in sustainable travel modes will further mitigate the impact of the development over time.	Operational

Mitigation/ Monitoring No.	Description of Mitigation/Environmental Commitment	Phase
Material Assets – Waste (Chapter 18)		
Mitigation		
WM_1	As previously stated, a project specific RWMP has been prepared in line with the requirements of the requirements of the *Best Practice Guidelines for the Preparation of Resource & Waste Management Plans for Construction and Demolition Projects* (EPA, 2021), and is included as Appendix 18.1. The mitigation measures outlined in the RWMP will be implemented in full and form part of mitigation strategy for the site. The mitigation measures presented in this RWMP will ensure effective waste management and minimisation, reuse, recycling, recovery and disposal of waste material generated during the demolition, excavation and construction phases of the Proposed Development. • Prior to commencement, the appointed Contractor(s) will be required to refine / update the RWMP (Appendix 18.1) in agreement with DLRCC and in compliance with any planning conditions, or submit an addendum to the RWMP to DLRCC, detailing specific measures to minimise waste generation and resource consumption, and provide details of the proposed waste contractors and destinations of each waste stream. • The contractor will be required to fully implement the RWMP throughout the duration of the proposed construction phase. A quantity of topsoil, sub soil, clay and made ground will need to be excavated to facilitate the Proposed Development. The project engineers, Byrne Looby, have estimated that 48,830.070 m^3 of material will require excavation.	Construction
WM_2	Any suitable excavated material will be temporarily stockpiled for reuse as fill, where possible, with remaining soil to be removed off-site for appropriate reuse, recycling, recovery and / or disposal. Correct classification and segregation of the excavated material is required to ensure that any potentially contaminated materials are identified and handled in a way that will not impact negatively on workers as well as on water and soil environments, both on and off site.	Construction

WM_3	Building materials will be chosen with an aim to 'design out waste'.	Construction
WM_4	On-site segregation of waste materials will be carried out to increase opportunities for off-site reuse, recycling, and recovery. The following waste types, at a minimum, will be segregated: • Concrete rubble (including ceramics, tiles, and bricks); • Plasterboard; • Metals; • Glass; and • Timber	Construction
WM_5	Left over materials (e.g., timber off-cuts, broken concrete blocks / bricks) and any suitable construction materials shall be re-used on-site, where possible (alternatively, the waste will be sorted for recycling, recovery or disposal).	Construction
WM_6	All waste materials will be stored in skips or other suitable receptacles in designated areas of the site.	Construction
WM_7	Any hazardous wastes generated (such as chemicals, solvents, glues, fuels, oils) will also be segregated and will be stored in appropriate receptacles (in suitably bunded areas, where required).	Construction
WM_8	A Construction and Demolition Resource & Waste Manager (CDRWM) will be appointed by the main Contractor(s) to ensure effective management of waste during the excavation and construction works.	Construction
WM_9	All construction staff will be provided with training regarding the waste management procedures.	Construction
WM_10	All waste leaving site will be reused, recycled, or recovered, where possible, to avoid material designated for disposal.	Construction
WM_11	All waste leaving the site will be transported by suitably permitted contractors and taken to suitably registered, permitted, or licenced facilities.	Construction
WM_12	All waste leaving the site will be recorded and copies of relevant documentation maintained.	Construction
WM_13	Nearby sites requiring clean fill material will be contacted to investigate reuse opportunities for clean and inert material, if required. If any of the material is to be reused on another site as by-product (and not as a waste), this will be done in accordance with Article 27 of the EC (Waste Directive) Regulations (2011). EPA approval should be obtained prior to moving material as a by-product. However, it is not currently anticipated that Article 27 will be used.	Construction
WM_14	The operator / facilities management company of the site during the operational phases will be responsible for ensuring – allocating personnel and resources as needed – the ongoing implementation of this OWMP, ensuring a high level of recycling, reuse and recovery at the site of the Proposed Development.	Operational
WM_15	Residents in individual houses will be responsible for the implementation of the OWMP with regards to the management of their own waste.	Operational

WM_16	The operator / facilities management company will ensure on-site segregation of all waste materials into appropriate categories, including (but not limited to): • Organic waste; • Dry Mixed Recyclables; • Mixed Non-Recyclable Waste; • Glass; • Waste electrical and electronic equipment (WEEE); • Batteries (non-hazardous and hazardous); • Cooking oil; • Light bulbs; • Cleaning chemicals (pesticides, paints, adhesives, resins, detergents, etc.); • Furniture (and from time-to-time other bulky waste); and • Abandoned bicycles	Operational
WM_17	The operator / facilities management company will ensure that all waste materials will be stored in colour coded bins or other suitable receptacles in designated, easily accessible locations. Bins will be clearly identified with the approved waste type to ensure there is no cross contamination of waste materials.	Operational
WM_18	The operator / facilities management company will ensure that all waste collected from the site of the Proposed Development will be reused, recycled, or recovered, where possible, with the exception of those waste streams where appropriate facilities are currently not available.	Operational
WM_19	The operator / facilities management company will ensure that all waste leaving the site will be transported by suitable permitted contractors and taken to suitably registered, permitted, or licensed facilities.	Operational

Mitigation/ Monitoring No.	Description of Mitigation/Environmental Commitment	Phase
Material Assets – Built Services (Chapter 19)		
Mitigation		
BS_1	A method statement for all works to be carried out, to fully comply with all requirements of the Construction and Environmental Management Plan (CEMP) as completed by Byrne Looby, in Particular Chapter 5 Environmental Management will be prepared by the contractor and agreed with DLRCC prior to commencement of works to outline what measures are to be taken to ensure there is no loss of service during the works.	Construction
BS_2	Dewatering measures will only be employed where necessary, to fully comply with the requirements of Sections 5.8 and 5.9 of the Construction and Environmental Management Plan (CEMP) as completed by Byrne Looby outlining the dewatering methodology with respect to the Stradbrook Stream and receiving Groundwaters. This is also outlined in Chapter 9 Land, Soils, Geology and Hydrogeology of this EIAR.	Construction
BS_3	Tree-root protection and inclusion zones are proposed where minor services are required for site lighting. The affected trees, calculation methodology to BS 5837:2010 and the trenching constraints are detailed on the Leinster Tree Services Tree Constraints/Protection Plan and the Arboricultural Impact Assessment, which must be adhered to when installing any services within or close to the tree roots of retained trees.	Construction
BS_4	All major service routes have been designed to run on one side of the main access avenue, to avoid trees identified for retention. In addition, the proposed basement will be used as a service route between the front part of the site and the rear blocks (H-I).	Construction
BS_5	All new-build service infrastructure is to be designed in accordance with the relevant service provider and asset owner's code of practice, which require due cognisance of the receiving environment. Design depths of proposed infrastructure are to be optimised so that excessive excavations are avoided where possible, and by association a reduction in resultant waste and machinery operation time. It is proposed that products and materials are supplied locally, where practicable and available; in order to reduce carbon footprint of travel and production.	Construction
BS_6	The following mitigation measures will be implemented for the construction phase of the development: • Consultation with relevant services providers in advance of works to ensure works are carried out to relevant standards and specifications including procedures to ensure safe working practices are	Construction

	implemented for works in the vicinity of services such as live gas mains, works in the vicinity of overhead electricity lines and live electricity lines and works to distribution watermains. • Neighbouring sites are to be advised of construction methodologies in advance of works, in situations which may affect them. • Protection in place of all underground services for which diversions are not required. • All decommissioned infrastructure will be sent to an accepting landfill for disposal. • Construction methods used by the contractor are to be tailored to reduce, where possible, dust noise and air pollution; to minimise interference with the environment and the neighbouring areas. • Any spoil or waste material generated from the construction process is to be temporarily stored at an approved location on site, before being removed to an accepting licensed waste disposal facility. • All new infrastructure is to be installed and constructed to the relevant codes of practice and guidelines. • Potable water supply networks and waste water infrastructure are to be pressure tested by an approved method during the construction phase and prior to connection to the public networks, all in accordance with Irish Water Requirements. • Connections to the service providers are to be carried out to the approval and / or under the supervision of the Local Authority or relevant utility service provider, prior to commissioning. • All new sewers are to be inspected by CCTV survey post construction; to identify any possible physical defects for rectification prior to operational phase. • Prior to the commencement of excavations in public areas, all utilities and public services are to be identified and checked; to ensure that adequate protection measures are implemented to minimise the risk of service disruption. • All excavations within the public area are to be back-filled in a controlled manner and surface re-instated to the satisfaction of the Local Authority. • Where possible, trenchless techniques should be used for the placement of service utilities, to avoid contamination of sub-soils and groundwater.	
BS_7	An appropriate Remediation Plan should be put into place for the de-commissioning and removal of the existing septic tank on site, in the event that contaminated soils are encountered on site. Further mitigation	Construction

	with regards to the treatment of hazardous and contaminated materials is outlined in Chapter 9 'Land, Soils, Geology and Hydrogeology'.	
BS_8	The design and construction of the required services infrastructure in accordance with the relevant guidelines and codes of practice will in an attempt to mitigate any potential impacts during the operational phase of the development, with the exception of any routine maintenance of the site services. Any additional mitigation measures required for the proposed built services, if required, during the operational phase will be as advised by the relevant service provider.	Operational
BS_9	Use of water conservation measures will be included as part of the design development, including dual flush water cisterns, low flow taps etc.	Operational