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

Natura Impact Statement

July 2023

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Dalguise House Large-Scale Residential Development

Natura Impact Statement

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1. INTRODUCTION

1.1 Introduction

Roughan & O'Donovan (ROD) was commissioned by GEDV Monkstown Owner Ltd ("the Applicant") to prepare a Natura Impact Statement (NIS) to inform a planning application for the proposed Dalguise House Large-scale Residential Development (LRD) ("the proposed development") in Monkstown, Co. Dublin.

The requirements arising out of Article 6(3) of Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora ("the Habitats Directive") in relation to Appropriate Assessment are transposed into Irish law by Part 5 of the European Communities (Birds and Natural Habitats) Regulations, 2011 (as amended) ("the Habitats Regulations") and Part XAB of the Planning and Development Act, 2000 (as amended) ("the Planning and Development Act"). In accordance with Article 6(3) of the Habitats Directive and Part XAB of the Planning and Development Act, an Appropriate Assessment (AA) Screening Report was prepared to assess whether or not the proposed development, either individually or in combination with other plans or projects, was likely to have a significant effect on one or more sites of Community importance for nature conservation ("European sites").

The AA Screening Report, which was prepared by ROD on behalf of GEDV Monkstown Owner Ltd concluded, best scientific knowledge and the Conservation Objectives of the sites concerned, that, in the absence of appropriate mitigation, the proposed development had the potential to significantly affect three European Sites, namely the the South Dublin Bay & River Tolka Estuary SPA, the South Dublin Bay SAC and the Dalkey Islands SPA. In order to assist Dún Laoghaire Rathdown County Council in carrying out its AA, GEDV Monkstown Owner Ltd is required to submit a Natura Impact Statement (NIS) in respect of the proposed development.

In accordance with Article 6(3) of the Habitats Directive and section 177V of the Planning and Development Act 2000 (as amended), it is the Competent Authority – in this case Dún Laoghaire Rathdown County Council – which carries out the appropriate assessment (AA) which includes inter alia (i) an examination (ii) an analysis (iii) an evaluation (iv) the making of findings (v) the making of conclusions and (vi) the making of a final determination.[1]

This document comprises the NIS in respect of the proposed development and has been prepared by ROD on behalf of GEDV Monkstown Owner Ltd. It contains an examination, analysis and evaluation of the likely impacts from the proposed development, both individually and in combination with other plans and projects, in view of best scientific knowledge and the Conservation Objectives of the European sites concerned. It also prescribes appropriate mitigation to ensure that the proposed development will not adversely affect the integrity of those sites. Finally, it provides complete, precise and definitive findings which are capable of removing all reasonable scientific doubt as to the absence of adverse effects on the integrity of the European sites concerned and sets out detailed reasons which explain the basis for such findings.

[1] *Waddenzee* (CaseC-127/02) [2004] ECR I-7405; *Commission v Spain* (Case C-404/09) [2011] E.C.R. I-11853; *Sweetman* (Case C-258/11).

1.2 Competent Experts

This NIS was prepared by Patrick O'Shea and Rachel Heaphy. Patrick is an Ecologist with over ten years' experience in ecological assessment. He holds a degree in Botany from Trinity College Dublin and an MSc in Ecological Management and Conservation Biology from Queen's University Belfast. Patrick is a Full member of the Chartered Institute of Ecological and Environmental Management (CIEEM). Rachel holds a BSc (Hons) in Zoology from University College Cork and an MRes degree (with distinction) from the University of Roehampton.

The freshwater macroinvertebrate surveys, chemical analysis and data summary report was undertaken and prepared by Dr Bláithín Ní Ainín, a Senior Freshwater Ecologist with APEM Ltd.

1.3 Legislative Context

Council Directive 92/43/EEC of the 21st May 1992 on the conservation of natural habitats of wild fauna and flora ("the Habitats Directive") and Directive 2009/147/EC of the European Parliament and of the Council of the 30th November 2009 on the conservation of wild birds ("the Birds Directive") list habitats and species which are important for conservation and in need of protection. This protection is afforded in part through the designation of sites which support significant examples of habitats or populations of species ("European sites"). Sites designated for birds are termed "Special Protection Areas" (SPAs) and sites designated for natural habitat types or other species are termed "Special Areas of Conservation" (SACs). The complete network of European sites is referred to as "Natura 2000".

In order to ensure the protection of European sites in the context of land use planning and development, Article 6(3) of the Habitats Directive provides for the assessment of the implications of plans and projects for European sites, as follows:

> "*Any plan or project not directly connected with or necessary to the management of the site* [or sites] *but likely to have a significant effect thereon, either individually or in combination with other plans or projects, shall be subject to appropriate assessment of its implications for the site in view of the site's conservation objectives. In the light of the conclusions of the assessment of the implications for the site* [...]*, the competent national authorities shall agree to the plan or project only after having ascertained that it will not adversely affect the integrity of the site concerned* [...]*.*"

The requirements arising out of Article 6(3) are transposed into Irish law by Part XAB, Appropriate Assessment (including section 177V of the Planning and Development Act 2000 (as amended)) (and in other circumstances by Part 5 of the Habitats Regulations).

The determination of whether or not a plan or project meets the two thresholds for requiring AA is referred to as "Stage 1" or "AA Screening". The first threshold is reached if the plan or project is not directly connected with or necessary to the management of one or more European sites. In its ruling in *Waddenzee*[2], the Court of Justice of the European Union (CJEU) interpreted the second threshold as being reached where "*it cannot be excluded, on the basis of objective information, that* [the plan or project] *will have a significant effect on that site*". Thus, in applying the Precautionary Principle, the CJEU interpreted the word "likely" to mean that, as long

[2] Landelijke Vereniging tot Behoud van de Waddenzee, Nederlandse vereniging tot Bescherming van Vogels *v*. Staatssecretaris van Landbouw, Naturbeheer en Visserij (Waddenzee) [2004] C-127/02 ECR I-7405.

as it cannot be demonstrated that an effect will not occur, that effect is considered "likely". A likely effect is considered to be "significant" only if it interrupts or causes a delay in achieving the Conservation Objectives of the site concerned.[3]

Prior to approval of a plan or project which is the subject of AA (also referred to as "Stage 2"), it is necessary to "*ascertain*" that the plan or project will not "*adversely affect the integrity of the site*". In its guidance document (EC, 2018), the European Commission stated that "*the integrity of a site involves its constitutive characteristics and ecological functions*" and that "*the decision as to whether it is adversely affected should focus on and be limited to the habitats and species for which the site has been designated and the site's conservation objectives*". Regarding the word "ascertain", the CJEU, also in *Waddenzee*, interpreted this as meaning "*where no reasonable scientific doubt remains as to the absence of such effects*". Therefore, the legal test at Stage 2 is satisfied (and the plan or project may be authorised) when it can be demonstrated beyond reasonable scientific doubt that the plan or project will not interrupt or cause delays in the achievement of the Conservation Objectives of the site or sites concerned. AA is informed by a "Natura Impact Report" (NIR) in the case of plans or a "Natura Impact Statement" (NIS) in the case of projects.

The CJEU has made a relevant judgment on what information should be contained within documents supporting AA[4] (in the NIR or NIS):

> "[The AA] *cannot have lacunae and must contain complete, precise and definitive findings and conclusions capable of removing all reasonable scientific doubt as to the effects of the works proposed on the protected site concerned.*"

The High Court and Supreme Court[5] have also provided clarity on how competent authorities should undertake AA[6] and has stated that the following four matters require to be addressed:

- First, an appropriate assessment must identify, in the light of the best scientific knowledge in the field, all aspects of the development project which can, by itself or in combination with other plans or projects, affect (a) European site(s) in the light of its conservation objectives;
- Second, there must be complete, precise and definitive findings and conclusions regarding the previously identified potential effects on any relevant European site(s) this and may not have lacunae or gaps. The requirement for precise and definitive findings and conclusions requires analysis, evaluation and decisions. Further, the reference to findings and conclusions in a scientific context requires both findings following analysis and conclusions following an evaluation each in the light of the best scientific knowledge in the field;

[3] Conservation Objectives are referred to, but not defined, in the Habitats Directive. In Ireland, Conservation Objectives are set for Qualifying Interests (the birds, habitats or other species for which a given European site is selected) and represent the overall target that must be met for that Qualifying Interest to reach or maintain favourable conservation condition in that site and contribute to its favourable conservation status nationally.

[4] *Sweetman v. An Bord Pleanála* [2013] Case C-258/11.

[5] See *Kelly (Eoin) v An Bord Pleanála* [2014] I.E.H.C. 400 where the High Court (Finlay Geoghegan J.) held that section 177V(1) of the Planning and Development Act 2000 (as amended) must be construed so as to give effect to Article 6(3) of the Habitats Directive, and hence, an appropriate assessment carried out under section 177V(1) of the 2000 Act must meet the requirements of Article 6(3) of the Habitats Directive as interpreted by jurisprudence of the CJEU case law; *Connelly v An Bord Pleanála* [2018] 2 I.L.R.M 453; [2018] I.E.S.C. 31.

[6] *Kelly v. An Bord Pleanála* [2014] IEHC 422.

- Third, on the basis of those findings and conclusions, the Competent Authority (here Dún Laoghaire-Rathdown County Council) must be able to determine that no scientific doubt remains as to the absence of the identified potential effects;
- Fourth, where the aforesaid three requirements are satisfied, Dún Laoghaire-Rathdown County Council may determine that the proposed development will not adversely affect the integrity of any relevant European site. Accordingly, an appropriate assessment may only include a determination that the proposed development will not adversely affect the integrity of any relevant European site where upon the basis of complete, precise and definitive findings and conclusions made, Dún Laoghaire-Rathdown County Council decides that no reasonable scientific doubt remains as to the absence of the identified potential effects.

1.4 Methodology

In accordance with the requirements for AA, this NIS assesses the likely effects of the proposed development on the integrity of the European site(s) "screened in" at Stage 1. This assessment is undertaken in six steps, as follows:

1. Step 1 involves gathering all of the information and data that will be necessary for a full and proper assessment. These include, but are not limited to, the details of all phases of the plan or project, environmental data pertaining to the area in which the plan or project is located, e.g. rare or protected habitats and species or invasive species present or likely to be present, and the details of the European sites within the Zone of Influence.
2. Step 2 involves examination of the information gathered in the first step and detailed scientific analysis of the effects of the plan or project on the ecological structure and function of the receiving environment, focussing on European sites.
3. Step 3 evaluates the effects analysed in Step 2 against the Conservation Objectives of the relevant European site or sites, thereby determining whether or not they constitute adverse effects on site integrity.
4. Having established that the plan or project will adversely affect the integrity of one or more European sites, Step 4 involves the development of appropriate mitigation, including, where appropriate, monitoring and enforcement measures, to eliminate or minimise those effects such that they no longer constitute adverse effects on the integrity of the site(s) concerned, as well as consideration of the significance of any residual (post-mitigation) effects.
5. Step 5 involved the assessment of the significance of any residual effects arising from the proposed development in combination with other plans or projects.
6. Step 6 involves the final determination of whether or not the plan or project will adversely affect the integrity of one or more European sites. Notwithstanding the final recommendation made in the NIS, the responsibility for completing this step lies solely with the competent authority.

The following guidance documents informed the assessment methodology:

- EC (2021) *Assessment of plans and projects in relation to Natura 2000 sites: Methodological guidance on the provisions of Article 6(3) and (4) of the Habitats Directive 92/43/EEC*. Environment Directorate-General of the European Commission.
- EC (2018) *Managing Natura 2000 sites: The provisions of Article 6 of the 'Habitats' Directive 92/43/EEC*. European Commission, Brussels.

- DEHLG (2010) *Appropriate Assessment of Plans and Projects in Ireland – Guidance for Planning Authorities*. Department of the Environment, Heritage and Local Government, Dublin.
- NPWS (2010) *Appropriate Assessment under Article 6 of the Habitats Directive: Guidance for Planning Authorities*. Circular Letter NPWS 1/10 & PSSP 2/10. National Parks & Wildlife Service, Department of the Environment, Heritage and Local Government, Dublin.
- OPR (2021) Appropriate Assessment Screening for Development Management. Office of the Planning Regulator, Dublin.

1.5 Ecological Assessment

In order to fully inform this NIS, it was necessary to establish the baseline ecological conditions in the receiving environment, particularly with regard to European sites. This was achieved by undertaking a number of desktop studies and field surveys and engaging in consultations with the relevant stakeholders, including the National Parks & Wildlife Service (NPWS) and Inland Fisheries Ireland (IFI).

1.5.1 Desk Study

During the desk study, the statutory consultee, the NPWS, provided data on designations of sites, habitats and species of conservation interest. This included reporting pursuant to Article 17 of the Habitats Directive[7] (NPWS, 2019a, b, c) and Article 12 of the Birds Directive[8] (Eionet, 2018), as well as the Site Synopses and Conservation Objectives for the relevant European sites.

The desk study involved a thorough review of existing information relating to ecology in the vicinity of the proposed development and in the surrounding area. A number of web-based geographic information systems (GISs) were used to obtain information relating to the natural environment surrounding the proposed development. These included the NPWS *Map Viewer* (NPWS, 2022), which provided information on the locations of protected sites, the National Biodiversity Data Centre's *Biodiversity Maps* (NBDC, 2022), which provided recent and historic records of rare and protected species in the area.

The documents prepared for the previous planning application (Planning Ref.: ABP30694920) were also reviewed as part of the desk study. These documents include, but are not limited to, the following:

- *Ecological Impact Statement for residential development Dalguise House, Monkstown, Co. Dublin* (OPENFIELD Ecology Services, dated March 2020)
- *Screening Report for Appropriate Assessment of residential development on lands at Dalguise House, Monkstown, Co. Dublin* (OPENFIELD Ecology Services, dated March 2020)
- *Waterfowl and Shorebird Survey Results 2020/21 at Lands at Dalguise House, Monkstown, Co. Dublin* (Enviroguide Consulting, dated May 2021)

As with all desk studies, the data considered were 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 outputs of the desk study.

[7] Under Article 17, to report to the European Commission every six years on their status and on the implementation of the measures taken under the Directive.
[8] Every three years, Member States of the European Union are required by Article 12 of the Birds Directive to report on implementation of the Directive. The most recent reporting available is for the period 2008-2012.

1.5.2 Field Surveys

Field surveys were conducted within the study area by Patrick O'Shea and Rachel Heaphy, who were assisted by other members of the Roughan & O'Donovan Environmental team between June 2021 and March 2022.

The surveys adhered to the following guidelines:

- *Ecological Survey Techniques for Protected Flora and Fauna during the Planning of National Road Schemes* (NRA, 2008b).
- *Guidelines for Assessment of Ecological Impacts of National Road Schemes* (NRA, 2009).
- *Best Practice Guidance for Habitat Survey and Mapping* (Smith et al., 2011).

A freshwater macroinvertebrate survey and chemical analysis was undertaken by Dr Bláithín Ní Ainín, of APEM Ireland, on the 12th of October 2021 at two locations along the Stradbrook Stream, one upstream and one downstream of the proposed development. The macroinvertebrate sampling was conducted according to the standard methodology, *Water Quality in Ireland: 2001 – 2003* (Toner et al., 2005). The data summary report, also prepared by Dr Bláithín Ní Ainín, is provided in Appendix C to this NIS.

The surveys with relevance to this NIS are described below.

Habitats

The habitats in the vicinity of the proposed development were surveyed following the Heritage Council's *Best Practice Guidance for Habitat Survey and Mapping* (Smith et al., 2011). Habitats were classified in accordance with *A Guide to Habitats in Ireland* (Fossitt, 2000) and conformity to Annex I-type habitats was evaluated using the *Interpretation Manual of European Union Habitats – EUR28* (EC, 2013). Smith et al. (2011) states that the optimal time of year for habitat surveys is April to September, inclusive, as this is the growing season for most plants. The walkover surveys were undertaken in June and July 2021 i.e. within the optimal season for habitats.

Birds

Breeding bird surveys were carried out following *Countryside Bird Survey Manual (CBS)* (Birdwatch Ireland, 2012) and all species recorded were classified according to British Trust for Ornithology (BTO) species codes. Evidence of breeding was also collected, noting 'possible', 'probable' and 'confirmed' breeding, in line with *Bird Atlas 2007-2011* (BTO, 2011). The breeding bird survey was undertaken in June and July 2021 i.e. within the optimal season for breeding birds.

Invasive Alien Plant Species

As part of the habitat survey, the presence of invasive alien species was considered. The Ecologists had particular regard for invasive species subject to restrictions under Regulation 49 of the Habitats Regulations, including Himalayan Balsam (*Impatiens glandulifera*), Giant-rhubarb (*Gunnera* sp.), Japanese Knotweed (*Fallopia japonica*), Bohemian Knotweed (*Fallopia* × *bohemica*) and Rhododendron (*Rhododendron ponticum*). The surveys were carried out in June and July 2021, the optimum survey period.

Water Quality

The macroinvertebrate and water sampling were undertaken on the 12th October 2021. The macroinvertebrate sampling followed the standard methodology used by the

Environmental Protection Agency (EPA) as described in Toner *et al.,* 2005. The survey was carried out during the optimum survey period (June-October) when flows are likely to be relatively low and temperatures highest. During the macroinvertebrate and water chemical survey, each sampling point was assigned an EPA Q-Value and a Water Framework Directive (WFD) Ecological Status (Table 1.1). The results from both sampling points indicate that the water quality is poor, which is illustrated by the chemical analysis, freshwater macroinvertebrate species assemblage and the presence of sewage fungus.

Table 1.1 Water Quality Results

Watercourse	Q-Value	WFD Ecological Status
Stradbrook Stream (Upstream)	Q3	Poor
Stradbrook Stream (Downstream)	Q3	Poor

1.5.3 Assessment

The ecological baseline which was established by the desk studies and field surveys described above was used to inform the assessment of the potential ecological effects arising from the proposed development, particularly with regard to European sites. Any assumptions that were made in view of gaps in the ecological data were made in accordance with the Precautionary Principle.

2. DESCRIPTION OF THE PROPOSED DEVELOPMENT

2.1 Overview

The Dalguise House Large-scale Residential Development is situated on the 3.58-hectare site of Dalguise House, Monkstown, Co. Dublin. The proposed development includes the demolition of a number of structures on site and the development of 493 no. residential units, 486 no. of which are new build and 7 no. which will be provided in existing buildings. Access to the proposed development will be provided at two points, one at the existing entrance to Dalguise House and a second through Purbeck, which will involve the construction of a new bridge. The development includes the provision for future pedestrian and cycle access with adjoining developments including Arundel, Richmond Park and the former Cheshire Home site, subject to agreement. A full description of the proposed development is provided in Appendix A and drawings for proposed development are presented in Appendix B.

The proposed development is not directly connected with or necessary for the management of any Natura 2000 site.

2.2 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.

2.3 Receiving Natural Environment

The proposed development site 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 site contains good quality habitat for bats and bird species. An established heronry exists in the mature trees along the western site boundary. Grey Heron (*Ardea cinerea*) was recorded on the site on most of the field surveys.

A total of six Fossitt (2000) habitats were identified in the proposed development site. These habitats are listed below.

- Buildings and Artificial Surfaces (BL3)
- Improved Amenity Grassland (GA2)
- Hedgerows (WL1)
- Treelines (WL2)
- Mixed Broadleaved/Conifer Woodland (WD2)
- Scattered Trees and Parkland (WD5)
- Exposed Sand, Gravel or Till (ED1)
- Eroding/Upland Rivers (FW1)

Plate 2.1 Amenity Grassland on the northern boundary of the site, surrounded by tall mature trees

Ringsend Wastewater Treatment Plant, built in 2005, currently discharges treated wastewater into the Lower Liffey Estuary via an outfall approximately 1 km from the facility. It 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. This upgrade will provide additional secondary treatment capacity with nutrient reduction, additional capacity and nutrient reduction to the 24 existing secondary tanks, a new phosphorus recovery process and expansion of the plant's sludge treatment facilities.

Table 2.1 EPA Water Quality Results

Waterbody	Coastal Waterbody WFD 2013 - 2018	Coastal Waterbodies Risk	Transitional Waterbody WFD 2013 - 2018	Transitional Waterbodies Risk
Dublin Bay	Good	Not at Risk	N/A	N/A
Tolka Estuary	N/A	N/A	Moderate	At Risk
North Bull Island	N/A	N/A	Not assigned	Review
Liffey Estuary Lower	N/A	N/A	Good	Review
Liffey Estuary Upper	N/A	N/A	Good	Review

2.4 Likely Effects on the Natural Environment

A number of elements of the proposed development are considered likely to give rise to environmental and ecological impacts. Potential risks to the natural environment arising from the proposed development are as follows:

- Water quality impacts arising from both the construction and the operation of the proposed development have the potential to affect habitats and species directly and indirectly. Accidental pollution events could result in sediment and pollutants entering the Stradbrook Stream which discharges into Dublin Bay.
- Increased foul water supply and storm water overflow incidences at Ringsend WwTP as a result of the proposed development could also result in increased untreated waste water entering Dublin Bay. The potential effects of water quality impacts include habitat degradation and eutrophication.
- Semi-natural and artificial habitats within the footprint of the proposed development which support a variety of flora and fauna will be lost or fragmented during the construction of the proposed development.
- Disturbance will occur during construction and operation of the proposed development as a result of noise, lighting and vibration. During the construction phase, the construction of the apartment buildings, bridge and roads as well as the demolition of existing structures could lead to noise and vibration impacts which could cause disturbance to both birds and other wildlife.

3. IDENTIFICATION OF ADVERSE EFFECTS

3.1 Establishing the Zone of Influence

Section 3.2.3 of DEHLG (2010) outlines the procedure for selecting the European sites to be considered in AA. It states that European sites potentially affected should be identified and listed, bearing in mind the potential for direct, indirect and cumulative effects. It also states that the specific approach in each case is likely to differ depending on the scale and likely effects of the plan or project. However, it advises that the following sites should generally be included:

- All European sites within or immediately adjacent to the plan or project area;
- All European sites within the Zone of Influence of the plan or project; and
- In accordance with the Precautionary Principle, all European sites for which there is doubt as to whether or not they might be significantly affected.

The Zone of Influence (hereafter referred to as the "ZoI") of a plan or project is the geographic extent over which significant ecological effects are likely to occur. In the case of plans, this zone should extend to a distance of 15km in all directions from the boundary of the plan area. In the case of projects, however, the guidance recognises that the likely ZoI must be established on a case-by-case basis, with reference to the following key variables:

- The nature, size and location of the project;
- The sensitivities of the ecological receptors; and,
- The potential for cumulative effects.

For example, in the case of a project that could affect a watercourse, it may be necessary to include the entire upstream and/or downstream catchment in order to capture all European sites with water-dependent features of interest.

Having regard to the above key variables, the ZoI was defined as:

- The proposed development boundary plus a 500 m buffer
- The downstream extent of the Stradbrook Stream
- The Liffey Estuary Lower Transitional Waterbody
- The coastal waterbodies of Dublin Bay from Ireland's Eye to Dalkey Island.

This area was defined as the Zone of Influence and extends to the maximum distance at which potential adverse effects could occur including via hydrological connections i.e. foul water and surface water pathways. In addition, beyond this limit, noise and visual disturbance to birds will not occur.

Seabirds and marine mammals which are Qualifying Interests of European sites beyond the zone of influence, are highly mobile and have the potential to occur within the zone of influence while feeding or on migration. Bottlenose Dolphin, for example, is a Qualifying Interest of five European sites on the west coast of Ireland, however this species is found all around the coasts of Ireland. The potential for ex-situ adverse effects on these species groups is dealt with regards to sea birds and marine mammals (Harbour Porpoise) in Tables 3.2 and 3.8 of this document.

A geographical representation of the ZoI was produced in ArcGIS 10.5.1 using the proposed development boundary and publicly available Ordnance Survey Ireland (OSi) maps. This was used in combination with NPWS shapefiles to identify the boundaries of European sites in relation to the ZoI (Figure 3.1).

It was determined that twelve European sites occur within the ZoI. Table 3.1 describes how these sites are connected to the proposed development. Detailed descriptions of these sites are given in Section 3.2.

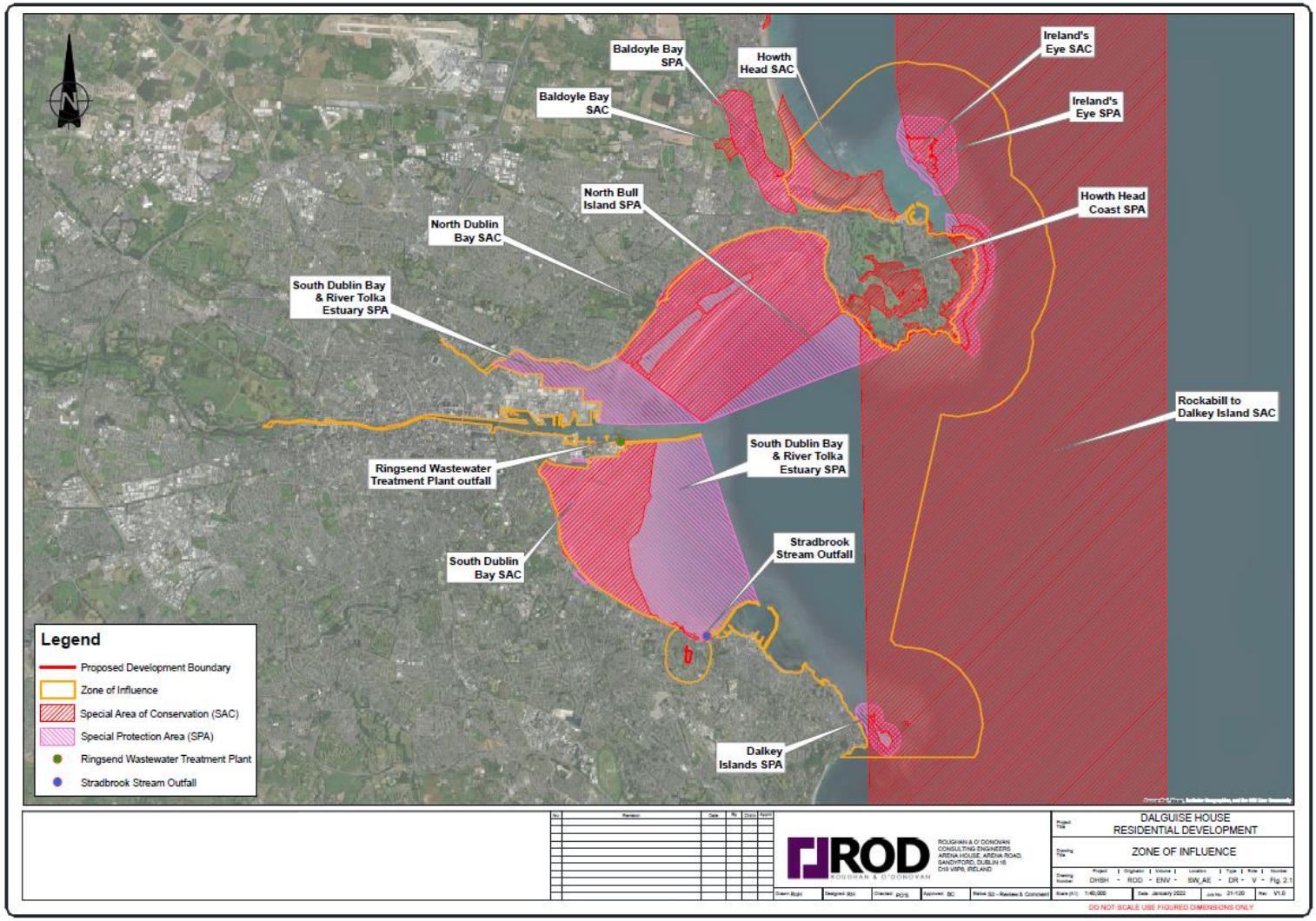

Figure 3.1 Location of European sites in the Zone of Influence

Table 3.1 European sites located within and adjacent to the ZoI

European site [site code]	Are there potential pathways for impacts from the proposed development to this site? Explain.
South Dublin Bay and River Tolka Estuary SPA [004024]	**Yes.** The shortest absolute distance from the proposed development to this site is c. 230 m north to Seapoint Beach. This distance is over land and this location is within of the ZoI. The shortest distance from the proposed development to the site via a hydrological connection is 810 m northeast through the Stradbrook Stream to its outfall on the west side of the West Pier Pumping Station. In addition to this, this site located 650m from the Ringsend Wastewater Treatment Plant outfall hydrologically, at the ESB Dolphin.
South Dublin Bay SAC [000210]	**Yes.** The shortest absolute distance from the proposed development to this site is c. 340 m north to Seapoint Beach. This distance is over land and this location is within the ZoI. The shortest distance from the proposed development to the site via a hydrological connection is 1.1 km north through the Stradbrook Stream and Dublin Bay to Seapoint Beach, which is 200 m west of the stream outfall. In addition to this, the site is hydrologically connected to the Ringsend Wastewater Treatment Plant outfall hydrologically, around the South Bull Wall, over a distance of 3.75km.
North Bull Island SPA [004006]	**Yes.** The shortest absolute distance from the proposed development to this site is 5.8 km north at the North Bull Lighthouse. This distance is over land and this location is within the ZoI. The shortest distance from the proposed development to the site via a hydrological connection is 6.4 km north through the Stradbrook Stream and Dublin Bay to the North Bull Lighthouse. In addition to this, the site is hydrologically connected to the Ringsend Wastewater Treatment Plant outfall at a distance of 2 km.
North Dublin Bay SAC [000206]	**Yes.** The shortest absolute distance from the proposed development to this site is 5.8 km north just beyond the North Bull Lighthouse. This distance is over land and this location is within the ZoI. The shortest distance from the proposed development to the site via a hydrological connection is 6.4 km north through the Stradbrook Stream and Dublin Bay to just beyond the North Bull Lighthouse. In addition to this, the site is hydrologically connected to the Ringsend Wastewater Treatment Plant outfall at a distance of 2 km.
Baldoyle Bay SPA [004016]	**Yes.** The shortest absolute distance from the proposed development to this site is 11.4 km north at Sutton Golf Club. This distance is over land and this location is within the ZoI. The shortest distance from the proposed development to the site via a hydrological connection is 17.6 km through the Stradbrook Stream and Dublin Bay, although many wintering birds are likely to travel across Dublin Bay so ex-situ pathways are considered to exist. In addition to this, the site is hydrologically connected to the Ringsend Wastewater Treatment Plant outfall at a distance of 15.8 km.
Baldoyle Bay SAC [000199]	**No.** The shortest absolute distance from the proposed development to this site is 11.4 km north at Sutton Golf Club. This distance is over land and this location is within the ZoI. There are no potential pathways for adverse effects over land. The shortest distance from the proposed development to the site via a hydrological connection is 16 km through the Stradbrook Stream and Dublin Bay. In addition to this, the site is hydrologically connected to the Ringsend Wastewater Treatment Plant at a distance of 14 km. Given the assimilative capacity of Dublin Bay, any water quality impacts would be negligible by the time they reached this site. Therefore, there are not considered to be any pathways for impact between the proposed development and this site.

European site [site code]	Are there potential pathways for impacts from the proposed development to this site? Explain.
Dalkey Islands SPA	**Yes.** The shortest absolute distance from the proposed development to this site is 4.4 km east beyond Scotsman's Bay. This distance is over land and this location is within the ZoI. The shortest distance from the proposed development to the site via a hydrological connection is 6.1 km northeast through the Stradbrook Stream, around the east of Dún Laoghaire Harbour and off the coast of Dalkey. In addition to this, the site is hydrologically connected to the Ringsend Wastewater Treatment Plant outfall at a distance of 10.1 km.
Rockabill to Dalkey Island SAC	**Yes.** The shortest absolute distance from the proposed development to this site is 4.4 km southeast to the northside of Maiden Rock. This distance is over land and this location is within the ZoI. The shortest distance from the proposed development to the site via a hydrological connection is 5.3 km southeast through the Stradbrook Stream, around the east of Dún Laoghaire Harbour and off the coast of Dalkey. In addition to this, the site is hydrologically connected to the Ringsend Wastewater Treatment Plant outfall at a distance of 6 km.
Howth Head Coast SPA	**Yes.** The shortest absolute distance from the proposed development to this site is 10.3 km northeast to Bailey Lighthouse. This distance is over land and this location is within the ZoI. The shortest distance from the proposed development to the site via a hydrological connection is 10.6 km northeast through the Stradbrook Stream and Dublin Bay to Bailey Lighthouse. In addition to this, the site is hydrologically connected to the Ringsend Wastewater Treatment Plant outfall at a distance of 15.8 km.
Howth Head SAC	**Yes.** The shortest absolute distance from the proposed development to this site is 9 km northeast to Martello Tower, Sutton. This distance is over land and this location is within the ZoI. The shortest distance from the proposed development to the site via a hydrological connection is 9.5 km northeast through the Stradbrook Stream and Dublin Bay to Martello Tower, Sutton. In addition to this, the site is hydrologically connected to the Ringsend Wastewater Treatment Plant outfall at a distance of 6.5 km.
Ireland's Eye SPA	**Yes.** The shortest absolute distance from the proposed development to this site is 13.1 km northeast to the southern perimeter of the site. This distance is over land and this location is within the ZoI. The shortest distance from the proposed development to the site via a hydrological connection is 14.8 km through the Stradbrook Stream and Dublin Bay, although many wintering birds are likely to travel across Dublin Bay so ex-situ pathways are considered to exist. In addition to this, the site is hydrologically connected to Ringsend Wastewater Treatment Plant outfall at a distance of 13 km.
Ireland's Eye SAC	**No.** The shortest absolute distance from the proposed development to this site is 13.6 km northeast to the Thulla. This distance is over land and this location is within the ZoI. There are no potential pathways for adverse effects over land. The shortest distance from the proposed development to the site via a hydrological connection is 15.6 km through the Stradbrook Stream and Dublin Bay. In addition to this, the site is hydrologically connected to the Ringsend Wastewater Treatment Plant outfall at a distance of 13.6 km. Given the assimilative capacity of Dublin Bay, any water quality impacts would be negligible by the time they reached this site. Therefore, there are not considered to be any pathways for impact between the proposed development and this site.

3.2 Site Descriptions

South Dublin Bay and River Tolka Estuary SPA

The description of the South Dublin Bay and River Tolka Estuary SPA provided here is based on the Conservation Objectives (NPWS, 2015a), Site Synopsis (NPWS, 2015b), and Natura 2000 Standard Data Form (NPWS, 2020a) for the site, as well as the Conservation Objectives Supporting Document (NPWS, 2014a).

Qualifying Interests of the Site

[A046] Light-bellied Brent Goose (*Branta bernicla hrota*)

[A130] Oystercatcher (*Haematopus ostralegus*)

[A137] Ringed Plover (*Charadrius hiaticula*)

[A141] Grey Plover (*Pluvialis squatarola*)

[A143] Knot (*Calidris canutus*)

[A144] Sanderling (*Calidris alba*)

[A149] Dunlin (*Calidris alpina*)

[A157] Bar-tailed Godwit (*Limosa lapponica*)

[A162] Redshank (*Tringa totanus*)

[A179] Black-headed Gull (*Chroicocephalus ridibundus*)

[A192] Roseate Tern (*Sterna dougallii*)

[A193] Common Tern (*Sterna hirundo*)

[A194] Arctic Tern (*Sterna paradisaea*)

[A999] Wetlands

Site Overview

This site comprises a substantial part of Dublin Bay. It includes the intertidal area between the River Liffey and Dún Laoghaire and the estuary of the River Tolka to the north of the River Liffey, as well as Booterstown Marsh. A portion of the shallow marine waters of the bay is also included.

The site is of ornithological importance as it supports an internationally important population of Light-bellied Brent Goose and nationally important populations of a further nine wintering species. Furthermore, the site supports a nationally important colony of breeding Common Tern and is an internationally important passage/staging site for three tern species. Notably, four of the species that regularly occur at this site are listed on Annex I of the Birds Directive, namely Bar-tailed Godwit, Common Tern, Arctic Tern and Roseate Tern. Parts of the site are also designated as the Ramsar Convention site "Sandymount Strand/Tolka Estuary".

Being an integral part of the internationally important Dublin Bay complex, the site is important for wintering waterfowl. Although birds regularly commute between the south bay and the north bay, recent studies have shown that certain populations which occur in the south bay spend most of their time there.

An internationally important population of Light-bellied Brent Goose (368) occurs regularly and newly arrived birds in the autumn feed on the Eelgrass bed at the Merrion Gates. At the time of designation, the site supported nationally important numbers of a further nine species: Oystercatcher (1,145), Ringed Plover (161), Grey Plover (45),

Knot (548), Sanderling (321), Dunlin (1,923), Bar-tailed Godwit (766), Redshank (260) and Black-headed Gull (3,040). Other species occurring in smaller numbers include Great Crested Grebe (21), Curlew (127) and Turnstone (52). Little Egret, a species which has recently colonised Ireland, also occurs at this site.

South Dublin Bay is a significant site for wintering gulls, with a nationally important population of Black-headed Gull, but also Common Gull (330) and Herring Gull (348). Mediterranean Gull is also recorded from here, occurring through much of the year, but especially in late winter/spring and again in late summer into winter.

Both Common Tern and Arctic Tern breed in Dublin Docks, on a man-made mooring structure known as the ESB Dolphin – this is included within the site. Small numbers of Common Tern and Arctic Tern were recorded nesting on this dolphin in the 1980s. A survey in 1995 recorded nationally important numbers of Common Tern nesting here (52 pairs). The breeding population of Common Tern at this site has increased, with 216 pairs recorded in 2000. This increase was largely due to the ongoing management of the site for breeding terns. More recent data highlights this site as one of the most important Common Tern sites in the country with over 400 pairs recorded here in 2007.

South Dublin Bay is an important staging/passage site for a number of tern species in the autumn (mostly late July to September). The origin of many of the birds is likely to be the Dublin breeding sites (Rockabill and the Dublin Docks) though numbers suggest that the site is also used by birds from other sites, perhaps outside the state. This site is selected for designation for its autumn tern populations: Roseate Tern (2,000 in 1999), Common Tern (5,000 in 1999) and Arctic Tern (20,000 in 1996).

Sensitivities of the Site and its Qualifying Interests

As this site is mostly comprised of coastal wetlands and is located directly adjacent to a major city and port, expansion of the city and port poses the greatest threat to its integrity. Reclamation of land from the sea, estuary or marsh represents a direct loss of key Qualifying Interests of the site. Roads, urbanisation, human habitation, industrial and commercial activities and discharges present pressures on the site in terms of disturbance and pollution.

Watersports, walkers, horse riding and non-motorised vehicles also cause persistent disturbance to the birds within the site. Angling, particularly bait collection, causes both disturbance to birds and reduces food availability. The site is also subject to some natural eutrophication pressures.

South Dublin Bay SAC

The description of the South Dublin Bay SAC provided here is based on the Conservation Objectives (NPWS, 2013a), Site Synopsis (NPWS, 2015c) and Natura 2000 Standard Data Form (NPWS, 2020b) for the site.

Qualifying Interests of the Site

[1140] Mudflats and sandflats not covered by seawater at low tide

[1210] Annual vegetation of drift lines

[1310] *Salicornia* and other annuals colonising mud and sand

[2110] Embryonic shifting dunes

Site Overview

This site lies south of the River Liffey in Co. Dublin and extends from the South Wall to the west pier at Dún Laoghaire. It is an intertidal site with extensive areas of sand and mudflats. The sediments are predominantly sands but grade to sandy muds near the shore at Merrion Gates. The main channel which drains the area is Cockle Lake.

Several small, sandy beaches with incipient dune formation occur in the northern and western sectors of the site, notably at Poolbeg, Irishtown and Merrion/ Booterstown. The formation at Booterstown is very recent. Drift line vegetation occurs in association with the embryonic and incipient fore dunes. Typically drift lines occur in a band approximately 5 m wide, though at Booterstown this zone is wider in places. The habitat occurs just above the High-Water Mark and below the area of embryonic dune. Species present are Sea Rocket (*Cakile maritima*), Frosted Orache (*Atriplex laciniata*), Spear-leaved Orache (*A. prostrata*), Prickly Saltwort (*Salsola kali*) and Fat Hen (*Chenopodium album*). Also occurring is Sea Sandwort (*Honkenya peploides*), Sea Beet (*Beta vulgaris* subsp. *maritima*) and Annual Sea-blite (*Suaeda maritima*). A small area of pioneer saltmarsh now occurs in the lee of an embryonic sand dune just north of Booterstown Station. This early stage of saltmarsh development is here characterised by the presence of pioneer stands of glassworts (*Salicornia* spp.) occurring below an area of drift line vegetation. As this is of very recent origin, it covers a small area, but ample areas of substrate and shelter are available for the further development of this habitat.

Lugworm (*Arenicola marina*), Cockles (*Cerastoderma edule*) and annelids and other bivalves are frequent throughout the site. The small gastropod *Hydrobia ulvae* occurs on the muddy sands off Merrion Gates.

South Dublin Bay is an important site for waterfowl. Although birds regularly commute between the south bay and the north bay, recent studies have shown that certain populations which occur in the south bay spend most of their time there. The principal species are Oystercatcher (1215), Ringed Plover (120), Sanderling (344), Dunlin (2628) and Redshank (356) (average winter peaks 1996/97 and 1997/98). Up to 100 Turnstones are usual in the south bay during winter. Brent Goose regularly occur in numbers of international importance (average peak 299). Bar-tailed Godwit (565), a species listed on Annex I of the E.U. Birds Directive, also occur.

Large numbers of gulls roost in South Dublin Bay, e.g. 4,500 Black-headed Gulls in February 1990; 500 Common Gulls in February 1991. It is also an important tern roost in the autumn, regularly holding 2000-3000 terns including Roseate Terns, a species listed on Annex I of the E.U. Birds Directive. South Dublin Bay is largely protected as a Special Protection Area.

At low tide the inner parts of the south bay are used for amenity purposes. Bait-digging is a regular activity on the sandy flats. At high tide some areas have windsurfing and jet-skiing.

This site is a fine example of a coastal system, with extensive sand and mudflats, and incipient dune formations. South Dublin Bay is also an internationally important bird site.

Sensitivities of the Site and its Qualifying Interests

Increases to urbanisation, residential and commercial development pose the greatest threats to the integrity of this European site and its associated habitats as these activities and discharges present pressures in terms of disturbance and pollution.

Other threats such as outdoor sports and leisure activities such as walking, horse-riding and non-motorised vehicles often disturb and negatively impact natural habitats. Reclamation of land from the sea, estuary or marsh represent a direct loss of key qualifying interests of the site.

North Bull Island SPA

The description of the North Bull Island SPA provided here is based on the Conservation Objectives (NPWS, 2015d), Site Synopsis (NPWS, 2014b) and Natura 2000 Standard Data Form (NPWS, 2020c) for the site, as well as the Conservation Objectives Supporting Document (NPWS, 2014a).

Site Overview

This site covers all of the inner part of north Dublin Bay, with the seaward boundary extending from the Bull Wall lighthouse across to Drumleck Point at Howth Head. The North Bull Island sand spit is a relatively recent depositional feature, formed as a result of improvements to Dublin Port during the 18th and 19th Centuries. It is c. 5 km long and 1 km wide and runs parallel to the coast between Clontarf and Sutton. Part of the interior of the island has been converted to golf courses.

The North Bull Island SPA is an excellent example of an estuarine complex and is one of the top sites in Ireland for wintering waterfowl. It is of international importance on account of both the total number of waterfowl and the individual populations of Light-bellied Brent Goose, Black-tailed Godwit and Bar-tailed Godwit that use it. Also of significance is the regular presence of several species that are listed on Annex I of the Birds Directive, notably Golden Plover and Bar-tailed Godwit, but also Ruff and Short-eared Owl. North Bull Island is a Ramsar Convention site, and part of the North Bull Island SPA is a Statutory Nature Reserve and a Wildfowl Sanctuary.

Qualifying Interests of the Site

[A046] Light-bellied Brent Goose (*Branta bernicla hrota*)

[A048] Shelduck (*Tadorna tadorna*)

[A052] Teal (*Anas crecca*)

[A054] Pintail (*Anas acuta*)

[A056] Shoveler (*Anas clypeata*)

[A130] Oystercatcher (*Haematopus ostralegus*)

[A140] Golden Plover (*Pluvialis apricaria*)

[A141] Grey Plover (*Pluvialis squatarola*)

[A143] Knot (*Calidris canutus*)

[A144] Sanderling (*Calidris alba*)

[A149] Dunlin (*Calidris alpina*)

[A156] Black-tailed Godwit (*Limosa limosa*)

[A157] Bar-tailed Godwit (*Limosa lapponica*)

[A160] Curlew (*Numenius arquata*)

[A162] Redshank (*Tringa totanus*)

[A169] Turnstone (*Arenaria interpres*)

[A179] Black-headed Gull (*Chroicocephalus ridibundus*)

[A999] Wetlands

Saltmarsh extends along the length of the landward side of the island and provides the main roost site for wintering birds in Dublin Bay. The island shelters two intertidal lagoons which are divided by a solid causeway. These lagoons provide the main feeding grounds for the wintering waterfowl. The sediments of the lagoons are mainly sands with a small and varying mixture of silt and clay. Green algal mats (*Ulva* spp.) are a feature of the flats during summer. These sediments have a rich macro-invertebrate fauna, with high densities of Lugworm (*Arenicola marina*) and Ragworm (*Hediste diversicolor*).

This site is of international importance for waterfowl on the basis that it regularly supports in excess of 20,000 waterfowl. The site supports internationally important populations of three species, Light-bellied Brent Goose (1,548), Black-tailed Godwit (367) and Bar-tailed Godwit (1,529) - all figures are mean peaks for the five winters between 1995/96 and 1999/2000. The site is one of the most important in the country for Light-bellied Brent Goose. A further 14 species have populations of national importance: Shelduck (1,259), Teal (953), Pintail (233), Shoveler (141), Oystercatcher (1,784), Grey Plover (517), Golden Plover (2,033), Knot (2,837), Sanderling (141), Dunlin (4,146), Curlew (937), Redshank (1,431), Turnstone (157) and Black-headed Gull (2,196). The populations of Pintail and Knot are of particular note as they comprise 14% and 10% respectively of the all-Ireland population totals. Other species that occur regularly in winter include Grey Heron, Little Egret, Cormorant, Wigeon, Goldeneye, Red-breasted Merganser, Ringed Plover and Greenshank. Gulls are a feature of the site during winter and, along with the nationally important population of Black-headed Gull (2,196), other species that occur include Common Gull (332) and Herring Gull (331). While some of the birds also frequent South Dublin Bay and the River Tolka Estuary for feeding and/or roosting purposes, the majority remain within the site for much of the winter. The wintering bird populations have been monitored more or less continuously since the late 1960s and the site is now surveyed each winter as part of the larger Dublin Bay complex.

The North Bull Island SPA is a regular site for passage waders, especially Ruff, Curlew Sandpiper and Spotted Redshank. These are mostly observed in single figures in autumn but occasionally in spring or winter. The site formerly had an important colony of Little Tern but breeding has not occurred in recent years. Several pairs of Ringed Plover breed, along with Shelduck in some years. Breeding passerines include Skylark, Meadow Pipit, Stonechat and Reed Bunting. The island is a regular wintering site for Short-eared Owl, with up to 5 present in some winters.

Sensitivities of the Site and its Qualifying Interests

The greatest pressures/threats to the integrity of the North Bull SPA come from the bridge/viaduct located within the site (and the potential for other structures to be built within the site) and from walking, horse riding and non-motorised vehicles within the site. Bait digging/collection, nautical sports and the golf course (all inside the site) and roads, motorways, shipping lanes, continuous urbanisation and industrial or commercial areas (all outside the site) also represent significant pressures/threats to the integrity of this site. Other patterns of habitation within the site represent a lower-level pressure/threat.

North Dublin Bay SAC

The description of the North Dublin Bay SAC provided here is based on the Conservation Objectives (NPWS, 2013c), Site Synopsis (NPWS, 2013d) and Natura 2000 Standard Data Form (NPWS, 2020d) for the site.

Qualifying Interests of the Site

[1140] Tidal mudflats and sandflats not covered by seawater at low tide

[1210] Annual vegetation of drift lines

[1310] *Salicornia* and other annuals colonising mud and sand

[1330] Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*)

[1410] Mediterranean salt meadows (*Juncetalia maritimi*)

[2110] Embryonic shifting dunes

[2120] Shifting dunes along the shoreline with *Ammophila arenaria* (white dunes)

[2130] Fixed coastal dunes with herbaceous vegetation (grey dunes)

[2190] Humid dune slacks

[1395] Petalwort (*Petalophyllum ralfsii*)

Site Overview

This site covers the inner part of north Dublin Bay, the seaward boundary extending from the Bull Wall lighthouse across to the Martello Tower at Howth Head. The North Bull Island is the focal point of this site.

North Bull Island is a sandy spit which formed after the building of the South Wall and Bull Wall in the 18th and 19th centuries. It now extends for about 5 km in length and is up to 1 km wide in places. A well-developed and dynamic dune system stretches along the seaward side of the island. Various types of dunes occur, from fixed dune grassland to pioneer communities on foredunes.

About 1 km from the tip of the island, a large dune slack with a rich flora occurs, usually referred to as the 'Alder Marsh' because of the presence of Alder trees (*Alnus glutinosa*). The water table is very near the surface and is only slightly brackish.

Saltmarsh extends along the length of the landward side of the island. The edge of the marsh is marked by an eroding edge which varies from 20 cm to 60 cm high. The marsh can be zoned into different levels according to the vegetation types present. Towards the tip of the island, the saltmarsh grades naturally into fixed dune vegetation.

The habitat 'annual vegetation of drift lines' is found in places, along the length of Dollymount Strand, with species such as Sea Rocket (*Cakile maritima*), Oraches (*Atriplex* spp.) and Prickly Saltwort (*Salsola kali*).

The island shelters two intertidal lagoons which are divided by a solid causeway. The sediments of the lagoons are mainly sands with a small and varying mixture of silt and clay. The north lagoon has an area known as the "*Salicornia* flat", which is dominated by *Salicornia dolichostachya*, a pioneer glasswort species, and covers about 25 ha. The sediments on the seaward side of North Bull Island are mostly sands. The site extends below the low spring tide mark to include an area of the sublittoral zone.

Three rare plant species which are legally protected under the Flora (Protection) Order, 2015 have been recorded on the North Bull Island. These are Lesser Centaury (*Centaurium pulchellum*), Red Hemp-nettle (*Galeopsis angustifolia*) and Meadow Saxifrage (*Saxifraga granulata*). Two further species listed as threatened in the Red Data Book, Wild Clary/Sage (*Salvia verbenaca*) and Spring Vetch (*Vicia lathyroides*), have also been recorded. A rare liverwort, *Petalophyllum ralfsii*, was first recorded from the North Bull Island in 1874 and has recently been confirmed as still present.

This species is of high conservation value as it is listed on Annex II of the E.U. Habitats Directive. The North Bull is the only known extant site for the species in Ireland away from the western seaboard.

North Dublin Bay is of international importance for waterfowl Some of these species frequent South Dublin Bay and the River Tolka Estuary for feeding and/or roosting purposes (mostly Brent Goose, Oystercatcher, Ringed Plover, Sanderling and Dunlin). The tip of the North Bull Island is a traditional nesting site for Little Tern. A high total of 88 pairs nested in 1987. However, nesting attempts have not been successful since the early 1990s. A well-known population of Irish Hare is resident on the island.

The invertebrates of the North Bull Island have been studied and the island has been shown to contain at least seven species of regional or national importance in Ireland.

The main land uses of this site are amenity activities and nature conservation. The North Bull Island is the main recreational beach in Co. Dublin and is used throughout the year. Much of the land surface of the island is taken up by two golf courses. Two separate Statutory Nature Reserves cover much of the island east of the Bull Wall and the surrounding intertidal flats. The site is used regularly for educational purposes. North Bull Island has been designated a Special Protection Area under the E.U. Birds Directive and it is also a statutory Wildfowl Sanctuary, a Ramsar Convention site, a Biogenetic Reserve, a Biosphere Reserve and a Special Area Amenity Order site.

This site is an excellent example of a coastal site with all the main habitats represented. The site holds good examples of nine habitats that are listed on Annex I of the E.U. Habitats Directive; one of these is listed with priority status. Several of the wintering bird species have populations of international importance, while some of the invertebrates are of national importance. The site contains a number of rare and scarce plants including some which are legally protected. Its proximity to the capital city makes North Dublin Bay an excellent site for educational studies and research.

Sensitivities of the Site and its Qualifying Interests

As this site is located directly adjacent to a major city and port, expansion of the city and port poses the greatest threat to its integrity. Reclamation of land from the sea, estuary or marsh represents a direct loss of key Qualifying Interests of the site. Roads, urbanisation, human habitation, industrial and commercial activities and accumulation of organic material present pressures on the site in terms of disturbance and pollution. Walkers, horse riding and non-motorised vehicles also cause persistent disturbance to the birds within the site.

Baldoyle Bay SPA

The description of the Baldoyle Bay SPA provided here is based on the Conservation Objectives (NPWS, 2013e), Site Synopsis (NPWS, 2014c), and Natura 2000 Standard Data Form (NPWS, 2020e) for the site, as well as the Conservation Objectives Supporting Document (NPWS, 2012).

Site Overview

Baldoyle Bay, located to the north and east of Baldoyle and to the south of Portmarnock, Co. Dublin, is a relatively small, narrow estuary separated from the open sea by a large sand dune system. Two small rivers, the Mayne River and the Sluice River, flow into the inner part of the estuary.

Large areas of intertidal flats are exposed at low tide. These are mostly sands but grade to muds in the inner sheltered parts of the estuary. Extensive areas of Common

Cord-grass (*Spartina anglica*) occur in the inner estuary. Both the Narrow-leaved Eelgrass (*Zostera angustifolia*) and the Dwarf Eelgrass (*Z. noltii*) are also found here.

During summer, the sandflats of the sheltered areas are covered by mats of green algae (*Ulva* spp.). The sediments have a typical macrofauna, with Lugworm (*Arenicola marina*) dominating the sandy flats. Areas of saltmarsh occur near Portmarnock Bridge and at Portmarnock Point, with narrow strips found along other parts of the estuary. Species such as Glasswort (*Salicornia* spp.), Sea-purslane (*Halimione portulacoides*), Sea Plantain (*Plantago maritima*) and Sea Rush (*Juncus maritimus*) are found here.

Baldoyle Bay is an important site for wintering waterfowl, providing good quality feeding areas and roost sites for an excellent diversity of waterfowl species. It supports an internationally important population of Light-bellied Brent Goose (726) and has a further five species with nationally important populations (all figures are mean peaks for the five winters 1995/96 to 1999/2000): Shelduck (147), Ringed Plover (223), Golden Plover (2,120), Grey Plover (200) and Bar-tailed Godwit (353). Other species which occur include Great Crested Grebe (42), Pintail (35), Teal (138), Mallard (46), Common Scoter (61), Oystercatcher (531), Lapwing (524), Knot (189), Dunlin (879), Black-tailed Godwit (113), Curlew (98), Redshank (224), Greenshank (11) and Turnstone (43).

Regular breeding birds include Shelduck, Mallard and Ringed Plover. In autumn, passage migrants such as Curlew Sandpiper, Spotted Redshank and Green Sandpiper are regular in small numbers. Little Egret, a species which has recently colonised Ireland, also occurs at this site.

Baldoyle Bay SPA is of high conservation importance, for supporting internationally important numbers of Light-bellied Brent Goose as well as nationally important populations of a further five species, including Golden Plover and Bar-tailed Godwit, both species that are listed on Annex I of the E.U. Birds Directive. The inner part of the site is a Statutory Nature Reserve and also designated as a wetland of international importance under the Ramsar Convention.

Qualifying Interests of the Site

[A046] Light-bellied Brent Goose (*Branta bernicla hrota*)

[A048] Shelduck (*Tadorna tadorna*)

[A137] Ringed Plover (*Charadrius hiaticula*)

[A140] Golden Plover (*Pluvialis apricaria*)

[A141] Grey Plover (*Pluvialis squatarola*)

[A157] Bar-tailed Godwit (*Limosa lapponica*)

[A999] Wetlands

Sensitivities of the Site and its Qualifying Interests

The greatest pressures/threats to the integrity of the Baldoyle Bay SPA come from Portmarnock Golf Course located within the site and reclamation of land from the sea due to human induced changes in hydraulic conditions. The spread of invasive alien species and fertilisation from agricultural practices also represent significant pressures/threats to the integrity of this site. Pressures from walking, horse riding, non-motorised vehicles and hunting within the site as well as the construction of roads also threaten the integrity of the site.

Dalkey Islands SPA

The description of the Dalkey Islands SPA provided here is based on the Conservation Objectives (NPWS, 2021a), Site Synopsis (NPWS, 2015e) and Natura 2000 Standard Data Form (NPWS, 2020f) for the site, as well as the Conservation Objectives Supporting Document (NPWS, 2013f).

Site Overview

The site comprises Dalkey Island, Lamb Island and Maiden Rock, the intervening rocks and reefs, and the surrounding sea to a distance of 200 m. Dalkey Island, which is the largest in the group, lies c. 400 m off Sorrento Point on the Co. Dublin mainland from which it is separated by a deep channel. The island is low-lying, the highest point of which (c. 15 m) is marked by a Martello Tower. Soil cover consists mainly of a thin peaty layer, though in a few places there are boulder clay deposits. Vegetation cover is low-growing and consists mainly of grasses. Dense patches of Bracken (Pteridium aquilinum) and Hogweed (Heracleum sphondylium) occur in places. Lamb Island lies to the north of Dalkey Island, and at low tide is connected by a line of rocks. It has a thin soil cover and some vegetation, mainly of grasses, Nettles (Urtica dioica) and Hogweed. Further north lies Maiden Rock, a bare angular granite rock up to 5 m high that is devoid of higher plant vegetation.

Dalkey Islands SPA is both a breeding and a staging site for Sterna terns. There is a good history of nesting by terns though success has been variable over the years. Common Tern is the most common species, usually outnumbering Arctic Tern by at least 3:1. Up to 1988, the range given for Common Tern was 15-53 pairs, and for Arctic Tern 'a few' pairs. Also, Roseate Tern attempted nesting in 1986, with 2 pairs recorded. A tern conservation scheme, co-ordinated by BirdWatch Ireland / National Parks and Wildlife Service, began in 1995, with wardening, nestbox deployment and monitoring being carried out. The ultimate aim was to attract Roseate Tern to breed. Numbers of terns increased in subsequent years, though numbers and breeding success is still variable between years. In 2003 62 pairs of Common Tern and 24 pairs of Arctic Tern were recorded. Of great significance is that Roseate Tern has returned, with 5 pairs recorded in 2003 and 11 pairs in 2004 - this is one of only three known sites in the country for this rare species.

The site, along with other parts of south Dublin Bay, is used by the three tern species as a major post-breeding/pre-migration autumn roost area. The site is linked to another important post-breeding/pre-migration autumn tern roost area in Dublin Bay. Birds are present from about late-July to September, with c. 2,000 terns, comprising individuals of all three species, recorded in 1998. The origin of the birds is likely to be the Dublin breeding sites (Rockabill and Dublin Docks) though the numbers recorded suggests that birds from other sites, perhaps outside the State, are also present.

Dalkey Islands SPA is of particular importance as a post-breeding/pre-migration autumn roost area for Roseate Tern, Common Tern and Arctic Tern. The recent nesting by Roseate Tern is highly significant. All three tern species using the site are listed on Annex I of the E.U. Birds Directive.

Qualifying Interests of the Site

[A192] Roseate Tern (*Sterna dougallii*)

[A193] Common Tern (*Sterna hirundo*)

[A194] Arctic Tern (*Sterna paradisaea*)

[A999] Wetlands

Sensitivities of the Site and its Qualifying Interests

The greatest pressures/threats to the integrity of the Dalkey Islands SPA come from urbanised areas and human habitation. These include outdoor sports and leisure activities, walking, horseriding and non-motorised vehicles. Agricultural activities such as grazing from livestock also threaten the integrity of the site.

Rockabill to Dalkey Island SAC

The description of the Rockabill to Dalkey Island SAC provided here is based on the Conservation Objectives (NPWS, 2013g), Site Synopsis (NPWS, 2014d) and Natura 2000 Standard Data Form (NPWS, 2019d) for the site, as well as the Conservation Objectives Supporting Document (NPWS, 2013f).

Site Overview

This site includes a range of dynamic inshore and coastal waters in the western Irish Sea. These include sandy and muddy seabed, reefs, sandbanks and islands. This site extends southwards, in a strip approximately 7 km wide and 40 km in length, from Rockabill, running adjacent to Howth Head, and crosses Dublin Bay to Frazer Bank in south Co. Dublin. The site encompasses Dalkey, Muglins and Rockabill islands.

Reef habitat is uncommon along the eastern seaboard of Ireland due to prevailing geology and hydrographical conditions. Expansive surveys of the Irish coast have indicated that the greatest resource of this habitat within the Irish Sea is found fringing offshore islands which are concentrated along the Dublin coast. A detailed survey of selected suitable islands has shown areas with typical biodiversity for this habitat both intertidally and subtidally. These reefs are subject to strong tidal currents with an abundant supply of suspended matter resulting in good representation of filter feeding fauna such as sponges, anemones and echinoderms.

The area selected for designation represents a key habitat for the Annex II species Harbour Porpoise within the Irish Sea. Population survey data show that porpoise occurrence within the site boundary meets suitable reference values for other designated sites in Ireland. The species occurs year-round within the site and comparatively high group sizes have been recorded. Porpoises with young (i.e. calves) are observed at favourable, typical reference values for the species. Casual and effort-related sighting rates from coastal observation stations are significant for the east coast of Ireland and the latter appear to be relatively stable across all seasons. The selected site contains a wide array of habitats believed to be important for Harbour Porpoise including inshore shallow sand and mudbanks and rocky reefs scoured by strong current flow. The site also supports Common Seal and Grey Seal, for which terrestrial haul-out sites occur in immediate proximity to the site. Bottlenose Dolphins has also occasionally been recorded in the area. A number of other marine mammals have been recorded in this area including Minke, Fin and Killer Whales and Risso's and Common Dolphins.

This site is of conservation importance for reefs, listed on Annex I, and Harbour Porpoise, listed on Annex II, of the E.U. Habitats Directive.

Qualifying Interests of the Site

[1170] Reefs

[1351] Harbour Porpoise (*Phocoena phocoena*)

Sensitivities of the Site and its Qualifying Interests

The greatest pressures/threats to the integrity of the Rockabill to Dalkey Island SAC come from transportation and service corridors, predominantly in the form of shipping lanes, ports and marine constructions. Urbanisation, residential and commercial development increase the risk of noise pollution and discharge into the environment, which greatly effects the integrity of the site. Pressures from professional passive fishing within the site also threaten the integrity of the site.

Howth Head Coast SPA

The description of the Howth Head Coast SPA provided here is based on the Conservation Objectives (NPWS, 2021b), Site Synopsis (NPWS, 2011a) and Natura 2000 Standard Data Form (NPWS, 2020g) for the site.

Site Overview

Howth Head is a rocky headland situated on the northern side of Dublin Bay. The peninsula is composed of Cambrian rock of the Bray Group, the most conspicuous component being quartzite. The site comprises the sea cliffs extending from just east of the Nose of Howth to the tip of the Bailey Lighthouse peninsula. The marine area to a distance of 500 m from the cliff base is included within the site.

The cliffs vary from between about 60 m and 90 m in height, and in places comprise fairly sheer, exposed rock face. Here plants such as Rock Sea-spurrey (*Spergularia rupicola*), Navelwort (*Umbilicus rupestris*), Rock Samphire (*Crithmum maritimum*), English Stonecrop (*Sedum anglicum*) and Biting Stonecrop (*Sedum acre*) are found, along with a good diversity of lichen species.

Howth Head Coast SPA is of high ornithological importance as it supports a nationally important population of Kittiwake. It is also a traditional nesting site for Peregrine Falcon, a species that is listed on Annex I of the E.U. Birds Directive. The site is easily accessible and has important amenity and educational value due to its proximity to Dublin City.

Qualifying Interests of the Site

[A188] Kittiwake (*Rissa tridactyla*)

Sensitivities of the Site and its Qualifying Interests

The greatest pressures/threats to the integrity of the Howth Head Coast SPA come from walking, horse riding and non-motorised vehicles within the site. Natural system modifications such as fire and fire suppression also present pressures to the integrity of the site, although these are not as great as the threats from human intrusions and disturbances.

Howth Head SAC

The description of the Howth Head SAC provided here is based on the Conservation Objectives (NPWS, 2016a), Site Synopsis (NPWS, 2013h) and Natura 2000 Standard Data Form (NPWS, 2018) for the site, as well as the Conservation Objectives Supporting Document (NPWS, 2016b).

Site Overview

Howth Head is a rocky headland situated on the northern side of Dublin Bay. The peninsula is composed of Cambrian slates and quartzites, joined to the mainland by a

post-glacial raised beach. Limestone occurs on the north-west side while glacial drift is deposited against the cliffs in places.

A mosaic of heathland vegetation occurs on the slopes above the sea cliffs and in the area of the summit. This is dominated by Western Gorse (*Ulex gallii*), Heather (*Calluna vulgaris*), Bell Heather (*Erica cinerea*) and localised patches of Bracken (*Pteridium aquilinum*). In more open areas species such as English Stonecrop (*Sedum anglicum*), Wood Sage (*Teucrium scorodonia*) and Navelwort (*Umbilicus rupestris*) occur, along with some areas of bare rock.

A number of Red Data Book plant species, the latter five of which are legally protected under the Flora (Protection) Order, 1999, have been recorded at this site - Green-winged Orchid (*Orchis morio*), Bird's-foot (*Ornithopus perpusillus*), Hairy Violet (*Viola hirta*), Rough Poppy (*Papaver hybridum*), Pennyroyal (*Mentha pulegium*), Heath Cudweed (*Omalotheca sylvatica*) and Betony (*Stachys officinalis*).

Howth Head displays a fine range of natural habitats, including two Annex I habitats, within surprisingly close proximity to Dublin city. The site is also of scientific importance for its seabird colonies, invertebrates and lichens. It also supports populations of at least two legally protected plant species and several other scarce plants.

Qualifying Interests of the Site

[1230] Vegetated sea cliffs of the Atlantic and Baltic coasts

[4030] European dry heaths

Sensitivities of the Site and its Qualifying Interests

The greatest pressures/threats to the integrity of the Howth Head SAC come from the spread of invasive alien species, human activities such as walking, horse riding, non-motorised vehicles. Pressures from natural systems modifications such as burning within the site as well as mining and quarrying also threaten the integrity of the site.

Ireland's Eye SPA

The description of the Ireland's Eye SPA provided here is based on the Conservation Objectives (NPWS, 2021c), Site Synopsis (NPWS, 2011b) and Natura 2000 Standard Data Form (NPWS, 2020h) for the site.

Site Overview

Howth Head is a rocky headland situated on the northern side of Dublin Bay. The peninsula is composed of Cambrian rock of the Bray Group, the most conspicuous component being quartzite. The site comprises the sea cliffs extending from just east of the Nose of Howth to the tip of the Bailey Lighthouse peninsula. The marine area to a distance of 500 m from the cliff base is included within the site.

Qualifying Interests of the Site

[A017] Cormorant (*Phalacrocorax carbo*)

[A184] Herring Gull (*Larus argentatus*)

[A188] Kittiwake (*Rissa tridactyla*)

[A199] Guillemot (*Uria aalge*)

[A200] Razorbill (*Alca torda*)

Sensitivities of the Site and its Qualifying Interests

The greatest pressures/threats to the integrity of the Ireland's Eye SPA come from walking, horse riding and non-motorised vehicles within the site. Biological resource use such as leisure fishing also present pressures to the integrity of the site, although these are not as great as the threats from human intrusions and disturbances.

3.3 Evaluation against Conservation Objectives

Guidance from the European Commission (EC, 2021) explains that "*The description of the site's integrity and the impact assessment should be based on the parameters that determine the conservation objectives and that are specific to the habitats and species of the site and their ecological requirements*".

Following this guidance, the identification of adverse effects potentially arising from the proposed development on the integrity of the European sites identified in Section 3.1 and described in Section 3.2 focusses on and is limited to the Conservation Objectives of those sites. Where no site-specific Conservation Objectives have been prepared, the Attributes and Targets from the same Qualifying Interests in similar European Sites have been used.

Table 3.2 and 3.3 below detail the evaluation of the likely effects of the proposed development in view of the Conservation Objectives of the sites identified in Section 3.1 and described in Section 3.2. As explained in Sections 1.2 and 1.3, the assessment of adverse effects is carried out in view of the Conservation Objectives of the relevant European sites, which are in turn defined by the respective Attributes and Targets. Therefore, the evaluation of whether or not the proposed development will adversely affect each European site (in view of the Conservation Objective in question) is made with regard to these Attributes and Targets.

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Table 3.2 Evaluation of the adverse effects of the proposed development in view of the Conservation Objectives of the South Dublin Bay and River Tolka Estuary SPA [004024]

Qualifying Interest	Conservation Objective as per NPWS (2015a)	Does the proposed development provide for any potential delay or interruption in the achievement of this Conservation Objective, as defined by its Attributes and Targets?	Adverse Effect
Light-bellied Brent Goose (*Branta bernicla hrota*) [A046]	*"To maintain the favourable conservation condition of Light-bellied Brent Goose in South Dublin Bay and River Tolka Estuary SPA"*	The Attributes of these Conservation Objectives focus on "*Population trend*" and "*Distribution*". The site of the proposed development or the habitats adjacent to it do not contain suitable feeding or roosting habitat for these species. Wetland bird species are typically associated with coastal and intertidal habitats. While some species, such as Light-bellied brent Geese are known to feed on amenity grassland, the site of the proposed development is suitable for these species. Light-bellied Brent Geese prefer large open spaces which do not impede their sightlines. The proposed development site does not contain large open areas of amenity grassland with site lines. The front lawn has fences and is dotted with trees. The northern lawn near Purbeck is on a slope. Both of these areas are surrounded by tall trees. This assessment is corroborated by the wintering bird survey (Enviroguide, 2021) that was undertaken from October 2020 – March 2021. The report did not record any Qualifying Interest species on the site, despite significant survey effort, with 36 hours spent surveying over six days. It is noted that Grey Heron nest on the proposed development site but as they are not a Qualifying Interest of any European Site in Dublin Bay, they are not relevant to this NIS. <u>*Construction Phase Impacts*</u> During the construction of the proposed development, there is potential for accidental discharge of sediment and pollutants to reach Dublin Bay which is 810 m downstream via surface water pathways and the Stradbrook Stream. There is no potential for noise, vibration or visual impacts due to the size of the proposed development, the distance between the proposed development site and the SPA, the screening provided by buildings and trees, and the ambient noise levels already present in the area. <u>*Operational Phase Impacts*</u> 1. As described in Section 2.3, Ringsend WwTP is currently overloaded and is being upgraded in order to comply with the Urban Wastewater Treatment Directive. During the operational phase of the proposed development, wastewater will be conveyed to the	Yes
Oystercatcher (*Haematopus ostralegus*) [A130]	*"To maintain the favourable conservation condition of Oystercatcher in South Dublin Bay and River Tolka Estuary SPA"*		Yes
Ringed Plover (*Charadrius hiaticula*) [A137]	*"To maintain the favourable conservation condition of Ringed Plover in South Dublin Bay and River Tolka Estuary SPA"*		Yes
Grey Plover (*Pluvialis squatarola*) [A141]	*"Grey Plover is proposed for removal from the list of Special Conservation Interests for South Dublin Bay and River Tolka Estuary SPA. As a result, a site-specific conservation objective has not been set for this species."*		Yes
Knot (*Calidris canutus*) [A143]	*"To maintain the favourable conservation condition of Knot in South Dublin Bay and River Tolka Estuary SPA"*		Yes

Qualifying Interest	Conservation Objective as per NPWS (2015a)	Does the proposed development provide for any potential delay or interruption in the achievement of this Conservation Objective, as defined by its Attributes and Targets?	Adverse Effect
Sanderling (*Calidris alba*) [A144]	*"To maintain the favourable conservation condition of Sanderling in South Dublin Bay and River Tolka Estuary SPA"*	Ringsend WwTP, which is currently treating wastewater for up to 2 million people. Considering the assimilative capacity of the Liffey Estuary and Dublin Bay, the proposed development will not measurably increase the foul water being supplied to Ringsend WwTP and will not lead to adverse effects. 2. Untreated surface water from the site (i.e. accidental hydrocarbon leaks and subsequent discharge) has the potential to flow into the Stradbrook Stream which could lead to adverse effects on the SPA. 3. During periods of high rainfall, the public surface water drainage system overflows into the foul water drainage system which can then become overloaded, releasing untreated foul water into Dublin Bay from overflows along South Dublin Bay. This will not constitute an adverse effect, as the proposed development will not measurably increase the loading on the system. **Mitigation measures are required to reduce the potential for adverse effects on this European site with regards to the Conservation Objectives for these Qualifying Interests.**	Yes
Dunlin (*Calidris alpina alpina*) [A149]	*"To maintain the favourable conservation condition of Dunlin in South Dublin Bay and River Tolka Estuary SPA"*		Yes
Bar-tailed Godwit (*Limosa lapponica*) [A157]	*"To maintain the favourable conservation condition of Bar-tailed Godwit in South Dublin Bay and River Tolka Estuary SPA"*		Yes
Redshank (*Tringa totanus*) [A162]	*"To maintain the favourable conservation condition of Redshank in South Dublin Bay and River Tolka Estuary SPA"*		Yes
Black-headed Gull (*Chroicocephalus ridibundus*) [A179]	*"To maintain the favourable conservation condition of Black-headed Gull in South Dublin Bay and River Tolka Estuary SPA"*		Yes
Roseate Tern (*Sterna dougallii*) [A192]	*"To maintain the favourable conservation condition of Roseate Tern in South Dublin Bay and River Tolka Estuary SPA"*	The Attributes of these Conservation Objectives focus on "*Passage Population*", "*Distribution*", *"Prey biomass availability", "Barriers to connectivity"* and *"Disturbance at roosting site"*. As explained above, the site of the proposed development or the habitats adjacent to it do not contain suitable habitat feeding, roosting or nesting habitat for these species.	Yes

Qualifying Interest	Conservation Objective as per NPWS (2015a)	Does the proposed development provide for any potential delay or interruption in the achievement of this Conservation Objective, as defined by its Attributes and Targets?	Adverse Effect
Common Tern (*Sterna hirundo*) [A193]	*"To maintain the favourable conservation condition of Common Tern in South Dublin Bay and River Tolka Estuary SPA"*	*Construction Phase Impacts* During the construction of the proposed development, there is potential for accidental discharge of sediment and pollutants to reach Dublin Bay which is 810 m downstream via surface water pathways and the Stradbrook Stream. There is no potential for noise, vibration or visual impacts due to the size of the proposed development, the distance between the proposed development site and the SPA, the screening provided by buildings and trees, and the ambient noise levels already present in the area. *Operational Phase Impacts* 1. As described in Section 2.3, Ringsend WwTP is currently being upgraded in order to comply with the Urban Wastewater Treatment Directive. During the operational phase of the proposed development, wastewater will be conveyed to the Ringsend WwTP, which is currently treating wastewater for up to 2 million people. Considering this as well as the assimilative capacity of Dublin Bay, the proposed development will not measurably increase the foul water being supplied to Ringsend WwTP. 2. Untreated surface water from the site (i.e. accidental hydrocarbon leaks and subsequent discharge) has the potential to flow into the Stradbrook Stream which could lead to adverse effects on the SPA. 3. During periods of high rainfall, the public surface water drainage system overflows into the foul water drainage system which can then become overloaded, releasing untreated foul water into Dublin Bay from overflows along South Dublin Bay. This will not constitute an adverse effect, as the proposed development will not measurably increase the loading on the system. **Therefore, mitigation measures are required to reduce the potential for adverse effects on this European site with regards to the Conservation Objectives for these Qualifying Interests.**	Yes
Arctic Tern (*Sterna paradisaea*) [A194]	*"To maintain the favourable conservation condition of Arctic Tern in South Dublin Bay and River Tolka Estuary SPA"*		Yes

Qualifying Interest	Conservation Objective as per NPWS (2015a)	Does the proposed development provide for any potential delay or interruption in the achievement of this Conservation Objective, as defined by its Attributes and Targets?	Adverse Effect
Wetlands [A999]	*"To maintain the favourable conservation condition of the wetland habitat in South Dublin Bay and River Tolka Estuary SPA as a resource for the regularly occurring migratory waterbirds that utilise it"*	The Conservation Objective for Wetlands is defined by a single Attribute, namely "*Habitat area*", the Target for which is "*The permanent area occupied by the wetland habitat should be stable and not significantly less than the area of 2,192 hectares, other than that occurring from natural patterns of variation*". **As the proposed development does not provide for any reduction in the permanent area of this habitat within the site, it has no potential to delay or interrupt the achievement of this Conservation Objective.**	No

Table 3.3 Evaluation of the adverse effects of the proposed development in view of the Conservation Objectives of the South Dublin Bay SAC [000210]

Qualifying Interest	Conservation Objective as per NPWS (2013a)	Does the proposed development provide for any potential delay or interruption in the achievement of this Conservation Objective, as defined by its Attributes and Targets?	Adverse Effect
Mudflats and sandflats not covered by seawater at low tide [1140]	*"To maintain the favourable conservation condition of Mudflats and sandflats not covered by seawater at low tide in South Dublin Bay SAC"*	The Attributes of this Conservation Objective focuses on "*Habitat Area*", "*Habitat Extent*", *"Community Structure: Zostera density", "Community Distribution"*. Mudflats and sandflats not covered by seawater at low tide are located at Monkstown DART station close to the Stradbrook Stream outfall (NPWS, 2013a). *Construction Phase Impacts* During the construction of the proposed development, there is potential for accidental discharge of sediment and pollutants to impact this habitat in Dublin Bay which is 810 m downstream via surface water pathways and the Stradbrook Stream. *Operational Phase Impacts* 1. . As described in Section 2.3, Ringsend WwTP is currently being upgraded in order to comply with the Urban Wastewater Treatment Directive. During the operational phase of the proposed development, wastewater will be conveyed to the Ringsend WwTP, which is currently treating wastewater for up to 2 million people. Considering this as well as the assimilative capacity of Dublin Bay, the proposed development will not measurably increase the foul water being supplied to Ringsend WwTP. 2. Untreated surface water from the site (i.e. accidental hydrocarbon leaks and subsequent discharge) has the potential to flow into the Stradbrook Stream which could lead to adverse effects on the SAC. 3. During periods of high rainfall, the public surface water drainage system overflows into the foul water drainage system which can then become overloaded, releasing untreated foul water into Dublin Bay from overflows along South Dublin Bay. This will not constitute an adverse effect, as the proposed development will not measurably increase the loading on the system.	Yes

Qualifying Interest	Conservation Objective as per NPWS (2013a)	Does the proposed development provide for any potential delay or interruption in the achievement of this Conservation Objective, as defined by its Attributes and Targets?	Adverse Effect
		Therefore, mitigation measures are required to reduce the potential for adverse effects on this European site with regards to the Conservation Objectives for this Qualifying Interest.	
Annual vegetation of drift lines [1210]	*"To maintain or restore the favourable conservation condition of Annual vegetation of drift lines in South Dublin Bay SAC".* Attributes and Targets for this Qualifying Interest have been taken from the Conservation Objective for Annual vegetation of drift lines in the North Dublin Bay SAC, which is to restore the favourable conservation condition of this Qualifying Interest (NPWS, 2013b).	The location of Annual vegetation of drift lines within the South Dublin Bay SAC is unknown as it has not been mapped. In line with the Precautionary Principle, this Qualifying Interest is assumed to be present in suitable habitat close to the Stradbrook Stream outfall. The Attributes of this Conservation Objective focuses on "*Habitat area*", "*Habitat distribution*", *"Physical structure", "Vegetation structure* and *"Vegetation composition"*. Annual vegetation of drift lines are a terrestrial habitat and thus have no hydrological connection to the proposed development. **Therefore, there is no pathway for impacts between the proposed development and Annual vegetation of drift lines. Therefore, the proposed development will not adversely affect the South Dublin Bay SAC, in view of its Conservation Objective for Annual vegetation of drift lines.**	No
***Salicornia* and other annuals colonising mud and sand [1310]**	*"To maintain or restore the favourable conservation condition of* Salicornia *and other annuals colonizing mud and sand in South Dublin Bay SAC",* Attributes and Targets for this Qualifying Interest have been taken from the Conservation Objective for Salicornia and other annuals colonising mud and sand in the North Dublin Bay SAC, which is to restore the favourable conservation	The closest known location of *Salicornia* and other annuals colonising mud and sand habitat within the South Dublin Bay SAC is in Booterstown Marsh (McCorry & Ryle, 2009). In line with the Precautionary Principle, this habitat is assumed to be present in the intertidal areas near the Stradbrook Stream outfall. The Attributes of these Conservation Objectives focus on "*Habitat area*", "*Habitat distribution*", *"Physical structure", "Vegetation structure* and *"Vegetation composition"*. <u>*Construction Phase Impacts*</u> During the construction of the proposed development, there is potential for accidental discharge of sediment and pollutants to impact this habitat in Dublin Bay which is 810 m downstream via surface water pathways and the Stradbrook Stream.	Yes

Qualifying Interest	Conservation Objective as per NPWS (2013a)	Does the proposed development provide for any potential delay or interruption in the achievement of this Conservation Objective, as defined by its Attributes and Targets?	Adverse Effect
	condition of this Qualifying Interest (NPWS, 2013b).	*Operational Phase Impacts* 1. As described in Section 2.3, Ringsend WwTP is currently being upgraded in order to comply with the Urban Wastewater Treatment Directive. During the operational phase of the proposed development, wastewater will be conveyed to the Ringsend WwTP, which is currently treating wastewater for up to 2 million people. Considering this as well as the assimilative capacity of Dublin Bay, the proposed development will not measurably increase the foul water being supplied to Ringsend WwTP. 2. Untreated surface water from the site (i.e. accidental hydrocarbon leaks and subsequent discharge) has the potential to flow into the Stradbrook Stream which could lead to adverse effects on the SAC. 3. During periods of high rainfall, the public surface water drainage system overflows into the foul water drainage system which can then become overloaded, releasing untreated foul water into Dublin Bay from overflows along South Dublin Bay. This will not constitute an adverse effect, as the proposed development will not measurably increase the loading on the system. **Therefore, mitigation measures are required to reduce the potential for adverse effects on this European site with regards to the Conservation Objectives for this Qualifying Interest.**	
Embryonic shifting dunes [2110]	*"To restore the favourable conservation condition of Embryonic shifting dunes in South Dublin Bay SAC".* Attributes and Targets for this Qualifying Interest have been taken from the Conservation Objective for Embryonic shifting dunes in the North Dublin Bay SAC, which is to restore the	The closest known location of Embryonic shifting dunes habitat within the South Dublin Bay SAC is in just north of Booterstown station (NPWS, 2015a). In line with the Precautionary Principle, this Qualifying Interest is assumed to be present in suitable habitat close to outfall locations along the South Dublin Bay. As per the North Dublin Bay SAC, the Attributes of these Conservation Objectives focus on "*Habitat area*", "*Habitat distribution*", *"Physical structure", "Vegetation structure* and *"Vegetation composition"*.	No

Qualifying Interest	Conservation Objective as per NPWS (2013a)	Does the proposed development provide for any potential delay or interruption in the achievement of this Conservation Objective, as defined by its Attributes and Targets?	Adverse Effect
	favourable conservation condition of this Qualifying Interest (NPWS, 2013b).	Embryonic shifting dunes are a terrestrial habitat and thus have no hydrological connection to the proposed development. **There is no pathway for impacts between the proposed development and this qualifying interest. Therefore, the proposed development will not adversely affect the South Dublin Bay SAC, in view of its Conservation Objectives and mitigation measures are not required.**	

Table 3.4 Evaluation of the adverse effects of the proposed development in view of the Conservation Objectives of North Bull Island SPA [004006]

Qualifying Interest	Conservation Objective as per NPWS (2015d)	Does the proposed development provide for any potential delay or interruption in the achievement of this Conservation Objective, as defined by its Attributes and Targets?	Adverse Effect
Light-bellied Brent Goose (*Branta bernicla hrota*) [A046]	*"To maintain the favourable conservation condition of Light-bellied Brent Goose in North Bull Island SPA"*	The Attributes of these Conservation Objectives focus on "*Population trend*" and "*Distribution*". As explained in Table 3.2, the site of the proposed development or the habitats adjacent to it do not contain suitable habitat feeding, roosting or nesting habitat for these species. <u>*Construction Phase Impacts*</u> During the construction of the proposed development, there is potential for accidental discharge of sediment and pollutants to reach Dublin Bay via the Stradbrook Stream. However, considering the distance between the proposed development site and the assimilative capacity of Dublin Bay, any water quality impacts would have dissipated by the time they reached the North Bull Island SPA. There is no potential for noise and vibration impacts to cause disturbance to these species in the North Bull Island SPA due to the size of the proposed development, the 5.8 km distance and the ambient noise levels already present. <u>*Operational Phase Impacts*</u> 1. As described in Section 2.3, Ringsend WwTP is currently being upgraded in order to comply with the Urban Wastewater Treatment Directive. During the operational phase of the proposed development, wastewater will be conveyed to the Ringsend WwTP, which is currently treating wastewater for up to 2 million people. Considering this as well as the assimilative capacity of Dublin Bay, the proposed development will not measurably increase the foul water being supplied to Ringsend WwTP. 2. Untreated surface water from the site (i.e. accidental hydrocarbon leaks) has the potential to flow into the Stradbrook Stream and eventually into Dublin Bay. However, given the location of this site to the proposed development via the Stradbrook Stream, and the assimilative capacity of Dublin Bay, potential adverse effects can be excluded.	No
Shelduck (*Tadorna tadorna*) [A048]	*"To maintain the favourable conservation condition of Shelduck in North Bull Island SPA"*		No
Teal (*Anas crecca*) [A052]	*"To maintain the favourable conservation condition of Teal in North Bull Island SPA"*		No
Pintail (*Anas acuta*) [A054]	*"To maintain the favourable conservation condition of Pintail in North Bull Island SPA"*		No
Shoveler (*Anas clypeata*) [A056]	*"To maintain the favourable conservation condition of Shoveler in North Bull Island SPA"*		No
Oystercatcher (*Haematopus ostralegus*) [A130]	*"To maintain the favourable conservation condition of Oystercatcher in North Bull Island SPA"*		No
Golden Plover (*Pluvialis apricaria*) [A140]	*"To maintain the favourable conservation condition of Grey Plover in North Bull Island SPA"*		No

Qualifying Interest	Conservation Objective as per NPWS (2015d)	Does the proposed development provide for any potential delay or interruption in the achievement of this Conservation Objective, as defined by its Attributes and Targets?	Adverse Effect
Grey Plover (*Pluvialis squatarola*) [A141]	*"To maintain the favourable conservation condition of Grey Plover in North Bull Island SPA"*	3. During periods of high rainfall, the public surface water drainage system overflows into the foul water drainage system which can then become overloaded, releasing untreated foul water into Dublin Bay from overflows along South Dublin Bay. This will not constitute an adverse effect, as the proposed development will not measurably increase the loading on the system. **There is no pathway for impacts between the proposed development and these qualifying interests. Therefore, the proposed development will not adversely affect the North Bull Island SPA, in view of its Conservation Objectives and mitigation measures are not required.**	No
Knot (*Calidris canutus*) [A143]	*"To maintain the favourable conservation condition of Knot in North Bull Island SPA"*		No
Sanderling (*Calidris alba*) [A144]	*"To maintain the favourable conservation condition of Sanderling in North Bull Island SPA"*		No
Dunlin (*Calidris alpina alpina*) [A149]	*"To maintain the favourable conservation condition of Dunlin in North Bull Island SPA"*		No
Black-tailed Godwit (*Limosa limosa*) [A156]	*"To maintain the favourable conservation condition of Black-tailed Godwit in North Bull Island SPA"*		No
Bar-tailed Godwit (*Limosa lapponica*) [A157]	*"To maintain the favourable conservation condition of Bar-tailed Godwit in North Bull Island SPA"*		No
Curlew (*Numenius arquata*) [A160]	*"To maintain the favourable conservation condition of Curlew in North Bull Island SPA"*		No

Qualifying Interest	Conservation Objective as per NPWS (2015d)	Does the proposed development provide for any potential delay or interruption in the achievement of this Conservation Objective, as defined by its Attributes and Targets?	Adverse Effect
Redshank (*Tringa totanus*) [A162]	*"To maintain the favourable conservation condition of Redshank in North Bull Island SPA"*		No
Turnstone (*Arenaria interpres*) [A169]	*"To maintain the favourable conservation condition of Turnstone in North Bull Island SPA"*		No
Black-headed Gull (*Chroicocephalus ridibundus*) [A179]	*"To maintain the favourable conservation condition of Black-headed Gull in North Bull Island SPA"*		No
Wetlands [A999]	*"To maintain the favourable conservation condition of the wetland habitat in North Bull Island SPA as a resource for the regularly occurring migratory waterbirds that utilise it"*	The Conservation Objective for Wetlands is defined by a single Attribute, namely "Habitat area", the Target for which is "*The permanent area occupied by the wetland habitat should be stable and not significantly less than the area of 1,713 hectares, other than that occurring from natural patterns of variation*". As the proposed development does not provide for any reduction in the permanent area of this habitat within the site, it has no potential to delay or interrupt the achievement of this Conservation Objective. **Therefore, it can be concluded beyond reasonable scientific doubt that the proposed development will not significantly affect this European site in view of its Conservation Objectives for this Qualifying Interest.**	No

Table 3.5 Evaluation of the adverse effects of the proposed development in view of the Conservation Objectives of the North Dublin Bay SAC [000206]

Qualifying Interest	Conservation Objective as per NPWS (2013c)	Does the proposed development provide for any potential delay or interruption in the achievement of this Conservation Objective, as defined by its Attributes and Targets?	Adverse Effect
Mudflats and sandflats not covered by seawater at low tide [1140]	*"To maintain the favourable conservation condition of Mudflats and sandflats not covered by seawater at low tide in North Dublin Bay SAC"*	The Attributes of this Conservation Objective focuses on "*Habitat Area*", "*Community Extent*"*, "Community Structure:* Mytilus edulis *density", "Community Distribution"*. Mudflats and sandflats not covered by seawater at low tide are located at the south-eastern side of Dollymount Strand on Bull Island (NPWS, 2013c). *Construction Phase Impacts* During the construction of the proposed development, there is potential for accidental discharge of sediment and pollutants to reach Dublin Bay via the Stradbrook Stream. However, considering the distance between the proposed development site and the assimilative capacity of Dublin Bay, any water quality impacts would have dissipated by the time they reached the North Dublin Bay SAC. *Operational Phase Impacts* 1. As described in Section 2.3, Ringsend WwTP is currently being upgraded in order to comply with the Urban Wastewater Treatment Directive. During the operational phase of the proposed development, wastewater will be conveyed to the Ringsend WwTP, which is currently treating wastewater for up to 2 million people. Considering this as well as the assimilative capacity of Dublin Bay, the proposed development will not measurably increase the foul water being supplied to Ringsend WwTP. 2. Untreated surface water from the site (i.e. accidental hydrocarbon leaks) has the potential to flow into the Stradbrook Stream and eventually into Dublin Bay. However, given the location of this site to the proposed development via the Stradbrook Stream, and the assimilative capacity of Dublin Bay, potential adverse effects can be excluded. 3. During periods of high rainfall, the public surface water drainage system overflows into the foul water drainage system which can then become overloaded, releasing untreated foul water into Dublin Bay from overflows along South Dublin Bay. This will not constitute	No

Qualifying Interest	Conservation Objective as per NPWS (2013c)	Does the proposed development provide for any potential delay or interruption in the achievement of this Conservation Objective, as defined by its Attributes and Targets?	Adverse Effect
		an adverse effect, as the proposed development will not measurably increase the loading on the system. **There is no pathway for impacts between the proposed development and these qualifying interests. Therefore, the proposed development will not adversely affect the North Dublin Bay SAC, in view of its Conservation Objectives and mitigation measures are not required.**	
Annual vegetation of drift lines [1210]	*"To restore the favourable conservation condition of Annual vegetation of drift lines in North Dublin Bay SAC"*	The location of Annual vegetation of drift lines within the North Dublin Bay SAC is unknown as it has not been mapped. In line with the Precautionary Principle, this Qualifying Interest is assumed to be present in suitable habitat close to the Ringsend WwTP outfall location. The Attributes of this Conservation Objective focuses on "*Habitat area*", "*Habitat distribution*", *"Physical structure", "Vegetation structure* and *"Vegetation composition"*. Annual vegetation of drift lines are a terrestrial habitat and thus have no hydrological connection to the proposed development. **Therefore, there is no pathway for impacts between the proposed development and Annual vegetation of drift lines. Therefore, the proposed development will not adversely affect the North Dublin Bay SAC, in view of its Conservation Objective for Annual vegetation of drift lines.**	No
***Salicornia* and other annuals colonising mud and sand [1310]**	*"To restore the favourable conservation condition of* Salicornia *and other annuals colonizing mud and sand in North Dublin Bay SAC"*	The Attributes of this Conservation Objective focuses on "*Habitat Area*", *"Habitat Distribution", "Physical Structure", "Vegetation Structure"* and *"Vegetation Composition"*. *Salicornia* and other annuals colonising mud and sand are located at the north-western side of Bull Island (NPWS, 2013c). <u>*Construction Phase Impacts*</u> During the construction of the proposed development, there is potential for accidental discharge of sediment and pollutants to reach Dublin Bay via the Stradbrook Stream. However, considering the distance between the proposed development site and the assimilative capacity of Dublin Bay, any water quality impacts would have dissipated by the time they reached the North Dublin Bay.	No

Qualifying Interest	Conservation Objective as per NPWS (2013c)	Does the proposed development provide for any potential delay or interruption in the achievement of this Conservation Objective, as defined by its Attributes and Targets?	Adverse Effect
		Operational Phase Impacts 1. As described in Section 2.3, Ringsend WwTP is currently being upgraded in order to comply with the Urban Wastewater Treatment Directive. During the operational phase of the proposed development, wastewater will be conveyed to the Ringsend WwTP, which is currently treating wastewater for up to 2 million people. Considering this as well as the assimilative capacity of Dublin Bay, the proposed development will not measurably increase the foul water being supplied to Ringsend WwTP. 2. Untreated surface water from the site (i.e. accidental hydrocarbon leaks) has the potential to flow into the Stradbrook Stream and eventually into Dublin Bay. However, given the location of this site to the proposed development via the Stradbrook Stream, and the assimilative capacity of Dublin Bay, potential adverse effects can be excluded. 3. During periods of high rainfall, the public surface water drainage system overflows into the foul water drainage system which can then become overloaded, releasing untreated foul water into Dublin Bay from overflows along South Dublin Bay. This will not constitute an adverse effect, as the proposed development will not measurably increase the loading on the system. **There is no pathway for impacts between the proposed development and these qualifying interests. Therefore, the proposed development will not adversely affect the North Dublin Bay SAC, in view of its Conservation Objectives and mitigation measures are not required.**	
Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) [1330]	*"To maintain the favourable conservation condition of Atlantic Salt meadows (*Glauco-Puccinellietalia maritimae*) in North Dublin Bay SAC"*	The Attributes of this Conservation Objective focuses on "*Habitat Area*", *"Habitat Distribution", "Physical Structure", "Vegetation Structure"* and *"Vegetation Composition"*. Atlantic Salt meadows *(Glauco-Puccinellietalia maritimae)* and Mediterranean salt meadows *(Juncetalia maritime)* are located at the north-western and north-eastern sides of Bull Island, respectively (NPWS, 2013c). *Construction Phase Impacts*	No
Mediterranean salt meadows	*"To maintain the favourable conservation condition of*		No

Qualifying Interest	Conservation Objective as per NPWS (2013c)	Does the proposed development provide for any potential delay or interruption in the achievement of this Conservation Objective, as defined by its Attributes and Targets?	Adverse Effect
(*Juncetalia maritime)* [1410]	*Mediterranean salt meadows (*Juncetalia maritime*) in North Dublin Bay SAC"*	During the construction of the proposed development, there is potential for accidental discharge of sediment and pollutants to reach Dublin Bay via the Stradbrook Stream. However, considering the distance between the proposed development site and the assimilative capacity of Dublin Bay, any water quality impacts would have dissipated by the time they reached the North Dublin Bay. <u>*Operational Phase Impacts*</u> 1. As described in Section 2.3, Ringsend WwTP is currently being upgraded in order to comply with the Urban Wastewater Treatment Directive. During the operational phase of the proposed development, wastewater will be conveyed to the Ringsend WwTP, which is currently treating wastewater for up to 2 million people. Considering this as well as the assimilative capacity of Dublin Bay, the proposed development will not measurably increase the foul water being supplied to Ringsend WwTP. 2. Untreated surface water from the site (i.e. accidental hydrocarbon leaks) has the potential to flow into the Stradbrook Stream and eventually into Dublin Bay. However, given the location of this site to the proposed development via the Stradbrook Stream, and the assimilative capacity of Dublin Bay, potential adverse effects can be excluded. 3. During periods of high rainfall, the public surface water drainage system overflows into the foul water drainage system which can then become overloaded, releasing untreated foul water into Dublin Bay from overflows along South Dublin Bay. This will not constitute an adverse effect, as the proposed development will not measurably increase the loading on the system. **There is no pathway for impacts between the proposed development and these qualifying interests. Therefore, the proposed development will not adversely affect the North Dublin Bay SAC, in view of its Conservation Objectives and mitigation measures are not required.**	
Embryonic shifting dunes [2110]	*"To restore the favourable conservation condition of*	The Attributes of these Conservation Objectives focuses on "*Habitat Area*", *"Habitat Distribution", "Physical Structure", "Vegetation Structure"* and *"Vegetation Composition"*.	No

Qualifying Interest	Conservation Objective as per NPWS (2013c)	Does the proposed development provide for any potential delay or interruption in the achievement of this Conservation Objective, as defined by its Attributes and Targets?	Adverse Effect
	Embryonic shifting dunes in North Dublin Bay SAC"	These Qualifying Interests are located at the south-eastern side of Bull Island (NPWS, 2013c). These are terrestrial habitats and thus have no hydrological connection to the proposed development. **Therefore, there is no pathway for impacts between the proposed development and these Qualifying Interests. Therefore, the proposed development will not adversely affect the North Dublin Bay SAC, in view of the Conservation Objective for these Qualifying Interests.**	
Shifting dunes along the shoreline with *Ammophila arenaria* (white dunes) [2120]	*"To restore the favourable conservation condition of Shifting dunes along the shoreline with* Ammophila arenaria *('white dunes') in North Dublin Bay SAC"*		
Fixed coastal dunes with herbaceous vegetation (grey dune) [2130]	*"To restore the favourable conservation condition of fixed coastal dunes with herbaceous vegetation ('grey dunes') in North Dublin Bay SAC"*		
Humid dune slacks [2190]	*"To restore the favourable conservation condition of Humid dune slacks in North Dublin Bay SAC"*		
Petalwort *Petalophyllum ralfsii [1395]*	*"To maintain the favourable conservation condition of Petalwort in North Dublin Bay SAC"*	The Attributes of this Conservation Objective focuses on "*Distribution of populations*", *"Population size", "Area of suitable habitat", "Hydrological conditions"* and *"Vegetation Structure".* Petalwort are located among the fixed dunes at the north-eastern side of Bull Island among (NPWS, 2013c). Petalwort is a terrestrial species and thus has no hydrological connection to the proposed development. **Therefore, there is no pathway for impacts between the proposed development and Petalwort. Therefore, the proposed development will not adversely affect the North Dublin Bay SAC, in view of its Conservation Objective for Petalwort.**	No

Table 3.6 Evaluation of the adverse effects of the proposed development in view of the Conservation Objectives of the Baldoyle Bay SPA [004016].

Qualifying Interest	Conservation Objective as per NPWS (2013e)	Does the proposed development provide for any potential delay or interruption in the achievement of this Conservation Objective, as defined by its Attributes and Targets?	Adverse Effect
Light-bellied Brent Goose (*Branta bernicla hrota*) [A046]	*"To maintain the favourable conservation condition of Light-bellied Brent Goose in Baldoyle Bay SPA"*	The Attributes of these Conservation Objectives focus on "*Population trend*" and "*Distribution*". As explained in Table 3.2, the site of the proposed development or the habitats adjacent to it do not contain suitable habitat feeding, roosting or nesting habitat for these species. <u>*Construction Phase Impacts*</u> During the construction of the proposed development, there is potential for accidental discharge of sediment and pollutants to reach Dublin Bay via the Stradbrook Stream. However, considering the distance between the proposed development site and the assimilative capacity of Dublin Bay, any water quality impacts would have dissipated by the time they reached the Baldoyle Bay SPA. There is no potential for noise and vibration impacts to cause disturbance to these species in the Baldoyle Bay SPA due to the size of the proposed development, the distance and the ambient noise levels already present. <u>*Operational Phase Impacts*</u> 1. . As described in Section 2.3, Ringsend WwTP is currently being upgraded in order to comply with the Urban Wastewater Treatment Directive. During the operational phase of the proposed development, wastewater will be conveyed to the Ringsend WwTP, which is currently treating wastewater for up to 2 million people. Considering this as well as the	No
Shelduck (*Tadorna tadorna*) [A048]	*"To maintain the favourable conservation condition of Shelduck in Baldoyle Bay SPA"*		No
Ringed Plover (*Charadrius hiaticula*) [A137]	*"To maintain the favourable conservation condition of Ringed Plover in Baldoyle Bay SPA"*		No
Golden Plover (*Pluvialis apricaria*) [A140]	*"To maintain the favourable conservation condition of Golden Plover in Baldoyle Bay SPA"*		No
Grey Plover (*Pluvialis squatarola*) [A140]	*"To maintain the favourable conservation condition of Grey Plover in Baldoyle Bay SPA"*		No

Qualifying Interest	Conservation Objective as per NPWS (2013e)	Does the proposed development provide for any potential delay or interruption in the achievement of this Conservation Objective, as defined by its Attributes and Targets?	Adverse Effect
Bar-tailed Godwit (*Limosa lapponica*) [A157]	*"To maintain the favourable conservation condition of Bar-tailed Godwit in Baldoyle Bay SPA"*	assimilative capacity of Dublin Bay, the proposed development will not measurably increase the foul water being supplied to Ringsend WwTP. 2. Untreated surface water from the site (i.e. accidental hydrocarbon leaks) has the potential to flow into the Stradbrook Stream and eventually into Dublin Bay. However, given the location of this site to the proposed development via the Stradbrook Stream, and the assimilative capacity of Dublin Bay, potential adverse effects can be excluded. 3. During periods of high rainfall, the public surface water drainage system overflows into the foul water drainage system which can then become overloaded, releasing untreated foul water into Dublin Bay from overflows along South Dublin Bay. This will not constitute an adverse effect, as the proposed development will not measurably increase the loading on the system. **There is no pathway for impacts between the proposed development and these qualifying interests. Therefore, the proposed development will not adversely affect the Baldoyle Bay SPA, in view of its Conservation Objectives and mitigation measures are not required.**	No
Wetlands [A999]	*"To maintain the favourable conservation condition of the wetland habitat in Baldoyle Bay SPA as a resource for the regularly occurring migratory waterbirds that utilise it"*	The Conservation Objective for Wetlands is defined by a single Attribute, namely "Habitat area", the Target for which is "*The permanent area occupied by the wetland habitat should be stable and not significantly less than the area of 263 hectares, other than that occurring from natural patterns of variation*". **As the proposed development does not provide for any reduction in the permanent area of this habitat within the site, it has no potential to delay or interrupt the achievement of this Conservation Objective.**	No

Table 3.7 Evaluation of the adverse effects of the proposed development in view of the Conservation Objectives of the Dalkey Islands SPA [004172].

Qualifying Interest	Conservation Objective as per NPWS (2021a)	Does the proposed development provide for any potential delay or interruption in the achievement of this Conservation Objective, as defined by its Attributes and Targets?	Adverse Effect
Roseate Tern (*Sterna dougallii*) [A192]	*"To maintain the favourable conservation condition of Roseate Tern in Dalkey Islands SPA"* as per Rockabill SPA (NPWS, 2013i)	The Attributes of these Conservation Objectives focus on "*Breeding population abundance*", *"Productivity rate", "Distribution", "Prey biomass availability", "Barriers to connectivity"* and "*Disturbance at breeding site*". As explained in Table 3.2, the site of the proposed development or the habitats adjacent to it do not contain suitable habitat feeding, roosting or nesting habitat for these species. These qualifying interests feed in Dublin Bay around Dún Laoghaire Harbour and their conservation objectives for the Dalkey Islands SPA may therefore be affected as a result of the proposed development. *Construction Phase Impacts* During the construction of the proposed development, there is potential for accidental discharge of sediment and pollutants to reach the Dalkey Islands SPA via the Stradbrook Stream and Dublin Bay. There is no potential for noise and vibration impacts to cause disturbance to these species in the Dalkey Islands SPA due to the size of the proposed development, the distance and the ambient noise levels already present. *Operational Phase Impacts* 1. . As described in Section 2.3, Ringsend WwTP is currently being upgraded in order to comply with the Urban Wastewater Treatment Directive. During the operational phase of the proposed development, wastewater will be conveyed to the Ringsend WwTP, which is currently treating wastewater for up to 2 million people. Considering this as well as the assimilative capacity of Dublin Bay, the proposed development will not measurably increase the foul water being supplied to Ringsend WwTP. 2. Untreated surface water from the site (i.e. accidental hydrocarbon leaks) has the potential to flow into the Stradbrook Stream and eventually into Dublin Bay. However, given the location of this site to the proposed development via the Stradbrook Stream, and the assimilative capacity of Dublin Bay, potential adverse effects can be excluded.	Yes
Common Tern (*Sterna hirundo*) [A193]	*"To maintain the favourable conservation condition of Common Tern in Dalkey Islands SPA"* as per Rockabill SPA (NPWS, 2013i)		Yes
Arctic Tern (*Sterna paradisaea*) [A194]	*"To maintain the favourable conservation condition of Arctic Tern in Dalkey Islands SPA"* as per Rockabill SPA (NPWS, 2013i)		Yes

Qualifying Interest	Conservation Objective as per NPWS (2021a)	Does the proposed development provide for any potential delay or interruption in the achievement of this Conservation Objective, as defined by its Attributes and Targets?	Adverse Effect
		3. During periods of high rainfall, the public surface water drainage system overflows into the foul water drainage system which can then become overloaded, releasing untreated foul water into Dublin Bay from overflows along South Dublin Bay. This will not constitute an adverse effect, as the proposed development will not measurably increase the loading on the system. **Therefore, mitigation measures are required to reduce the potential for adverse effects on this European site with regards to the Conservation Objectives for these Qualifying Interests.**	

Table 3.8 Evaluation of the likely effects of the proposed development in view of the Conservation Objectives of the Rockabill to Dalkey Island SAC [003000].

Qualifying Interest	Conservation Objective as per NPWS (2013g)	Does the proposed development provide for any potential delay or interruption in the achievement of this Conservation Objective, as defined by its Attributes and Targets?	Adverse Effect
Reefs [1170]	*"To maintain the favourable conservation condition of Reefs in Rockabill to Dalkey Island SAC"*	The Attributes of these Conservation Objectives focus on "*Habitat area*", *"Habitat distribution",* and "*Community structure*". Reefs are located around the south coast of Howth Head surround the entirety of Dalkey Island (NPWS, 2013g). *Construction Phase Impacts* During the construction of the proposed development, there is potential for accidental discharge of sediment and pollutants to reach Dublin Bay via the Stradbrook Stream. However, considering the distance between the proposed development site and the assimilative capacity of Dublin Bay, any water quality impacts would have dissipated by the time they reached the Rockabill to Dalkey Island SAC. *Operational Phase Impacts* 1. As described in Section 2.3, Ringsend WwTP is currently being upgraded in order to comply with the Urban Wastewater Treatment Directive. During the operational phase of the proposed development, wastewater will be conveyed to the Ringsend WwTP, which is currently treating wastewater for up to 2 million people. Considering this as well as the assimilative capacity of Dublin Bay, the proposed development will not measurably increase the foul water being supplied to Ringsend WwTP. 2. Untreated surface water from the site (i.e. accidental hydrocarbon leaks) has the potential to flow into the Stradbrook Stream and eventually into Dublin Bay. However, given the location of this site to the proposed development via the Stradbrook Stream, and the assimilative capacity of Dublin Bay, potential adverse effects can be excluded. 3. During periods of high rainfall, the public surface water drainage system overflows into the foul water drainage system which can then become overloaded, releasing untreated foul water into Dublin Bay from overflows along South Dublin Bay. This will not constitute an adverse effect, as the proposed development will not measurably increase the loading on the system.	No

Qualifying Interest	Conservation Objective as per NPWS (2013g)	Does the proposed development provide for any potential delay or interruption in the achievement of this Conservation Objective, as defined by its Attributes and Targets?	Adverse Effect
		There is no pathway for impacts between the proposed development and these qualifying interests. Therefore, the proposed development will not adversely affect the Rockabill to Dalkey Island SAC, in view of its Conservation Objectives and mitigation measures are not required.	
Harbour Porpoise (*Phocoena phocoena*) [1351]	*"To maintain the favourable conservation condition of Harbour Porpoise in Rockabill to Dalkey Island SAC"*	The Attributes of these Conservation Objectives focus on "*Access to suitable habitat*", and "*Disturbance*". There will be no works occurring in or adjacent to suitable Harbour Porpoise habitat. Therefore, there is no potential for Harbour Porpoise to be restricted access to suitable habitat, nor will there be any disturbance impacts to Harbour Porpoise in the Rockabill to Dalkey Island SAC as a result of the proposed development. **Therefore, there is no pathway for impacts between the proposed development and this Qualifying Interest. Therefore, the proposed development will not adversely affect the Rockabill to Dalkey Island SAC, in view of the Conservation Objective for harbour Porpoise.**	No

Table 3.9 Evaluation of the likely effects of the proposed development in view of the Conservation Objectives of the Howth Head Coast SPA [004113].

Qualifying Interest	Conservation Objective as per NPWS (2021b)	Does the proposed development provide for any potential delay or interruption in the achievement of this Conservation Objective, as defined by its Attributes and Targets?	Adverse Effect
Kittiwake (*Rissa tridactyla*) [A188]	*"To maintain the favourable conservation condition of Kittiwake in Howth Head Coast SPA"* as per Saltee Islands SPA (NPWS, 2011c)	The Attributes of these Conservation Objectives focus on "*Breeding population abundance*", *"Productivity rate", "Distribution", "Prey biomass availability", "Barriers to connectivity"* and "*Disturbance at breeding site*". As explained in Table 3.2, the site of the proposed development or the habitats adjacent to it do not contain suitable habitat feeding, roosting or nesting habitat for these species. *Construction Phase Impacts* During the construction of the proposed development, there is potential for accidental discharge of sediment and pollutants to reach Dublin Bay via the Stradbrook Stream. However, considering the distance between the proposed development site and the assimilative capacity of Dublin Bay, any water quality impacts would have dissipated by the time they reached the Howth Head Coast SPA. There is no potential for noise and vibration impacts to cause disturbance to these species in the Howth Head Coast SPA due to the size of the proposed development, the distance and the ambient noise levels already present. *Operational Phase Impacts* 1. . As described in Section 2.3, Ringsend WwTP is currently being upgraded in order to comply with the Urban Wastewater Treatment Directive. During the operational phase of the proposed development, wastewater will be conveyed to the Ringsend WwTP, which is currently treating wastewater for up to 2 million people. Considering this as well as the assimilative capacity of Dublin Bay, the proposed development will not measurably increase the foul water being supplied to Ringsend WwTP. 2. Untreated surface water from the site (i.e. accidental hydrocarbon leaks) has the potential to flow into the Stradbrook Stream and eventually into Dublin Bay. However, given the location of this site to the proposed development via the Stradbrook Stream, and the assimilative capacity of Dublin Bay, potential adverse effects can be excluded.	No

Qualifying Interest	Conservation Objective as per NPWS (2021b)	Does the proposed development provide for any potential delay or interruption in the achievement of this Conservation Objective, as defined by its Attributes and Targets?	Adverse Effect
		3. During periods of high rainfall, the public surface water drainage system overflows into the foul water drainage system which can then become overloaded, releasing untreated foul water into Dublin Bay from overflows along South Dublin Bay. This will not constitute an adverse effect, as the proposed development will not measurably increase the loading on the system. **There is no pathway for impacts between the proposed development and this qualifying interest. Therefore, the proposed development will not adversely affect the Howth Head Coast SPA, in view of its Conservation Objectives and mitigation measures are not required.**	

Table 3.10 Evaluation of the likely effects of the proposed development in view of the Conservation Objectives of the Howth Head SAC [000202].

Qualifying Interest	Conservation Objective as per NPWS (2016a)	Does the proposed development provide for any potential delay or interruption in the achievement of this Conservation Objective, as defined by its Attributes and Targets?	Adverse Effect
Vegetated sea cliffs of the Atlantic and Baltic coasts [1230]	*"To maintain the favourable conservation condition of Vegetated sea cliffs of the Atlantic and Baltic coasts in Howth Head SAC"*	The Attributes of these Conservation Objectives focus on "*Habitat length*", *"Habitat distribution", "Physical structure", Vegetation structure"* and *"Vegetation composition"*. Vegetated sea cliffs of the Atlantic and Baltic coasts are located around the east coast of Howth Head (NPWS, 2016a). This is a terrestrial habitat and thus has no hydrological connection to the proposed development. **Therefore, the proposed development will not adversely affect the Howth Head SAC, in view of its Conservation Objective for Vegetated sea cliffs of the Atlantic and Baltic coasts.**	No
European dry heaths [4030]	*"To maintain the favourable conservation condition of European dry heaths in Howth Head SAC"*	The Attributes of these Conservation Objectives focus on "*Habitat area*", *"Habitat distribution", "Ecosystem function", "Community diversity", "Vegetation composition"* and *Vegetation structure"*. This is a terrestrial habitat and thus has no hydrological connection to the proposed development. **Therefore, the proposed development will not adversely affect the Howth Head SAC, in view of its Conservation Objective for European Dry Heaths.**	No

Table 3.11 Evaluation of the likely effects of the proposed development in view of the Conservation Objectives of the Ireland's Eye SPA [004117].

Qualifying Interest	Conservation Objective as per NPWS (2021c)	Does the proposed development provide for any potential delay or interruption in the achievement of this Conservation Objective, as defined by its Attributes and Targets?	Adverse Effect
Cormorant (*Phalacrocorax carbo*) [A017]	*"To maintain the favourable conservation condition of Cormorant in Ireland's Eye SPA"* as per Saltee Islands SPA (NPWS, 2011c)	The Attributes of these Conservation Objectives focus on "*Breeding population abundance*", *"Productivity rate", "Distribution", "Prey biomass availability", "Barriers to connectivity"* and "*Disturbance at breeding site*" with *"Disturbance at marine areas immediately adjacent to the colony"* listed as additional Conservation Objectives for Guillemot and Razorbill. As explained in Table 3.2, the site of the proposed development or the habitats adjacent to it do not contain suitable habitat feeding, roosting or nesting habitat for these species. <u>*Construction Phase Impacts*</u> During the construction of the proposed development, there is potential for accidental discharge of sediment and pollutants to reach Dublin Bay via the Stradbrook Stream. However, considering the distance between the proposed development site and the assimilative capacity of Dublin Bay, any water quality impacts would have dissipated by the time they reached the Ireland's Eye SPA. There is no potential for noise and vibration impacts to cause disturbance to these species in the Ireland's Eye SPA due to the size of the proposed development, the distance and the ambient noise levels already present. <u>*Operational Phase Impacts*</u> 1. As described in Section 2.3, Ringsend WwTP is currently being upgraded in order to comply with the Urban Wastewater Treatment Directive. During the operational phase of	No
Herring Gull (*Larus argentatus*) [A184]	*"To maintain the favourable conservation condition of Herring Gull in Ireland's Eye SPA"* as per Saltee Islands SPA (NPWS, 2011c)		No
Kittiwake (*Rissa tridactyla*) [A188]	*"To maintain the favourable conservation condition of Kittiwake in Ireland's Eye SPA"* as per Saltee Islands SPA (NPWS, 2011c)		No
Guillemot (*Uria aalge*) [A199]	*"To maintain the favourable conservation condition of Guillemot in Ireland's Eye SPA"* as per Saltee Islands SPA (NPWS, 2011c)		No

Qualifying Interest	Conservation Objective as per NPWS (2021c)	Does the proposed development provide for any potential delay or interruption in the achievement of this Conservation Objective, as defined by its Attributes and Targets?	Adverse Effect
Razorbill (*Alca torda*) [A200]	*"To maintain the favourable conservation condition of Razorbill in Ireland's Eye SPA"* as per Saltee Islands SPA (NPWS, 2011c)	the proposed development, wastewater will be conveyed to the Ringsend WwTP, which is currently treating wastewater for up to 2 million people. Considering this as well as the assimilative capacity of Dublin Bay, the proposed development will not measurably increase the foul water being supplied to Ringsend WwTP. 2. Untreated surface water from the site (i.e. accidental hydrocarbon leaks) has the potential to flow into the Stradbrook Stream and eventually into Dublin Bay. However, given the location of this site to the proposed development via the Stradbrook Stream, and the assimilative capacity of Dublin Bay, potential adverse effects can be excluded. 3. During periods of high rainfall, the public surface water drainage system overflows into the foul water drainage system which can then become overloaded, releasing untreated foul water into Dublin Bay from overflows along South Dublin Bay. This will not constitute an adverse effect, as the proposed development will not measurably increase the loading on the system. **There is no pathway for impacts between the proposed development and these qualifying interests. Therefore, the proposed development will not adversely affect the Ireland's Eye SPA, in view of its Conservation Objectives and mitigation measures are not required.**	No

3.4 Summary of Adverse Effects

In Section 3.1, it was established that twelve European sites, namely the South Dublin Bay and River Tolka Estuary SPA, and the South Dublin Bay SAC, the North Bull Island SPA, the North Dublin By SAC, the Baldoyle Bay SPA, the Baldoyle Bay SAC, the Dalkey Islands SPA, the Rockabill to Dalkey Island SAC, the Howth Head Coast SPA, the Howth Head Coast SAC, the Ireland's Eye SPA and the Ireland's Eye SAC occur within the ZoI of the proposed development and that there are no pathways for effects between the proposed development and any other European sites.

In Section 3.3, it was established that, in the absence of appropriate mitigation, interruptions or delays in achieving certain Conservation Objectives for three of these sites, i.e. adverse effects on the integrity of three of those sites, as a result of the proposed development, cannot be ruled out. A summary of the adverse effects identified is given in Table 3.12 below.

Table 3.12 Summary of the European sites likely to be affected by the proposed development and the Qualifying Interests likely to be affected in each site.

European site	Qualifying Interest
South Dublin Bay and River Tolka Estuary SPA [004024]	Light-bellied Brent Goose (*Branta bernicla hrota*) [A046] Oystercatcher (*Haematopus ostralegus*) [A130] Ringed Plover (*Charadrius hiaticula*) [A137] Grey Plover (*Pluvialis squatarola*) [A141] Knot (*Calidris canutus*) [A143] Sanderling (*Calidris alba*) [A144] Dunlin (*Calidris alpina*) [A149] Bar-tailed Godwit (*Limosa lapponica*) [A157] Redshank (*Tringa totanus*) [A162] Black-headed Gull (*Chroicocephalus ridibundus*) [A179] Roseate Tern (*Sterna dougallii*) [A192] Common Tern (*Sterna hirundo*) [A193] Arctic Tern (*Sterna paradisaea*) [A194]
South Dublin Bay SAC [000210]	Mudflats and sandflats not covered by seawater at low tide [1140] *Salicornia* and other annuals colonising mud and sand [1310]
Dalkey Islands SPA [004172]	Roseate Tern (*Sterna dougallii*) [A192] Common Tern (*Sterna hirundo*) [A193] Arctic Tern (*Sterna paradisaea*) [A194]

4. ASSESSMENT OF ADVERSE EFFECTS

4.1 Approach to Assessment

In Section 3 of this NIS, adverse effects on the integrity of the South Dublin Bay and River Tolka Estuary SPA, the South Dublin Bay SAC and the Dalkey Islands SPA were identified. In accordance with European Commission guidance (EC, 2021), the identification of these effects was focussed on and limited to the Conservation Objectives of the sites concerned.

Section 4 provides a detailed analysis and evaluation of the adverse effects identified in Section 3 (as summarised in Section 3.4). In order to fully assess the implications of the proposed development for the European sites concerned, each of the potential adverse effects is evaluated with reference to the Attributes and Targets which define the Conservation Objectives of those sites.

4.2 South Dublin Bay and River Tolka Estuary SPA

The Qualifying Interests for which South Dublin Bay and River Tolka Estuary SPA has been selected and which could be adversely affected, were identified in Section 3. The Conservation Objectives for these Qualifying Interests are stated in Table 3.2 above.

4.2.1 Bird Species

The Attributes of wintering bird species are:

- Population Trend
- Distribution

The Attributes for Tern species are:

- Passage Population
- Distribution
- Prey biomass availability
- Barriers to connectivity
- Disturbance at roosting site

Water Quality

The potential effects of the proposed development on these Qualifying Interests include water quality impacts which could lead to changes in population trends and distribution for all species, as well as a reduction in prey availability for terns. Potential impacts of the construction and operation of the proposed development on water quality, insofar as they are relevant to these habitats, are discussed below. Construction activities adjacent to the Stradbrook Stream could negatively impact water quality.

The construction of the proposed development, if not properly managed, has the potential to impact on water quality as follows:

- Sedimentation – Surface water run-off from construction areas may contain high levels of suspended sediments (and contaminants). High deposition can lead to smothering of the habitat, which may alter the vegetation composition. Deposition of fine sediments can also increase the amounts and persistence of chemical contaminants in the receiving habitat, leading to further changes in the vegetation structure and composition.

- Spillage of hydrocarbons and other chemicals – Vehicles, plant and equipment which will be present during the construction and operational phases rely on hydrocarbons such as diesel, petrol and lubricating oils. Leaks from poorly maintained vehicles, plant, equipment or storage tanks provide for a risk of input of hydrocarbons into the environment. In the absence of appropriate mitigation, hydrocarbons from the construction site may spill directly into Stradbrook Stream or be washed into it in construction site run-off. This has the potential to cause negative ecological impacts on the stream and adjacent habitats. Hydrocarbons can have direct phytotoxic effects, including reducing the ability of plants to absorb water and nutrients from their environment. These compounds can also alter the nutrient balance and microbiota in soil and water, which can benefit some plant species while detrimentally affecting others. Such changes have the potential to alter the vegetation structure and composition of the habitat.
- Spillage of cementitious materials – During construction, concrete or other cementitious materials may spill directly into the Stradbrook Stream or be washed into it in run-off. Cementitious materials are highly alkaline and, consequently, can drastically alter the pH of the receiving watercourse. This can lead to profound ecological impacts on the affected watercourse and any habitats connected to it. Changes in the alkalinity of surface waters can affect the pH of connected ground waters and soils. This can affect the vegetation composition by causing damage to pH-sensitive species. As the pH impact is greater near the affected watercourse, vegetation here is disproportionately affected, leading to changes in zonation.
- Inadequate treatment of wastewater from on-site toilets and washing facilities also provides for potential water quality impacts which could lead to ecological effects on the aquatic environment and any habitats connected to it. Faecal contamination can alter the nutrient balance in soils and water, causing significant changes in microbial communities and reductions in oxygen levels. This can have significant effects on the biological composition of receiving habitats.

The operation of the proposed development, if not properly managed, has the potential to impact on water quality as follows:

- Increased impermeable surface areas can result in surface water run-off due to pollution from hydrocarbon leaks and residues in urban areas. Hydrocarbons can have direct phytotoxic effects, including reducing the ability of plants to absorb water and nutrients from their environment. These compounds can also alter the nutrient balance and microbiota in soil and water, which can benefit some plant species while detrimentally affecting others. Such changes have the potential to alter the vegetation structure and composition of the receiving habitats.

Conclusion

The only impacts likely to arise from the proposed development which have any potential to adversely affect the Conservation Objectives for the Qualifying Interests for which the South Dublin Bay and River Tolka Estuary SPA is selected are water quality impacts. Appropriate mitigation is, therefore, required to eliminate, beyond reasonable scientific doubt, the risk of such effects occurring.

4.3 South Dublin Bay SAC

The Qualifying Interests for which South Dublin Bay SAC has been selected and which could be adversely affected, were identified in Section 3. The Conservation Objectives for each Qualifying Interest is stated in Table 3.3 above.

4.3.1 Mudflats and sandflats not covered by seawater at low tide

The Attributes for 'mudflats and sandflats not covered by the seawater at low tide' are:

- Habitat Area
- Habitat Extent
- Community Structure: *Zostera* density
- Community Distribution

Habitat Area and Community Extent

The extent and distribution of Mudflats and sandflats not covered by seawater at low tide in the South Dublin Bay SAC is mapped in the Conservation Objectives supporting document for marine habitats (NPWS, 2013j) and in Map 3 of the Conservation Objectives themselves (NPWS, 2013a). The site-specific Target for habitat area is "*stable or increasing".*

The proposed development is outside the SAC and therefore there will be no decline in habitat area or community extent of mudflats and sandflats not covered by the seawater at low tide within the South Dublin Bay SAC as a result of the proposed development.

Community structure: *Zostera* density and Distribution

The site-specific Targets for the community structure and distribution of mudflats and sandflats not covered by the seawater at low tide are to "*conserve the high quality of the* Zostera-*dominated community"* and *"conserve the fine sands with* Angulus tenuis *in a natural condition"*, respectively. There is a risk of pollution to the Stradbrook Stream and Dublin Bay directly from the proposed development during the construction and operational phases, which could adversely affect the community structure and distribution of this Qualifying Interest. Potential adverse effects on this Qualifying Interest are described in Section 4.2.1 above. The effects on water quality in relation to the South Dublin Bay SAC are of the same nature as those for the South Dublin Bay and River Tolka Estuary SPA.

4.3.2 Salicornia and other annuals of mud and sand

The Attributes of '*Salicornia* and other annuals of mud and sand' are:

- Habitat area
- Habitat distribution
- Physical structure
- Vegetation structure
- Vegetation composition

Habitat Area and Distribution

The extent and distribution of *Salicornia* and other annuals of mud and sand in the South Dublin Bay SAC has not been mapped in the Conservation Objectives document for (NPWS, 2013a). As per the North Dublin Bay SAC, the site-specific Targets for habitat area and habitat distribution are "*stable or increasing"* and *"no decline, or change in habitat distribution, subject to natural processes".* The proposed development does not provide for any loss of this habitat within its footprint. Therefore, it can be concluded, on the basis of best scientific knowledge, that neither the construction nor the operation of the proposed development will lead to any adverse effects in terms of changes to the habitat area or habitat distribution of this habitat.

Physical Structure, Vegetation Structure and Composition

As per the North Dublin Bay SAC, the site-specific Targets for physical and vegetation structure revolve around maintenance of the current natural state of the habitat. The site-specific Targets for vegetation composition are to *"maintain presence of species-poor communities"* and *"no significant expansion of common cordgrass"*.

During both construction and operation, there is a risk of pollution to the Stradbrook Stream and Dublin Bay directly from the proposed development, which could adversely affect the physical and vegetation structure and composition by removing characteristic species. These impacts are considered in Section 4.2.1. The effects on water quality in relation to the South Dublin Bay SAC are of the same nature as those for the South Dublin Bay and River Tolka Estuary SPA.

Conclusion

In the absence of appropriate mitigation, the construction and operation of the proposed development have the potential to adversely affect the Conservation Objectives for 'Mudflats and sandflats not covered by the seawater at low tide' and '*Salicornia* and other annuals of mud and sand' in the South Dublin Bay SAC through impacts on water quality. Therefore, mitigation is required to avoid this adverse effect.

The proposed development does not provide for any other adverse effects on the Conservation Objectives for these Qualifying Interests during either the construction or the operational phases.

4.4 Dalkey Islands SPA

The Qualifying Interests for Dalkey Islands SPA has been selected and which could be adversely affected, were identified in Section 3. The Conservation Objectives for these Qualifying Interests are stated in Table 3.7 above.

4.4.1 Bird Species

The Attributes for Tern species in the Dalkey Islands SPA, as per the Rockabill SPA are:

- Breeding Population
- Productivity Rate
- Distribution
- Prey biomass availability
- Barriers to connectivity
- Disturbance at breeding site

Water Quality

The potential effects of the proposed development on these Qualifying Interests are limited to water quality impacts which could lead to changes in prey biomass availability, breeding population rate and productivity rate for all Tern species. During both construction and operation, there is a risk of pollution to the Stradbrook Stream and Dublin Bay directly from the proposed development which could adversely affect the biological composition of receiving habitats and consequently, of Tern species in the Dalkey Islands SPA. These impacts are considered in Section 4.2.1. The effects on water quality in relation to the Dalkey Islands SPA are of the same nature as those for the South Dublin Bay and River Tolka Estuary SPA.

Conclusion

The only impacts likely to arise from the proposed development which have any potential to adversely affect the Conservation Objectives for the Qualifying Interests for which the Dalkey Islands SPA is selected are water quality impacts. Appropriate mitigation is, therefore, required to eliminate, beyond reasonable scientific doubt, the risk of such effects occurring.

5. MITIGATION

5.1 Principles and Approach

Section 4 of this NIS assessed the adverse effects likely to arise from the proposed development on the specific Attributes and Targets which define the Conservation Objectives for a number of Qualifying Interests of the South Dublin Bay and River Tolka Estuary SPA, South Dublin Bay SAC and Dalkey Islands SPA. This section prescribes mitigation measures to ensure their full and proper implementation aimed at mitigating these adverse effects, thereby protecting the integrity of these European sites during the construction and operation of the proposed development.

The mitigation measures prescribed in this NIS have been designed according to the principle of a mitigation hierarchy, as outlined in the European Commission's guidance document *Assessment of plans and projects in relation to Natura 2000 Sites: Methodological guidance on the provisions of Article 6(3) and (4) of the Habitats Directive 92/43/EEC* (EC, 2021). According to this hierarchy, mitigation measures first suggest *avoidance* (i.e. preventing significant impacts from happening in the fist place) and then *reduction* of impact (i.e. reducing the magnitude and/or likelihood of an impact).

As mitigation measures are related directly to impacts and only indirectly to receptors and as, in this case, all of the affected receptors have been identified as being affected the same set of impacts, to describe mitigation measures under the headings of the relevant receptors would lead to undue repetition. Therefore, the measures prescribed in this NIS are described under the headings of the types of impacts which they are intended to mitigate.

The mitigation measures are prescribed in Section 5.2 and a protocol to ensure their full and proper implementation is prescribed in Section 5.3. The significance of any residual effects following the inclusion of mitigation measures is evaluated in Section 5.4. As per the assessment of adverse effects in Section 4, this evaluation is made in view of the relevant Conservation Objectives.

5.2 Mitigation Measures

5.2.1 Water Quality

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,
- *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).

The following mitigation measures relating to the protection of water quality will apply during the construction and operation of the proposed development:

- 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.
- 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.
- Prior to the Construction Management Plan being accepted and implemented, it shall be approved by the Employers Representative.

The following measures prescribed regarding surface water run-off will also minimise the risk of any input of cementitious material into the Stradbrook Stream:

- When working near 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;
- 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;
- Placing of concrete in or near the watercourses will be carried out only under the supervision of a suitably qualified Environmental Manager;
- 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 ;
- Concrete waste and wash-down water will be contained and managed on site to prevent pollution of the watercourses;
- On-site concrete batching and mixing activities will only be allowed at the identified construction compound;
- 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);
- 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,
- 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.
- 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.

The measures prescribed regarding surface water run-off will also remove the risk of any input of hydrocarbons and other chemicals into the Stradbrook Stream. However, the following additional measures shall also apply:

- 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.

- 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).

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.

Given the full and proper implementation of these water quality protection measures, the construction, operation, and maintenance of the proposed development will not give rise to adverse effects.

5.3 Implementation

In order to give effect to the mitigation prescribed in this NIS it should be a condition of any consent granted in respect of the proposed development that all of the mitigation, including monitoring and enforcement, prescribed in this NIS be binding, during the construction phase, on the Contractor and, during operational phase, on the local authority. Accordingly, all of the mitigation prescribed herein shall be transposed into the Contract Documents for the construction of the proposed development.

5.3.1 Construction and Environmental Management Plan

The Construction and Environmental Management Plan (Appendix D) has been prepared to give an overview of the processes to be employed during construction of this project. The aim of this CEMP is to address issues that can arise during construction including noise and vibration, traffic management, working hours, pollution control, dust control, road cleaning, compound / public health facilities and staff parking, all associated with the construction works.

Prior to the on-site activities commencing, this plan will be revised by the appointed lead contractor and expanded to produce a CEMP, which shall incorporate:

- Operational Health & Safety (OH&S) Management Plan;
- Environmental Management Plan, including Waste Management Plan;
- Pedestrian and Traffic Management Plan.

The CEMP will be integrated into and implemented throughout the construction phases of the project to ensure the following:

- All site activities are effectively managed to minimise the generation of waste and to maximise the opportunities for on-site reuse and recycling of waste materials.
- All waste materials generated by site activities, that cannot be reused on site, are removed from site by appropriately permitted waste haulage contractors and that all wastes are disposed of at approved waste licensed/permitted facilities in compliance with the Waste Management Acts 1996 to 2005;
- Any environmental impacts (noise, vibration, dust, water) of project construction work activities on receptors and properties located adjacent to the project work areas, and on the local receiving environment, are managed and controlled.

During construction, all works must comply with relevant legislation and guidelines in order to reduce and minimise environmental impacts and to protect all ecological receptors. In particular, there must be full compliance with the following:

- The Construction Management Plan.
- The mitigation prescribed in this NIS and the accompanying EIAR.
- Any conditions which might be attached to the proposed development's planning consent.
- *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: technical guidance* (CIRIA, 2006).
- *Guidelines for the Crossing of Watercourses during the Construction of National Road Schemes* (TII, 2006).
- *Guidelines for Ecological Survey Techniques for Protected Flora and Fauna during the Planning of National Road Schemes* (TII, 2008).
- All applicable legislative requirements in relation to environmental protection.

This list is non-exhaustive. All environmental commitments/requirements and relevant legislation and guidelines which are current at the time of construction will be followed.

5.4 Residual Effects

5.4.1 Bird Species

The mitigation prescribed in Section 5.2 and the implementation and compliance measures prescribed in Section 5.3 will reduce all negative impacts on birds to imperceptible levels.

As explained in the assessment tables in Section 3.3, the Ringsend WwTP and overflow systems are currently treating wastewater for up to 2 million people. The proposed development of a size such that it will not measurably increase foul water being supplied to these systems. Therefore, residual water quality effects from the Ringsend WwTP and overflow systems are imperceptible.

Therefore, given the full and proper implementation of the mitigation prescribed in this NIS, it can be concluded beyond all reasonable scientific doubt that construction and operation of the proposed development will not adversely affect the integrity of the South Dublin Bay and River Tolka SPA and the Dalkey Islands SPA.

5.4.2 Annex I Habitats

The mitigation prescribed in Section 5.2 and the implementation and compliance measures prescribed in Section 5.3 will reduce all negative impacts on Annex I habitats to imperceptible levels.

As explained in the assessment tables in Section 3.3, the Ringsend WwTP and overflow systems are currently treating wastewater for up to 2 million people. The proposed development of a size such that it will not measurably increase foul water being supplied to these systems. Therefore, residual water quality effects from the Ringsend WwTP and overflow systems are imperceptible.

Therefore, given the full and proper implementation of the mitigation prescribed in this NIS, it can be concluded beyond all reasonable scientific doubt that construction and operation of the proposed development will not adversely affect the integrity of the South Dublin Bay SAC.

6. IN-COMBINATION EFFECTS

6.1 Introduction

Article 6(3) of the Habitats Directive requires that AA be carried out in respect of plans and projects that are likely to have significant effects on European sites, "*either individually or in combination with other plans or projects*". Therefore, regardless of whether or not the likely effects of a plan or project are significant when considered on their own, the significance of the combined effects of the plan or project under assessment and other plans and projects must also be evaluated.

6.2 Methodology

Plans and projects with potential for interactions with the proposed development were selected for assessment. For the purposes of the assessment, small scale and domestic developments were not considered given the nature of the proposed development and the fact that these developments would be subject to stringent planning controls. Plans and projects with planning permission within the last ten years, along the entire Stradbrook Stream and within 100m of each side of the stream were taken into consideration.

The ePlanning websites for Dún Laoghaire Rathdown County Council and the EIA Portal was used to search for planning applications.

6.3 Outcome

Table 6.1 below details the assessment of the likelihood of significant effects arising from the proposed development in combination with other plans or projects. This assessment was undertaken in view of the Conservation Objectives of the relevant European sites and found that the proposed development does not have the potential to adversely affect any European site in combination with other plans or projects.

Table 6.1 Assessment of potential adverse effects on the integrity of European sites from the proposed development in combination with other plans and projects.

Plan or Project	Description of Plan or Project	In-Combination Effect(s)
DLRCC Reg. Ref.: D22A/0070 **Address:** Richmond Cheshire Home, Richmond Park, Monkstown, Co. Dublin	**Planning Application Lodged:** 31st January 2022 Residential development comprising of 96 no. apartment units	The potential effects arising from this project and the proposed development are similar. Provided the mitigation measures outlined in the Natura Impact Statements for both developments is adhered to and given their scale relative to the baseline in Monkstown and the wider Dublin region, as well as the assimilative capacity of the Liffey Estuary and Dublin Bay, it can be concluded that the proposed development and this project will not lead to in-combination adverse effects.
APB Reg. Ref.: ABP31207021 **Address:** The former Ted Castles site and Dun Leary House (a Protected Structure), Old Dun Leary Road, Cumberland Street and Dun Leary	**Planning Application Lodged:** 26th November 2021 'Build to Rent' strategic housing development consisting of the construction of a new development of 146 no. units	The potential effects arising from this project and the proposed development are similar. Provided the mitigation measures outlined in the Natura Impact Statement for the proposed development is adhered to and given their scale relative to the baseline in Dún Laoghaire and the wider Dublin region, as well as the assimilative capacity of the Liffey Estuary and Dublin Bay, it can be concluded that the proposed development and this project will not lead to in-combination adverse effects.
APB Reg. Ref.: ABP31232521 **Address:** 3.9 ha at 'St. Teresa's House' (A Protected Structure) and 'St. Teresa's Lodge' (A Protected Structure) Temple Hill, Monkstown, Blackrock, Co. Dublin	**Planning Application Lodged:** 22nd Dec 2021 New residential and mixed-use scheme of 493 residential units The subdivision, conversion and re-use of 'St. Teresa's House' The dismantling, relocation and change of use from residential to café of 'St. Teresa's Lodge' within the site development area.	The potential effects arising from this project and the proposed development are similar. Provided the mitigation measures outlined in the Natura Impact Statement for the proposed development is adhered to and given their scale relative to the baseline in South Dublin and the wider Dublin region, as well as the assimilative capacity of the Liffey Estuary and Dublin Bay, it can be concluded that the proposed development and this project will not lead to in-combination adverse effects.
DLRCC Reg. Ref.: D21A/0958	**Planning Application Lodged:** 2nd November 2021 Currently at further information stage	The potential effects arising from this project and the proposed development are similar. Provided that the mitigation measures outlined

Plan or Project	Description of Plan or Project	In-Combination Effect(s)
Address: Former Europa Garage Site, Newtown Avenue, Blackrock, Co Dublin	Residential development providing 91 residential units	in the Natura Impact Statement for the proposed development is adhered to and given their scale relative to the baseline in South Dublin and the wider Dublin region, as well as the assimilative capacity of the Liffey Estuary and Dublin Bay, it can be concluded that the proposed development and this project will not lead to in-combination adverse effects.
DLRCC/APB Reg. Ref.: D19A/0378+ABP-305843-19; D17A/0590+ABP-301533-18 **Address:** Richmond Cheshire Home, Richmond Park, Monkstown, Co Dublin	**Decision Date:** 05 Jun 2019 Permission for revisions to a residential development previously permitted under Reg. Ref. D17A/0590 / ABP-301533-18. 72 no. residential units in these 2 no. apartment blocks 79 car parking spaces, 7 motorcycle spaces and 64 bicycle spaces	The potential effects arising from this project and the proposed development are similar and these developments are located very close together. However, provided the mitigation measures outlined in the Natura Impact Statement for the proposed development is adhered to, and given their scale relative to the baseline in South Dublin and the wider Dublin region, as well as the assimilative capacity of the Liffey Estuary and Dublin Bay, it can be concluded that the proposed development and this project will not lead to in-combination adverse effects.
APB Reg. Ref.: ABP30894620 **Address:** Lands adjacent and to the rear of Cluain Mhuire Family Centre, Newtownpark Avenue, Blackrock, Co. Dublin	**Decision Date:** 15th April 2021 Demolition of a single storey shed, construction of 140 no. apartments	The potential effects arising from this project and the proposed development are similar. However, provided the mitigation measures outlined in the Natura Impact Statement for the proposed development is adhered to, and given their scale relative to the baseline in South Dublin and the wider Dublin region, as well as the assimilative capacity of the Liffey Estuary and Dublin Bay, it can be concluded that the proposed development and this project will not lead to in-combination adverse effects.
APB Reg. Ref.: ABP30380419 **Address:**	**Decision Date:** 10th June 2019 294 no. apartments, conversion of St. Teresa's House, dismantling and relocation of St. Teresa's Lodge,	The potential effects arising from this project and the proposed development are similar. Provided the mitigation measures outlined in the Natura Impact Statements for both developments is adhered to and given their scale relative to the baseline in South Dublin and the wider Dublin region, as well as the

Plan or Project	Description of Plan or Project	In-Combination Effect(s)
St. Teresa's House/Centre and St. Teresa's Lodge (Protected Structures), Temple Hill, Monkstown, Blackrock, Co. Dublin.		assimilative capacity of the Liffey Estuary and Dublin Bay, it can be concluded that the proposed development and this project will not lead to in-combination adverse effects.
DLRCC/APB Reg. Ref.: D18A/1184+ABP-305265-19 **Address:** junction of, Fleurville Road and, Newtownpark Avenue, and abutting, Annaville Avenue to the east, Blackrock, Co. Dublin	**Decision Date:** 13th Feb 2020 (after appeal) Residential development consisting of 68 no. apartments	The potential effects arising from this project and the proposed development are similar. However, provided the mitigation measures outlined in the Natura Impact Statement for the proposed development is adhered to, and given their scale relative to the baseline in South Dublin and the wider Dublin region, as well as the assimilative capacity of the Liffey Estuary and Dublin Bay, it can be concluded that the proposed development and this project will not lead to in-combination adverse effects.
APB Reg. Ref.: ABP30468219 **Address:** Previously permitted Blocks 2 and 3, Cualanor, Glenageary, Upper Road, Co. Dublin.	**Decision Date:** 30th August 2019 368 no. apartments	The potential effects arising from this project and the proposed development are similar. However, provided the mitigation measures outlined in the Natura Impact Statement for the proposed development is adhered to, and given their scale relative to the baseline in South Dublin and the wider Dublin region, as well as the assimilative capacity of the Liffey Estuary and Dublin Bay, it can be concluded that the proposed development and this project will not lead to in-combination adverse effects.
APB Reg. Ref.: ABP30909821 **Address:** Lands at St Michael's Hospital Car Park, Crofton Road, Dun Laoghaire, Co. Dublin	**Decision Date:** 28th April 2021 Demolition of an existing house, construction of 102 no. Build to Rent apartments	The potential effects arising from this project and the proposed development are similar. However, provided the mitigation measures outlined in the Natura Impact Statement for the proposed development is adhered to, and given their scale relative to the baseline in South Dublin and the wider Dublin region, as well as the assimilative capacity of the Liffey Estuary and Dublin Bay, it can be concluded that the proposed development and this project will not lead to in-combination adverse effects.
APB Reg. Ref.:	**Decision Date:** 26th August 2019	The potential effects arising from this project and the proposed development are similar.

Plan or Project	Description of Plan or Project	In-Combination Effect(s)
ABP30424919 **Address:** Old School House, Eblana Avenue, Dun Laoghaire, Co. Dublin	Demolition of existing buildings on site, construction of 208 no. Build to Rent Shared Living Residential Development, cafe/kiosk	However, provided the mitigation measures outlined in the Natura Impact Statement for the proposed development is adhered to, and given their scale relative to the baseline in South Dublin and the wider Dublin region, as well as the assimilative capacity of the Liffey Estuary and Dublin Bay, it can be concluded that the proposed development and this project will not lead to in-combination adverse effects.
APB Reg. Ref.: ABP30733220 Dean's Grange Road, Deansgrange, Co. Dublin.	**Decision Date:** 20th September 2020 Demolition of existing buildings, construction of 151 no. apartments	The potential effects arising from this project and the proposed development are similar. However, provided the mitigation measures outlined in the Natura Impact Statement for the proposed development is adhered to, and given their scale relative to the baseline in South Dublin and the wider Dublin region, as well as the assimilative capacity of the Liffey Estuary and Dublin Bay, it can be concluded that the proposed development and this project will not lead to in-combination adverse effects.
APB Reg. Ref.: ABP30887720 **Address:** Former Europa Garage Site, Newtown Avenue, Blackrock, Co. Dublin.	**Decision Date:** 12th April 2021 101 no. apartments	The potential effects arising from this project and the proposed development are similar. However, provided the mitigation measures outlined in the Natura Impact Statement for the proposed development is adhered to, and given their scale relative to the baseline in South Dublin and the wider Dublin region, as well as the assimilative capacity of the Liffey Estuary and Dublin Bay, it can be concluded that the proposed development and this project will not lead to in-combination adverse effects.
DLRCC Reg. Ref.: D17A/0137 **Address:** Newtown Avenue, Blackrock, Co. Dublin. This site is known as the 'Former Europa Garage site'	**Decision Date:** 12th April 2017 (after appeal) • Demolition of the garage buildings on site • Residential scheme shall provide for 51 no. residential units	The potential effects arising from this project and the proposed development are similar. However, provided the mitigation measures outlined in the Natura Impact Statement for the proposed development is adhered to, and given their scale relative to the baseline in South Dublin and the wider Dublin region, as well as the assimilative capacity of the Liffey

Plan or Project	Description of Plan or Project	In-Combination Effect(s)
		Estuary and Dublin Bay, it can be concluded that the proposed development and this project will not lead to in-combination adverse effects.
APB Reg. Ref: ABP30804620 + D21A/0706 + ABP -313240-22+ D21A/0996 + ABP-314429-22 **Address:** Frascati Centre, Frascati Road, Blackrock, Co. Dublin	**Decision Date:** 16th Dec 2020 ABP30804620 Alterations to Phase 1 permission for 45 no. apartments from second to fourth floor permitted under Reg. Ref: D17A/0950 and ABP-300745-18 to include the provision of 57 no. additional apartments as an extension to Phase 1, the subject application relates to a total of 102 no. apartments. D21A/0706 + ABP -313240-22 The proposal relates to a Phase 2A residential development of 41 no. apartments and the allocation of 60 no. car spaces. D21A/0996 + ABP-314429-22 The proposal relates to a Phase 3 residential development of 98 no. apartments and all associated site works.	The potential effects arising from this project and the proposed development are similar. However, provided the mitigation measures outlined in the Natura Impact Statement for the proposed development is adhered to, and given their scale relative to the baseline in South Dublin and the wider Dublin region, as well as the assimilative capacity of the Liffey Estuary and Dublin Bay, it can be concluded that the proposed development and this project will not lead to in-combination adverse effects.
APB Reg. Ref: ABP-314041-22 **Address:** Lands located at and adjoining Stradbrook House, Stradbrook Road, Mountashton, Blackrock, Co. Dublin.	**Decision Date:** Planning Application lodged 11th July 2022 Demolition of the existing Stradbrook House and adjoining surface car park, and the construction of 108 No. Build-to-Rent residential senior living apartments	The potential effects arising from this project and the proposed development are similar. However, provided the mitigation measures outlined in the Natura Impact Statement for the proposed development is adhered to, and given their scale relative to the baseline in South Dublin and the wider Dublin region, as well as the assimilative capacity of the Liffey Estuary and Dublin Bay, it can be concluded that the proposed development and this project will not lead to in-combination adverse effects.
Planning Ref: D21A/1041 **Address:**	Decision Date: 3rd Party Appeal lodged against decision to grant on 8/8/22. Mixed use development of 88 no. Build to Rent residential apartments, commercial unit and café across 2 buildings.	The potential effects arising from this project and the proposed development are similar. Owing to nature and scale of this project and the mitigation measures that will be implement as outlined in the NIS for the proposed development (Dalguise LRD), it can be

Plan or Project	Description of Plan or Project	In-Combination Effect(s)
St. Michael's Hospital Car Park, Crofton Road, Dun Laoghaire, County Dublin, A96 TN26		concluded that the proposed development and this project will not lead to in-combination adverse effects.
Planning Ref: n/a **Address:** Stradbrook/ Sallynoggin Streams	**Decision Date:** Tender documents for a CCTV and flow survey have been prepared which is envisaged to be completed during winter 2021-2022. **Description:** Roughan & O'Donovan Consulting Engineers (ROD) has been commissioned by Dún Laoghaire – Rathdown County Council (DLRCC) to prepare Flood Alleviation Options (FAO) for the Stradbrook and Sallynoggin Streams.	This project is at option selection stage and therefore there is no detailed information to inform this cumulative assessment.
Planning Ref: n/a **Address:** Deansgrange Stream	**Decision Date:** Detailed Construction Design, Compilation of Work Packages and the Preparation of Tenders for Contracts. **Description:** Improvements to the flood defence regime	This flood relief scheme is in a different catchment to the proposed development, therefore, there is no potential for in-combination effects. The flood relief scheme is currently being designed and environmental assessments including AA will be carried out on the final design.
APB Reg. Ref: ABP-301798-18 **Address:** Ringsend Wastewater Treatment Plant, Pigeon House Road, Dublin 4	**Decision Date:** 24th April 2019 Irish Water was granted planning permission by An Bord Pleanála for an SID to further progress the upgrade of the Ringsend Wastewater Treatment Plant (WwTP) on the 24th of April 2019 (ref. PA29S.301798), following on from an earlier approval in 2012. The permission provides for works required to facilitate the use of Aerobic Granular Sludge (AGS) technology, to omit the previously permitted long sea outfall tunnel and to upgrade the sludge treatment facilities at Ringsend, and to provide for a Regional Biosolids Storage Facility (RBSF) in Newtown, Dublin 11. As stated in the EIAR for the project (TJ O'Connor & Associates, Barry & Partners & Royal HaskoningDHV, 2018, NTS, p. 6): *"The final effluent from the Ringsend WwTP discharges into the Lower Liffey Estuary, which, together with the Tolka Estuary, is designated as a sensitive water under the Urban Waste Water Treatment Directive (UWwTD). This*	Given the nature of the project there is only a possibility of increase treatment of foul water from the greater Dublin area. The proposed development will not lead to a measurable increase of foul water being supplied to the Ringsend WwTP, therefore this project will not lead to in-combination adverse effects.

Plan or Project	Description of Plan or Project	In-Combination Effect(s)
	designation requires the plant to include nutrient (nitrogen and phosphorous) removal in the treatment process, which is not currently the case. The Proposed Upgrade Project will include nutrient removal to ensure compliance with the UWwTD" The project site extents at Ringsend overlap with the cumulative impact assessment study area for the proposed development. As part of the application to ABP, Irish Water (the Applicant) submitted an EIAR and NIS (Natura Environmental Consultants, 2018), which have been reviewed for the purposes of this cumulative impact assessment. Relevant environmental impacts identified are discussed in the following paragraphs. Note that the Newtown RBSF component is situated at a substantial remove from the location of the proposed development and has been discounted from consideration. It should also be pointed out that the majority of the Ringsend works are to be carried out in an area which falls outside the cumulative impact assessment study area. However, one of the construction compounds (C2) is to be situated within the study area, as shown roughly in Plate 17.26, above. In terms of the construction programme, the EIAR (Ch. 3, p. 54) states the following: *"The proposal to upgrade the treatment facilities at Ringsend WwTP will involve significant interaction with the existing plant and will necessarily be carried out on a phased basis over a period of 7 to 10 years… Construction activity commenced in early 2018 on the contract for the provision of additional secondary treatment capacity permitted under the 2012 Approval. Construction activity on the site of the Ringsend WwTP is expected to continue until 2028… The intensive period for construction activity is in 2019 and 2020 when the capacity upgrade works are being carried out…"* It follows that the construction phase of the proposed development is likely to overlap with a portion of that for the WWTP upgrade. As well as the retrofitting of new technology onto existing facilities, the Ringsend component of the project involves the	

Plan or Project	Description of Plan or Project	In-Combination Effect(s)
	construction of new buildings / tanks, installation of new equipment, and ground works including road construction and provision of new fencing / gates. • During the construction phase, there is the potential for temporary, not significant, negative water quality impacts due to a number of secondary treatment tanks being out of operation for a few months while they are being upgraded, which was expected to happen in the winter of 2019 / 2020 and, consequentially, is not likely to overlap with the construction phase of the proposed development unless major delays have occurred in the construction programme for the WWTP upgrade project. It is stated that a CEMP will be implemented during the construction phase of the project to ensure the implementation of best practice measures in relation to environmental pollution control, including of surface water. Overall, by providing an enhanced wastewater treatment system, the upgrade of the Ringsend WWTP will result in a net improvement of water quality status in the Lower Liffey Estuary (i.e. in the operational phase).	

7. CONCLUSION

This NIS has been prepared in accordance with the relevant provisions of the Habitats Directive, the Habitats Regulations and the Planning and Development Act, as well as the relevant case law and current guidance. It has demonstrated that, in the absence of appropriate mitigation, the Dalguise House Large-Scale Residential Development, individually or in combination with other plans or projects, could adversely affect the integrity of three European sites, namely of the South Dublin Bay and River Tolka Estuary SPA, South Dublin Bay SAC and the Dalkey Islands SPA in view of their Conservation Objectives. In light of this finding, this NIS has prescribed appropriate mitigation to eliminate or minimise such effects. Any residual effects, either individually or in combination with other plans or projects, have been assessed as not constituting adverse effects on the integrity of the European sites concerned. This assessment has been undertaken on the basis of the best scientific knowledge in the field and the Precautionary Principle. No reasonable scientific doubt remains as to the absence of such effects.

It is the considered opinion of ROD, as the author of this NIS, that, in making its AA in respect of the proposed Dalguise House Residential Development, Dún Laoghaire Rathdown County Council, as the Competent Authority in this case, may determine that, given the full and proper implementation of the mitigation prescribed in this NIS, the proposed development, either individually or in combination with other plans or projects, will not adversely affect the integrity of the South Dublin Bay and River Tolka Estuary SPA, South Dublin Bay SAC or the Dalkey Islands SPA. Furthermore, ROD recommends that it be a binding condition of any consent granted in respect of the proposed development that the mitigation prescribed in this NIS be fully and properly implemented.

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APPENDIX A

Description of the Proposed Development

5.0 DESCRIPTION OF THE PROPOSED PROJECT

5.1 Introduction

This Chapter, in accordance with Article 5(1)(a) of the EIA Directive, provides: *"…information on the site, design, size and other relevant features of the project".*

The assessment provided in the following Chapters, undertaken by the various specialists, is underpinned by the description of the project as set out below.

5.2 Background to the Site

5.2.1 Site History

In terms of the site history, Dalguise House appears on the First Edition Ordnance map of 1837, where it is named '*Richmond Cottage*'. On that map the footprint of the main body of the house appears similar to the present footprint of the main house, but the 1837 map shows a large south western extension or wing that is no longer there. The curved outline of the large walled garden appears on the 1837 map as, do the stable yard and some of the present stable buildings. On the 1837 map there is a gate lodge shown at the shared entrance to Dalguise and Carrick Brennan from Monkstown Road, but this does not have the same footprint as the present gate lodge at that location.

On the 25 inch 1907 Ordnance map the house has been renamed as Dalguise. The present three storey western extension is on the 1907 map, but the earlier southern wing at the west end of the house is gone. The footprint of the gate lodge at Monkstown Road appears to be similar to that of the present gate lodge at that location. At the south end of the lane, the 1907 map shows two further gate lodges, one each for Dalguise and Carrick Brennan, strongly suggesting that the gate lodge at the Monkstown Road end of the lane was intended to serve both houses.

One previous planning application, lodged under ABP Reg. Ref. 30694920, has been made in respect of the subject site: a Strategic Housing Development (SHD) of 300 No. units, subsequently reduced by ten in the Permission to comprise 266 No. apartment units across 8 No. blocks, ranging in height from 5 to 9 storeys, and 24 No. houses, including within the existing structures on the site (total 290 No. units). A creche was also provided under the application, as well as communal recreational facilities and 314 No. car parking spaces and 654 No. bicycle parking spaces.

In addition to the existing vehicular and pedestrian access, it was proposed to provide a further access to Monkstown Road, via Purbeck, and to facilitate additional pedestrian/cycle connects to adjoining roads to the east and west. The scheme was for 'conventional' residential units – not BTR.

That Application was granted by An Bord Pleanála, subject to 31 No. conditions. This included a condition requiring a reduction in height (by one storey) of 2 No. blocks. The condition meant the removal of 10 No. apartments, reducing the overall number of dwelling units to 290 No. The decision was subject to Judicial Review and was subsequently overturned by the High Court. According to the Judgment, the judge found that ABP had erred in their conclusion that the submitted EIA Screening Report adequately described the effects that the proposed development would have on the environment. He also found that ABP had not given adequate reasons for its EIA Screening decision that the proposed development would have an insignificant effect on cultural heritage. The judge further held that in its decision to grant permission ABP erred by relying on a Specific Planning Policy Requirement concerning building height guidelines and found that the height of the proposed development did materially contravene Dún Laoghaire-Rathdown's building height policy.

In the light of the foregoing, no extensive development has been undertaken on the land in recent years.

5.2.3 Site Location and Surrounding Area

The subject site of c. 3.58 hectares lies on an existing residential property within the built-up area of Monkstown approximately 1.5 km west of Dún Laoghaire town centre and c. 1.5 km southeast of Blackrock village. The site is within walking distance of Monkstown Village, c. 250 m, which provides a range of local services.

The site is connected to Monkstown Road to the north via an avenue of c. 80m which serves as the vehicular and pedestrian access. It is bounded to the north by modern residential dwellings at Drayton Close, Purbeck and Heathfield; to the south by rear gardens of houses at Brook Court; to the east by the rear gardens and sides of houses at Richmond Park and family hub housing; and residential developments to the west, Southdale, Arundel and The Orchard. The housing in the area is a mix of ages, with more modern infill developments to the rear of large older structures along Monkstown Road.

In terms of statutory designations, Dalguise House is the only Protected Structure (RPS No. 870) on the site according to the *Dún Laoghaire- Rathdown County Development Plan 2022-2028.*

The site is located within 500m (5 minutes' walk) from the Salthill and Monkstown Dart Station. This station provides service for Dart suburban rail service direct to Connolly Station, where it connects to the national rail network. There are also a number of bus stops within 200 metres of the site, served by routes 7 and 7A, which connect the site to Mountjoy Square to the north to Brides Glen Luas/Loughlinstown. A further bus stop at Temple Hill (c. 800 m to the west) is served by routes 4; 46E; 84; 84A.

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.

The site is served by an existing schools' network of 16 No. primary schools (incl. 7 No Special education schools) and 8 No. post-primary schools, as well as 31 No. existing childcare facilities within c. 2km of the proposed development. A total of 31 No. operational childcare facilities were identified within a c. 2km radius of the subject site (equivalent to a c. 15-minutes' drive time).

Other adult education and training facilities such as the Lumen Dominican Centre, Dún Laoghaire Community Training Centre, Tivoli Training Centre, and Blackrock Education Centre are also available to local residents. Additionally, there are also third level institutions such as the National Film School, UCD Michael Smurfit Graduate Business School and the Dun Laoghaire Institute of Art, Design, and Technology which are located within 1-2km from the subject lands.

The subject site is supported by a number of local community facilities, including the Urban Junction, Central Dun Laoghaire Senior Citizens, The Beat Youth Café, Blackrock Community Men's Shed, Kill o' the Grange Parish Hall, Boylan Community Centre, Foxrock Parish Pastoral Centre, Holy Family Parish Resource Centre, Mountown Community Facility. The Blackrock Library and the DLR Lexicon are located just over 1km from the subject site.

Extensive open space and recreational grounds are located in the area, including several parks such as Dunedin Park, Vesey Gardens, Temple Park, De Vesci Gardens, Soldiers and Sailors Park, Longford Park, Belgrave Square, and Apna Park (Picnic site) along with the Soldiers and Sailors playground which are located under 1km from the subject lands.

There are also a number of sports facilities such as the Monkstown Pool & Fitness Centre, Blackrock College RFC, Newpark School Sports Centre, Newpark Swimming Pool, Harbour Splash and the Monkstown Swimming Pool in close proximity the subject lands.

The study area is located within c.2km from a number or larger retail centres such as Dún Laoghaire Shopping Centre, Bloomfields Shopping Centre, Frascati Shopping Centre, Blackrock Village Centre, and the Park Pointe Retail Centre along with a few marketplaces such as the Blackrock Market, the People's Park Sunday Market and the Blackrock Food Market.

There are also a number of supermarkets and greengrocers in close proximity including, Tesco, SuperValu, ALDI, Lidl, Avoca Food Market, Dunnes Stores, and T. Murphy along with a number of local convenience shops.

5.2.4 Site Specific Flood Risk Assessment (SSFRA)

As stated in Section 10.3.2 and Section 10.4.2.2 of Chapter 10 (Hydrology), a Stage 3 Flood Risk Assessment was carried out by McCloy Consulting in 2023 for the proposed development site. This flood risk assessment has been carried out in accordance with the OPW publication *"The Planning System and Flood Risk Assessment Guidelines for Planning Authorities".*

The site-specific hydraulic modelling revealed that proposed development is outside the present day and climate change 1% AEP and 0.1% AEP fluvial floodplain of the Stradbrook Stream. It has also shown that the proposed development will not have any off-site effect / increase in flood risk elsewhere. The site has been shown to be partly affected by flooding, however. Therefore, the 'sequential approach' has been applied to the existing flood scenario at the site as follows (McCloy Consulting, 2023):

- Highly vulnerable development (residential) has been wholly located in Flood Zone C / outside the 0.1% AEP floodplain.
- Less vulnerable development (access roads, car parking) has been located in Flood Zone C / outside the 0.1% AEP floodplain with the exception of the watercourse crossing and associated access roads in the vicinity which are necessary to provide site access. Finished levels in those areas are subsequently raised relative to adjacent flood levels and have a post-development probability of flooding equivalent to Flood Zone C. It is noted that proposed levels of the watercourse crossing and connecting roads will ensure they lie outside / above the 0.1% AEP flood level.
- Open green space (non-amenity) areas are sited within Flood Zone A but are considered appropriate as such under the OPW Guidelines.

Furthermore, the site-specific hydraulic modelling has shown that the proposed development will not have any off-site effect / increase in flood risk elsewhere.

5.2.5 Existing Site Access

The site is currently accessed via the vehicular entrance to Dalguise House off the R119 Monkstown Road. The site is currently served by a single access point only.

5.3 The Need for the Proposed Project

The proposed project, a large-scale residential development, is supported by planning policy at all tiers. The project delivers a significant number of new homes as required to meet housing objectives outlined throughout the relevant policy documents. The relevant national, regional and local planning policy is outlined in in Chapter 3 (Planning and Development Context) and further in the supporting planning documentation.

The Applicant GEDV Monkstown Owner Limited will operate the proposed scheme as part of the Greystar group. Greystar is the global leader in rental housing; it provides a full suite of services from design, development and operation of high-quality residential assets worldwide, with developments in Europe, North and South America, Asia and Australia. With over 750,000 units managed globally, Greystar has been delivering residential rental opportunities for over 30 years and has been operating in Ireland since 2019.

Greystar currently operates two schemes in Ireland:

- Griffith Wood, Dublin 9 (342 No. units) operational since December 2021; and
- Dublin Landings, North Wall Quay (268 No. units) operational since December 2019.

Dalguise will be the first scheme in Ireland that Greystar have brought from design to operation. The scheme will reflect Greystar's long-term experience as a world class operator and will deliver the quality of residential units and associated amenities that residents of Greystar's schemes expect within an accessible, high-quality environment all of which result in an exceptional living experience.

Greystar are long term operators and holders of residential communities. This is a very different approach to other developers in the market whose investment ethos is to sell on completion. Greystar is highly motivated by the long-term success of the scheme as a high quality, well integrated residential community that is directly managed by a team of on site, directly hired personnel.

Greystar's central management system is critical to its success. Each development has dedicated on-site staff, who provide a 24-hour service. This ensures that any repairs or operational difficulties can be addressed promptly. Management staff are familiar with the specific development and residents, which also improves residents' experiences and supports Greystar's high-quality services. The on-site management also ensures that car, motorcycle and cycle parking can be managed effectively, and that mobility measures set out in a Travel Plan can be implemented successfully.

The provision of publicly accessible services such as the Restaurant, Childcare Facility and public open space accords with Greystar's goals to integrate their developments with the local community and area.

The Applicants for this scheme are market leaders in the delivery and operation of Build-to-Rent (BTR) developments and they consider this development will be their flagship development in Ireland and that it will set the standard for BTR developments in the country.

Furthermore, the Applicant (GEDV Monkstown Owner Limited) is making a significant positive contribution towards enabling an affordable housing sector in Ireland. As part of the proposed development, the applicant is providing 20% of units for social and affordable homes in accordance with the Affordable Housing Act 2021.

5.4 Overview of Construction Phase and Construction Works

For full construction related details, refer to the *Construction Environmental Management Plan* (CEMP) prepared by ByrneLooby and Roughan & O'Donovan Consulting Engineers. A summary is provided below.

5.4.1 Construction Phase

The construction of the project is planned to take between 36 to 42 months. The current phasing suggests that the project will be split into three phases, with the accompanying infrastructure and green spaces being constructed with each phase. Please refer to Figure 3 of the CEMP for proposed indicative construction phasing details.

The proposed bridge at Purbeck shall be constructed during Phase 1. The refurbishment works to Dalguise House and the Coach House buildings will be in Phase 1, with the works in parallel by a specialist contractor with suitable experience working on Protected / Historic structures. The removal of the existing swimming pool and vinery will occur at the early stages to facilitate the construction compound. The installation of buried services and landscaping works shall be coordinated with the building substructure works, and the programming of the works shall be scheduled depending on the dismantling of scaffolds to buildings, the suitable planting period etc.

The final phasing and associated Construction Traffic Management Plans shall be submitted by the appointed Contractor to Dun Laoghaire Rathdown County Council for approval.

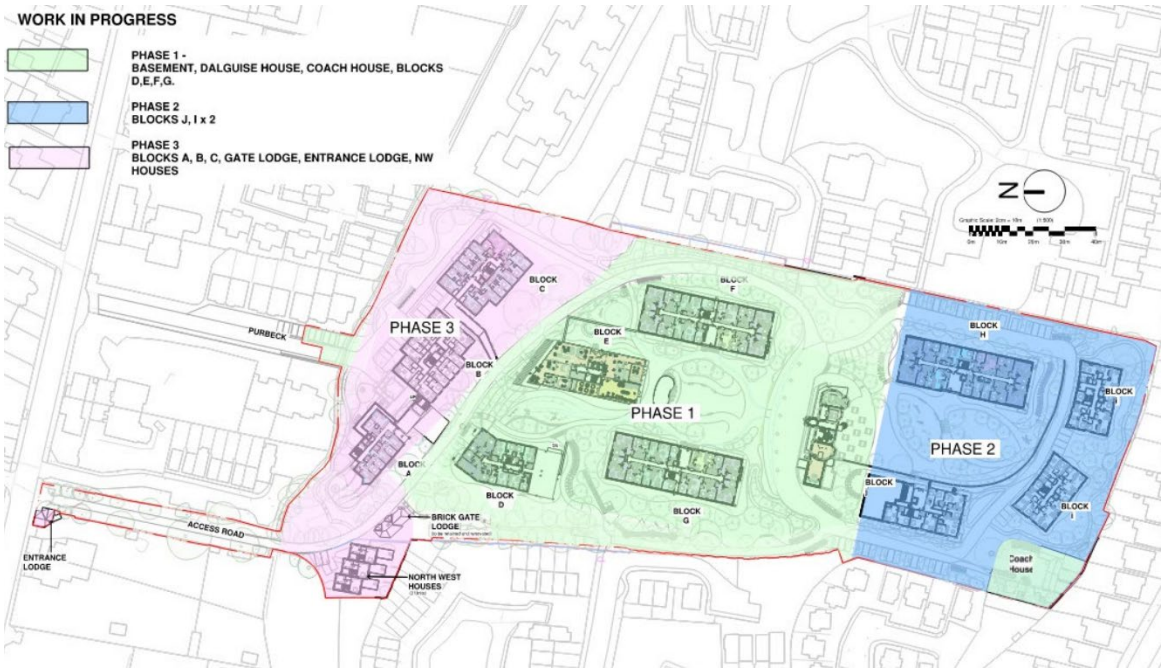

Figure 5.1: Illustrative Plan showing proposed construction phasing.

5.4.2 Proposed Construction Works

The proposed development will be divided into a number of phases as set out in the preceding section. Works in each phase will consist of the following:

Phase 1:

Phase 1 will incorporate the basement. A second and more comprehensive site investigation was carried out in early 2022. A total of eight rotary cores were carried out across the site and the bedrock was identified at 10.5m to 14.0m below ground level. This is well in excess of any basement excavations, and as such, it is not envisaged that any rock breaking will be required as part of the works. The majority of the excavations can utilise battered excavations (see drawing W3683-DR-1040-02), but some vertical temporary retaining walls will be required along the northern and western boundaries in close proximity to existing trees to be retained (see drawing W3683-DR-1040-02). The temporary retaining walls will include bored piles. All excavation banks shall be protected and inspected regularly. The accompanying drawing W3683-DR-1040-02 identifies the basement / undercroft excavation extent and the proximity to the site boundaries.

The foundations in the basement area will be integral to the basement slab. Some anti-floatation anchors will be necessary at basement level, below podium areas, and the set-out of the anchors will be subject to further monitoring of the groundwater levels over the coming period. The superstructure will then be constructed from the podium level, as outlined in the following sections. Access to this phase will be via the existing roadway, with a cellweb build-up provided on areas of the roadway that overlay with the tree Root Protection Zone (RPZ). The bridge crossing at the Stradbrook Stream will also be constructed in this initial phase.

Phase 2:

The excavations at Phase 2 will overlap with the completion of excavations at Phase 1. As noted in the site investigation, bedrock should not be encountered during excavations, and the bulk dig in Phase 1 shall be achieved using battered slopes to a safe angle of repose. All excavation banks shall be protected and inspected regularly. Excavations near trees to be retained shall incorporate specific construction techniques as outlined by the Arborist. The foundations in Phase 2 shall consist of shallow reinforced concrete strips or pad foundations. The superstructure will then be constructed from the foundation, as outlined in the following sections. Access to this phase will be via the existing roadway. An existing septic tank serving Dalguise House will be removed at the footprint of Block J. The site investigations to date do not indicate any contamination in the area, however, a Remediation Plan as set out in the Engineering Services Report shall be implemented for the removal of the tank and backfill.

Phase 3:

The third phase will include the construction of the final blocks. As with Phase 1, some of the excavations are adjacent to existing trees to be retained, and as a result, a temporary retaining wall shall be employed along the southern boundary of Block A, B and C. The foundations in the basement area will be integral with the basement slab. Some antifloatation anchors will be necessary at the undercroft level, below podium areas, and the set-out of the anchors will be subject to further monitoring of the groundwater levels over the coming period. The superstructure will then be constructed from the podium level, as outlined in the following sections. Access to this phase shall be via a new temporary roadway constructed with a CellWeb buildup over RPZs. Finally, any temporary piling platforms will be agreed in advance with the Arborist.

5.4.3 Construction Working Hours

Unless required otherwise by Dún Laoghaire-Rathdown County Council, it is proposed that standard construction working hours should apply, i.e.: 7am to 7pm Monday to Friday, and 8am to 2pm on Saturday. No works shall take place on site on Sundays or Bank Holidays.

It may be necessary for some construction operations to be undertaken outside these times, for example, service diversions and connections; concrete finishing and fit-out works; etc. There may also be occasions where it is necessary to make certain deliveries outside these times, for example, where large loads are limited to road usage outside peak times. Any proposed works outside of normal working hours will be identified in advance, and the Local Authority and local neighbours will be notified of the likely affects (see Section 10). This update will be from the designated Community Liaison Officer who will issue a monthly Community Liaison Plan which will be circulated to the relevant stakeholders. Works outside of normal working hours shall not progress without written approval from the Local Authority

5.4.4 Construction Traffic

The works associated with the new development will result in additional traffic on the neighbouring road network, with vehicle movements associated with the removal of excavated material, demolition waste, construction waste, and the delivery of new materials, concrete trucks etc.

The primary access routes to the site shall be determined by the Contractor in their *Construction Traffic Management Plan* (CTMP). Primary vehicle movements shall be limited to access/egress via the existing access to the Dalguise House lands off Monkstown Road. The Contractor will identify primary access routes that provide the most direct access to the M50 and limit access along local roads. Based on the quantities of excavation and fill to be moved to or from the site, construction waste removal, and general site deliveries for the intended construction works, HGV traffic is estimated to be a maximum of 13 No. two-way movements per hour. The figures below identify two routes to/from the site to the M50.

- Route 1 (Accessing the site, same return trip): Via the M50 onto the N31 at Leopardstown, left onto the N11 (Stillorgan Road), right onto N31 (Mount Merrion Avenue), right onto Frascati Road, left on to R119 (Monkstown Road).

- Route 2 (Accessing the site, same return trip): Via M11/M50 to the south, onto the N11 (Bray Road) through Cherrywood / Cornelscourt onto the Stillorgan Road, right onto N31 (Mount Merrion Avenue), right on to Frascati Road, left on to R119 (Monkstown Road).

Figure 5.2: Construction Route 1 (Source EPA Maps).

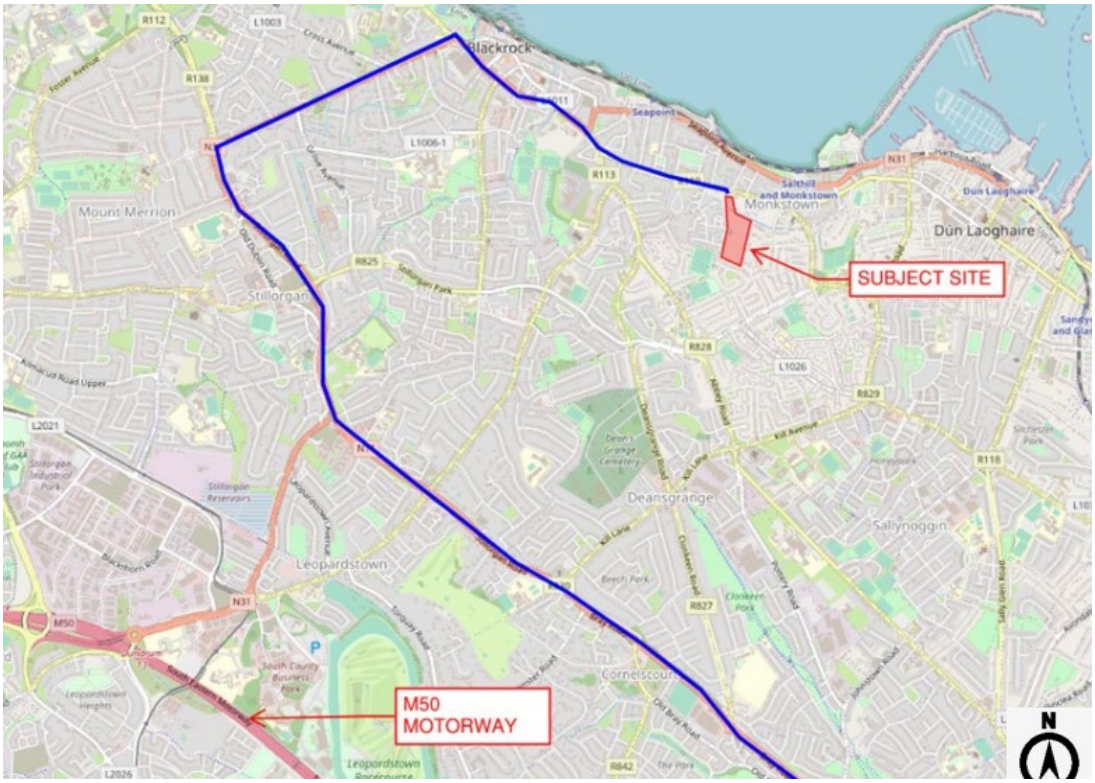

Figure 5.3: Construction Route 2 (Source EPA Maps)

The following are some measures that will be implemented to accommodate smooth traffic flows:

- At the entrance, suitable laybys with a temporary one-lane traffic light system shall be provided, with priority to vehicles entering the site.
- Site entrance gate will be set back a minimum of 18m from the footpath edge to ensure all vehicles leave the road before stopping.
- Appropriate sight lines will be provided;
- Advanced warning provided to all users on the road and directional signage for site traffic.

In addition to construction vehicles, it is projected that the works will result in approximately 150 to 200 construction workers on site during typical construction period, with a maximum of 400 construction personnel on site concurrently during short period of peak activity. Given typical construction working hours the majority of these personnel are expected to arrive to site in advance of the 08:00 – 09:00 morning peak hour and to depart before or after the 17:00 – 18:00 evening peak hour depending on the shift working pattern.

Some construction workers will arrive on foot, cycle or use public transport. In addition, many construction workers come to site in groups by car or van. Vehicular movements carrying construction personnel can be broken down as follows:

- 400 peak staff working on site (Max);
- 40% arrive during AM or PM Peak Hours = 160no., 30% arrive via public transport, walk or cycle = 48no., Total arrive via car/van 112, (Average Car Occupancy = 2.2 (including driver)). Maximum additional movements AM/PM Peak (400 staff) 51 cars/vans
- With up to 200 staff normally on site
- Normal additional movements AM Peak 26 cars/vans

This volume of construction traffic estimated to be generated during peak traffic hours is lower than the peak volumes of non-construction traffic projected for the operational phase of the development. Beyond the bulk earthworks stage, other stages during construction are estimated to have lower HGV volumes and lower traffic volumes overall. The projected peak volume of construction traffic, including both truck and staff movements, is lower than the peak traffic volumes projected for the fully occupied development during the operational stage.

Detailed measures shall be developed further as part of the CTMP developed by the Contractor in consultation with the Design Team and Dún Laoghaire Rathdown County Council prior to commencement of works.

The principal objective of the CTMP is to ensure that the impacts of all building activities generated during the construction of the proposed development upon both the public (off-site) and internal (on-site) worker's environments, are fully considered and proactively managed/programmed respecting key stakeholders requirements thereby ensuring that both the public's and construction workers safety is maintained at all times, disruptions minimised and undertaken within a controlled hazard free / minimised environment. It is noted that the impact of the construction works will be temporary in nature.

The CTMP shall be prepared in accordance with the principles outlined below and shall always comply with the requirements of:

- Chapter 8 of the Department of the Environment Traffic Signs Manual, current edition, published by The Stationery Office, and available from the Government Publications Office, Sun Alliance House, Molesworth Street, Dublin 2;
- Guidance for the Control and Management of Traffic at Road Works (June 2010) prepared by the Local Government Management Services Board; and
- Any additional requirements detailed in the Design Manual for Roads and Bridges & Design Manual for Urban Roads & Streets (DMURS).

In order to ensure satisfactory operation of the construction stage the following is proposed:

- Provision of sufficient on-site parking and compounding to ensure no potential overflow onto the local network.

Site offices and compound shall be located within the green space area just south of Dalguise House. The site will be able to accommodate employee and visitor parking throughout the construction period with construction of temporary hardstanding areas.

Finally, truck wheel washes will be installed and any specific recommendations regarding construction traffic management made by the Local Authority will be adhered to.

The following mitigation measures shall be incorporated into the CTMP:

- During the pre-construction phase, the site will be securely fenced off from adjacent properties, public footpaths and roads.
- The surrounding road network will be signed to define the access and egress routes for the development.
- The traffic generated by the construction phase of the development will be strictly controlled in order to minimise the impact of this traffic on the surrounding road network.
- All road works will be adequately signposted and enclosed to ensure the safety of all road users and construction personnel.
- All employees' and visitors' vehicle parking demands will be accommodated on-site.
- A programme of street cleaning if/when required.
- Any associated directional signage
- Any proposals to facilitate the delivery of abnormal loads to the site
- Measures to obviate queuing of construction traffic on the adjoining road network.

5.4.5 Construction Waste

AWN Consulting Ltd have developed a Resource & Waste Management Plan (RWMP) see Appendix 18.1 of the EIAR. This RWMP includes information on the legal and policy framework for Construction and Demolition (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. Section 6 of the enclosed CEMP provides details.

5.5 Description of the Operational Phase of the Proposed Project

In summary, the proposed development is a 7 year permission for a Large Scale Residential Development comprising 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.

Vehicular and pedestrian access and egress is provided at two points on Monkstown Road: the existing entrance to Dalguise; and at Purbeck.

The proposal also includes alterations 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 proposed development comprises the construction of 493 No. residential units in total consisting of 486 No. new build and 7 No. residential units. The 7 No. residential units be located within the existing Dalguise House, Gate Lodge (Brick Lodge) and Coach House, all of which are proposed to be reused and repurposes as part of the subject proposal.

The residential mix is broken down as follows:

- 3 No. 3 storey 3-bed terraced houses.
- 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)

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 is also proposed. Residential amenities, residential support facilities, a childcare facility and restaurant/café are also provided.

The table below provides the key development statistics.

Development Statistic	Proposed Development
Site Area	3.58 ha
No. of Residential Units	493
Density	138 units per hectare
Height	3 – 9 storeys
Dual Aspect	54%
Balconies	64%
Plot Ratio	1.13
Site Coverage	22%
Car and Cycle Parking	228 no. spaces (19 no. undercroft car parking spaces, 148 no. basement car parking spaces, 61 no. surface car parking spaces, (this includes 8 no. car spaces for café/restaurant, 6 no. childcare facility and 6 no. car share spaces). 971 no. Bicycle Spaces and 20 cargo bike spaces.

5.5.1 Demolition

The demolition and part-demolition of existing structures (total demolition area 967 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 (142 sq m);
- Part-demolition of Lower Ground Floor at Dalguise House (9 sq m);
- Demolition of 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;
- Demolition of 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.

5.5.2 Residential Development

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 1,403 sq m; and 46,154 sq m of new build, and 1,228 sq m retained existing buildings), will consist 493 No. residential units, comprising:

- 3 No. three storey 3-bed terraced houses;
- 490 No. Build-to-Rent units, residential amenities and residential support facilities;
- A childcare facility; and restaurant/café.

The proposed housing mix is as follows:

	Apartments	Houses	Total	
Studio	2		**2 (0.4%)**	
1 bed	289		**289 (58.6%)**	
2 bed (3 person)	20		**20 (4.1 %)**	
2 bed (4 person)	166		**166 (33.7 %)**	
3 bed	13	3	**13 (2.6%)**	**3 (0.6%)**
	490	**3**	**493**	

The proposed residential units will be arranged as follows:

Northwest Houses

The proposed development includes 3 No. 3-bed terraced houses located at the north west of the site at the main Dalguise House entrance. The 3 no. houses are three-storey in height and have a total gross floor area of 569 sq m.

Block A

Block A is located at the Purbeck entrance to the south of the site and is 7 storeys in height. The building has a gross floor area of 2,015 sq m and comprises a childcare facility, which is 540 sq m over Ground and First Floor Levels; and 19 no. apartment units, including 15 No. 1-beds and 4 No. 2-beds/4-person units.

Block B & Block C

Block B & Block C are located to the south of the site at the main vehicular entrance and are 7 storeys over undercroft parking. Each building has a gross floor area of 3,695 sq m and comprises 48 no. apartments units (total 96 no. apartment units) including, 33 No. 1-beds, 1 No. 2-beds/3 persons and 14 No. 2-beds/4-person units.

Block D

Block D is located to the west of the site and is 7 storeys over basement level car park. The building has a gross floor area of 4,325 sq m and comprises 52 no. apartment units, comprising 25 No. 1-beds, 26 No. 2-beds/4-persons, 1 No. 3-bed unit.

Block E

Block E is located in the centre of the southern part of the site and is 9 storeys over a basement level car park. The building has a gross floor area of 5,946 sq m comprising:

- 66 No. apartment units including 40 No. 1-beds, 26 No. 2-beds/4-person units;
- Residents' support facilities including a concierge/lobby (75 sq m);
- 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 and G

Block F and G are the central blocks flanking the main lawn area creating a formal setting to Dalguise House. Each building is 7 storeys over basement level car park and has a gross floor area of 5,469 sq m. Each building contains 76 No. apartment units (total 152 no. apartment units) including 46 No. 1-beds, 5 No. 2-beds/3-persons, 23 No. 2-beds/4-persons, 2 No. 3-bed units.

Block H

Block H is located at the southern end of the site and forms a courtyard with the walled garden. The building is 5 storeys over lower ground and has a gross floor area of 4,252 sq m. The building contains 54 No. apartment units including 30 No. 1-beds, 1 No. 2-beds/3-persons, 21 No. 2-beds/4-persons, 2 No. 3-bed units.

Block I (1 & 2)

Block I (1 & 2) are mews style apartment buildings located at the southern end of the site behind the Walled Garden. Each building is 3 storeys with a gross floor area of 1,038 sq m. Each building comprises 12 No. apartment units including 3 No. 1-beds, 3 No. 2-beds/3 persons, 6 No. 2-beds/4-person units.

Block J

Block J is a mews style apartment building located at the southern end of the site to the west of the Garden Wall. The building is 4 storeys in height and has a gross floor area of 1,844 sq m. It comprises 20 No. apartment units including 13 No. 1-beds; 1 No. 2-bed/4-persons, 6 No. 3-bed units.

Dalguise House and other Historic Buildings

The development includes the refurbishment, adaptation and reuse of:

- the 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 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).

5.5.3 Non-Residential Development

The proposed development will deliver non-residential facilities consisting of the proposed café /restaurant (273 sq m) located at the Lower Ground Floor of Dalguise House at the center of the site, and the childcare facility (540 sq m), located at the ground and first floor of Block A at the Purbeck entrance to the site.

The proposed non-residential uses will serve both the residents of the proposed development and be accessible to the existing community.

5.5.4 Ancillary Works

The development will also consist of the:

- 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: 227 No. car parking spaces (148 No. at basement level; 20 No. at undercroft; and 59 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.

5.5.5 Landscape Strategy and Design

The proposed landscape strategy has been developed by the landscape architects in close collaboration with other disciplines in the design team. Focus was placed on retaining the existing trees on site where possible with minimal re-grading in root protection areas. Therefore, this has impacted the distribution of the communal open space and public open space.

The general landscape design objectives are to:

- Establish a high-quality parkland space that is in keeping with the historical era of Dalguise House.
- Retention and enhancement of existing historical features such as the tree lined avenue approach to Dalguise House, the house lodges, stable buildings and the walled garden.
- Retention of high-quality mature trees, and increased tree planting
- Maximise views from the scheme towards the coastline and views within the central open space and walled garden towards the historical Dalguise House
- Create a predominantly public landscape with open space for locals and visitors to enjoy with greater permeability and accessibility to the wider townscape.
- Facilitate pedestrian/cycle links with the wider neighbourhood.
- Introduce environmental elements that residents and visitors can interact with and learn from.
- Increase biodiversity and management of the site.
- Introduce SUDS in a way that benefits amenity.
- Minimal intervention is being sought with manicured areas only where it would be in keeping from a historical perspective.

Proposed Tree Planting Species

There are a large range of trees on site including native, ornamental varieties and complimentary species. There is also a range of tree ages and condition with the majority of trees being mature and of fair condition as per the submitted Tree Survey prepared by Leinster Tree Services.

The scheme proposes to use many of the same species as the existing trees with some additional complimentary species to increase biodiversity and sustainability of tree cover. Tree species were selected based on suitability to local soil conditions and microclimate, longevity and biodiversity.

Proposed trees have been categorised into different types for different positions/areas within the landscape masterplan. These include:

- Large parkland trees
- Native/naturalistic trees
- Ornamental trees
- Swale trees
- Edible trees
- Main avenue trees

Trees planted will be a combination of Mature and Semi-Mature species. Clear Stem Trees will be specified to have a range of sizes: 60-70 Girth for the Large Parkland Trees, 40-45 Girth 30-35 Girth for other categories. These will have a minimum of 2m clear stem.

Multi Stem Trees will be specified to be at least 4-5m high with canopy lifted by at least 1m. Espaliers will be 3-4m high.

Where possible trees will be planted in tree pits as part of the SUDs strategy and to increase the health of the trees. This will not be possible where there are root protection zones. Trees within the podium will either be planted in raised landscape mounds or within raised planters to ensure they receive enough build up for healthy, sustainable growth.

Proposed Overall Planting Species

The soft landscape strategy proposes seeding the majority of grass areas with a long meadow mixture with the exception of the central lawn area and grass within 1m of paths/roads, which will have a shorter flowering lawn mixture. Grass mixtures along swales and pond edges will consist of suitable wetland and dry swale species. Woodland floors will remain as is, apart from where there is too much disruption to the understorey. In these areas a woodland meadow mix will be seeded.

Along the main avenue there will be some bulb planting punctuating the route in areas and bulb planting will also be used selectively in the main garden areas and central lawn.

Along the periphery of the site native shrub planting and hedges will be introduced in areas that are free from root protection zones.

Edible plants (all edible forest layers) will be specified within the walled garden and climbers will be planted at the base of the walled garden wall and entrance archways to achieve a secret garden character, thus reintroducing the kitchen garden use to the walled garden.

Ornamental planting is proposed directly around the blocks, in some areas this will be low level planting to account for lower build ups and a no dig planting method within root protection zones. In other areas this will also include taller species to allow for more structural interest. Marginal (both dry and wet), emergents and submerged aquatics will be proposed around the pond area, whereas a wet meadow mix will be used at the base of the swales, and a dry swale mix on the banks. A mix of sedum and biodiverse roof planting will be planted within the green/blue roofs and sedum boxes will also be provided on the tops of bicycle sheds.

Specifications of healthy, full specimens at a density that allows for instant impact will ensure that the site feels like a mature landscape from the start. Species are selected based on their suitability of particular positions – dry swales / shade etc. in addition to their aesthetics and ecological criteria.

Refer to the Landscape Soft works drawings (C0135 L300 series) submitted by Cameo and Partners.

Hard Landscaping

The hard landscape elements have been carefully selected for their proposed function and durability, and their ability to enhance the space and honour its historical parkland character. In parts of the site where there are existing trees and therefore root protection zones, paving that can be laid using a no dig construction method. Sustainability has also been a key consideration with a desire to use as much of the high-quality materials on site as possible. Materials that will benefit the SUDs strategy have also been proposed where possible, such as permeable resin bound paving, permeable concrete blocks, gravel suds pavers and reinforced grass.

The main avenue will be resurfaced with a buff macadam over the existing tarmac, this will repair the surface and create a shared surface aesthetic that is fitting for its parkland setting, but also durable and fit for purpose. As it will be laid on top of the existing tarmac it will have less impact on root protection zones. Paths will be permeable resin bound gravel. A limited number of woodland paths will be laid with loose bark chip and timber edging using a no dig construction to protect tree roots, these paths are in locations where there are root protection zones and level differences, such spaces are not counted as contributing to the communal nor public open spaces. Where raised decking, bridges and elevated walkways are necessary composite timber decking will be used to ensure longevity. With timber being used for structures within the woodland – such as the yoga platform, elevated bird hide and elevated tree walk.

The existing granite cobbles from the path that leads up to Dalguise House will be retained and used around the main house. These will be supplemented with new granite cobbles, (chosen to match existing), and used around the Coach House. Private terraces will be laid with granite flags. The two other feature paving areas, such as the area around the outdoor pavilion within the central lawn will consist of large high quality, polished concrete slabs. These materials should complement and further enhance the existing hard materials and natural surroundings.

Reinforced grass system will be used for the Fire emergency route that runs up the northern to help retain the parkland character.

Play Strategy

The play strategy proposes three different types of play experience within the site:

- Play off the ground - Play which is mainly elevated off the ground to ensure minimal disruption to root protection areas and a different level of interaction with the existing trees and canopy. This includes the tree top walk and elevated play nets.
- Natural looking & sculptural play - Play made out of timber and stone which feels in keeping with its natural environment. This includes Stepping Stumps, Existing Fallen Logs, Timber Climbing Ramp, Logs, Play Boulders, Jumping Discs, Timber Stilted Balance Beam.
- Naturally occurring play - Play encouraged by landscape features - such as depressions and mounds, slopes, dry swales, woodland, wildflowers.

This amounts to 1,134 sq m of dedicated play spaces across the site, some of which is within the public open space and other areas that fall within the communal space. However, there are opportunities for informal play across the landscape. The play areas are spread across the site, with most of the areas provide a variety of equipment that appeals to different ages - 0-5yrs, 5-11yrs, and 11yr plus. The play spaces are all interconnected by pedestrian routes. The elevated tree walk will not be restricted to certain ages, but adult supervision will be necessary for under 5yrs. The yoga platform is not specifically identified as a play space, but is expected to attract older children. The proposed play equipment will be designed and manufactured in accordance with standards EN 1176 and EN 1177. There will be a mix of impact absorbing play surfaces including loose bark mulch in areas of root protection zones and bonded rubber mulch that looks like bark mulch within the gardens where root zones are not impacted. Within the walled garden a high quality artificial grass will be used as the play safety surface to ensure that it is fitting with the Walled garden character.

A list of all play equipment can be found within the landscape package prepared by Cameo and Partners.

Environment Strategy

As per Criterion 4, in accordance with the requirements of DLRCC all new developments are to incorporate the principles of 'SuDs'. The aim of 'SuDs' inclusion across the development is to provide an effective system separate from the foul network to mitigate the adverse effects of storm water run-off on the environment, through enhanced quality systems and on local infrastructure to aid in preventing downstream flooding. The features proposed shall reduce runoff volumes, pollution concentrations and enhance groundwater recharge and biodiversity.

The proposed development 'SuDs' features shall consist of:

a. Green/Blue-roof – this allows the roof areas of the proposed apartments to use a filter layer to direct rainfall events into a storage layer below.
b. Permeable Paving – this system allows rainwater to be directed into car parking bays whereby the rainwater can filter through gaps in the paving blocks and percolate into the subsoil or to swales.
c. Tree Pits – tree pits will be located along the existing avenue to capture runoff for the existing hard standing area.
d. Swales – it is proposed to allow storm water to be directed locally into swales when the permeable paving is overflowing to delay storm water from entering the main drainage network.
e. Attenuation Tanks – as noted above, for extreme storm events, a dedicated system to contain the storm water flows generated during a 1-in-100-year storm, increased by 20% for climate change are required by DLR. It is proposed to use underground storage tanks in three locations for this purpose.
f. Low Water Usage Appliances – low water usage appliances should also be utilised to aid in the reduction of water usage on the development.
g. Oil Separator – prior to final disposal of storm water from the development drainage network into the Stradbrook Stream (at two locations), the effluent will pass through an oil separator to remove any hydrocarbons which may have entered the network from car parking areas

5.5.6 Public Open Space

This landscape consists of a sequence of different open spaces that are open to the public.

The landscape masterplan provide 5,759 sq m of public open space that is accessible and usable by all, well over and above the 15% requirement of 5,370 sq m. This includes the following areas:

- The central lawn; this area comprises of a formal lawn with meadow planting and mounds to the sides, circuitous paths and planting beyond. It includes an outdoor pavilion with indoor and external seating opportunities and other opportunities for seating within the lawn, with views towards Dalguise House, framed by the trees. There is no play equipment in this area, but the landscape mounds and meadow will provide a playable landscape.
- The woodland area west and north of Block G; this area comprises of several play nodes at ground, the elevated walkway and elevated play nets and the surrounding woodland landscape.
- The Walled Garden; this area includes the terrace directly to the south of Dalguise House which has provision for outdoor eating and drinking with views of the house to the north and the restored walled garden to the south. The Walled Garden will be split into a more active area with play to the north and a quiet, reflective space to the south, where people can grow and pick edible plants and rest in this sheltered spot. Plant beds will contain mainly edible plants and trees, including herbs, fruits, nuts and vegetables, but also plants of botanical interest. An edible forest approach will be used with the trees planted in an orchard style. The walled garden wall will be retained while access into the walled garden will generally be at points where there is already a break in the wall. Two existing trees of value will be retained within the design. There will be interesting structures within the garden - such as a long pergola trained with fruit trees. Along the paths there will be benches for rest and relaxation. Within the planting there will be areas for beehives, insect hotels and bird tables. Growing information boards will be positioned in key areas to educate people about the edible forest approach.

5.5.7 Communal Open Space

The proposals allow for 3,867 sqm of communal open space (above the required 3,864 sqm based upon the communal open space for the apartments and the additional communal open space to compensate for units without, or with a shortfall in private open space). This includes the following:

- The garden area between Blocks D & E; which consists of a play area with water play, seating provision, and associated planting including a raised planter.
- The communal roof terrace on Block E, which includes outdoor dining and seating provision enclosed within raised planters with views of the coastline to the north and a viewing deck.
- The outdoor terrace at ground level at Block E.
- The outdoor terrace between Blocks B and C at the entrance from the main avenue.
- The space between Block E and Block F, which includes a play area and seating.

- The courtyard by the Coach House.
- Woodland areas to the north and south of the site that include resting and play opportunities and sculpture interspersed within the woodland environment.
- In most places informal boundaries exist between communal and public open spaces.

5.5.8 Access

The site is currently accessed via a driveway from the R119 Monkstown Road. This access point leads to the historical winding avenue that leads up to Dalguise House. The road is currently narrow and not conforming to standards for a two-way route. Increasing the width of this road for two-way traffic would have a detrimental effect on the existing trees. Therefore, another access route through the adjoining Purbeck development is proposed. This new access route will be the main vehicular access and lead directly into the basement of the development where there will be underground parking. This was heavily influenced by the desire to retain as many high value trees as possible in this part of the site.

The existing winding avenue that leads up to Dalguise House will be repaired and resurfaced with Buff macadam, but this will be done on top of the existing surface, so further excavation will not be necessary. In most areas the width of the original road will be retained with distinct incidences of road widening for passing bays with setdown/delivery spaces also provided. However, these passing bay areas have been carefully chosen so as not to encroach on existing root protection zones. The road will act as a shared surface, and not be the main vehicular route into the development, therefore widening the road for a pavement is not necessary.

Provision is made in the landscaping proposals for potential future pedestrian and cycle connections that would facilitate permeability between the site and adjoining 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.

The access route to the west and the southern eastern access will enable cycle access in addition to pedestrian access with a wide gate and paths leading on from these access points. The third access point to Cheshire Homes development to the northeast will be for pedestrians only, as a bark chip path connects with the site so as not to interfere with root protection zones, having regard to the trees to be retained and the existing site levels. All pedestrian/cycle access points will be secured with lockable cast iron gates, but these are intended to stay open for the majority of the time.

These proposed access points can be seen on the General Arrangement Drawing supplied by Cameo+Partners Ltd as part of the submission.

5.5.9 Car Parking and Cycle Parking

The proposed development provides car parking for both the residential and non-residential components of the scheme, totaling in 228 no. spaces, comprising:

- 208 no. residential spaces
- 8 no. café/restaurant car spaces
- 6 no. childcare facility spaces (setdown and staff parking)
- 6 no. car share spaces to the south of Block G.

The parking proposal also includes 20 no. cargo bike spaces and 8 no. motorcycle spaces.

In terms of cycle parking, the total residential cycle parking provision will be 716 no. long stay spaces and 255 no. short stay spaces (a total of 971 no. spaces).

5.5.10 Site Utilities

Foul Infrastructure

The wider area is served by the Ringsend Wastewater Treatment Plant, which has treated Dublin's wastewater since 1906 and is the largest plant in Ireland providing 40% of the Country's treatment capacity (water.ie). The plant includes secondary treatment with capacity PE of 1640000 (EPA Maps, 2022). There are no other EPA licenced waste-water treatment facilities within 10 km of the site.

The Irish Water service drawings identifies that a main combined sewer exists running under on the line of the Stradbrook/Monkstown Stream was obtained. The main is a 450mm diameter vitrified clay (VC) line flowing towards Carrickbrennan Road with an existing manhole for connection 1 at the Western end of the Purbeck Lodge and Dalguise House site intersection while proposed connection 2 is adjacent western boundary to the Drayton Close estate.

A further 450mm diameter 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.

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. This will be removed during the construction phase.

Water Supply

Irish Water is responsible for managing and delivering water services to homes and businesses served by Public Water Supplies and Wastewater Agglomerations.

Potable water supply for Monkstown (as well as Blackrock, Booterstown, Clonkeen, Deansgrange, Dún Laoghaire Town, Foster's Avenue, Roebuck, Oatlands, Orpen, Pottery Road and Stradbrook) is from the Stillorgan Reservoir (DLR Co Council, 2022). Stillorgan is a treated-water reservoir that receives water that has been processed in Ballymore Eustace or Vartry, before it is dispersed through the network of pipes to a total population of 200,000 people in South Dublin. It is located approximately 3km from the site.

There is an existing 160 dia. HPPE or equivalent, Irish Water water main on Monkstown Road this was located during a previous site walk over (12 January 2022) and has been confirmed by Irish Water.

Electricity and Gas Infrastructure

The development shall be supplied from the local ESB Networks Medium Voltage Network, which includes Medium Voltage Sub-Stations on Brighton Avenue and at Richmond Park. The development will be supplied from the Monkstown Road direction, with potential future linkage to the Richmond Park substation, and to locate 2 No. Substations within the development, one in Block E and one to the rear of the site at Block H. The location and ratings of Sub-Station shall be considered to satisfy architectural and engineering design freedom and also to satisfy the statutory requirements of ESB Networks.

As part of the development, a low-pressure gas distribution network shall be extended by Gas Networks Ireland from the existing gas supply network, to supply gas to the various tenant units proposed throughout the development. It is not proposed to supply gas services to individual residential units.

Telecommunications

All main roads / boulevards within the development shall contain ducting / cable ways and chambers as deemed necessary for the servicing of the site. The immediate surroundings of the site are currently serviced by Eir and Virgin Media infrastructure, which will be extended within the site to meet the needs of the development. Fibre-to-the-Home will be extended to each unit within the development to provide the development with high-speed broadband, TV and telecommunication requirements.

APPENDIX B

Project Drawings

NOTE : THE FOOTPRINTS OF ADJOINING PROPERTIES ARE TAKEN FROM THE MOST CURRENT OS MAP PROVIDED TO THE ARCHITECT

SITE LAYOUT PLAN
1 : 500

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Drawing Notes:

= Indicates Extent of Application
Site Area within Application = 26787.7 m²
= Indicates Adjacent Site in Ownership of Applicant
= Wayleave
= Part V allocation
WSA = Waste Storage Area
= Access / Connection to surrounding Neighbourhoods.
Site Access

Issues & Revisions

Revision Number	Date	Drwn	Details of Issue / Revision
P01	12.10.22		Issued for Planning
P02	19.05.23		Response to RFI

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GEDV Monkstown Owner Limited,3rd Floor Kilmore House, Park Lane, Spencer Dock, Dublin 1.

Project Details:
Dalguise
Monkstown

Drawing Title:
Proposed Site Layout Plan

Job No.	Sheet Size:	Scale @A0:	Status	Purpose of Issue
P21-066D	A0_	1:500		PLANNING PERMISSION

Issue Date:	Drawn By:	Reviewed By:		Revision
28/07/22	MG	EOB	MKS-RAU-ZZ-XX-XX-DR-AR-002	P02

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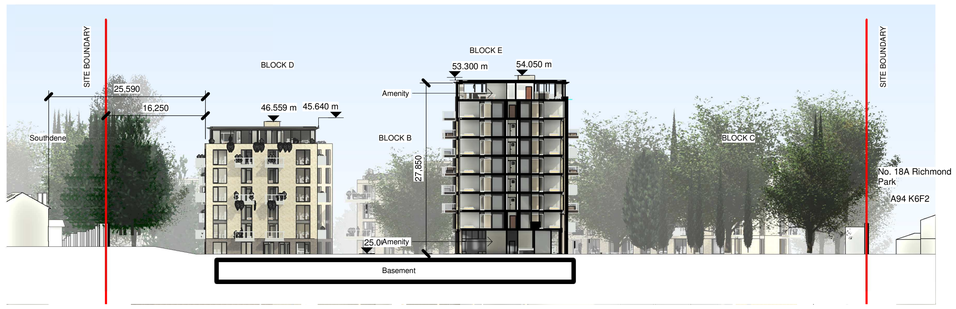
Section B - B
1 : 500



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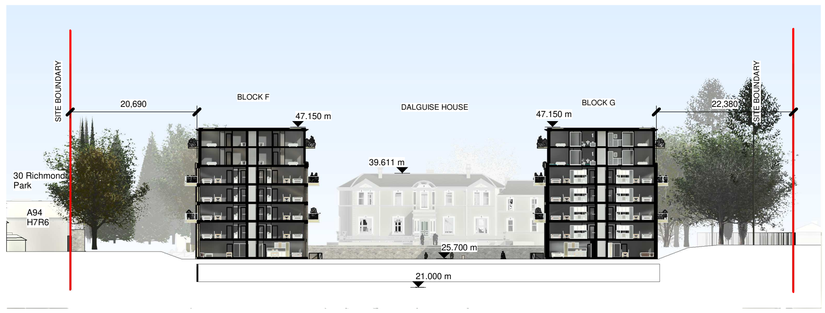

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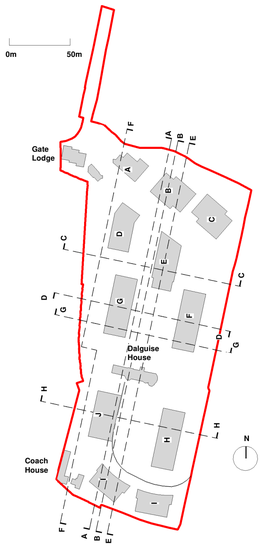

Block J

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WSA = Waste Storage Area
Site Access

Issues & Revisions

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P01	12.10.22		Issued for Planning
P02	19.05.23		Response to RFI

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Drawing Title:
GA-Site-Proposed Sections - Sheet 01

Job No.	Sheet Size:	Scale @A1:	Status	Purpose of Issue
P21-066D	A1_	1:500	P01	PLANNING PERMISSION

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18/10/22	MG	EOB	MKS-RAU-ZZ-XX-DR-AR-300	P02

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Section F-F
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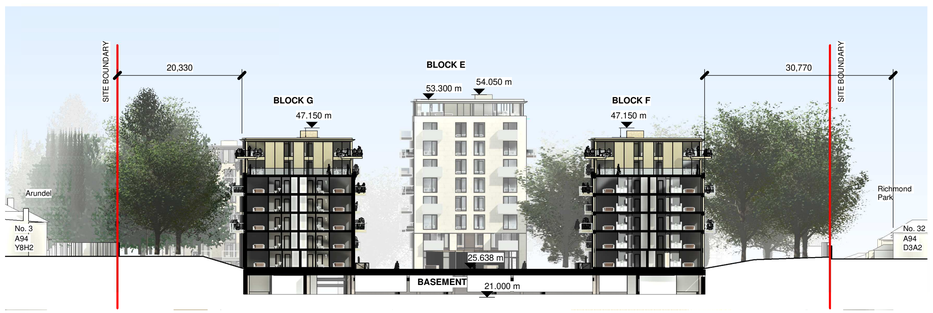

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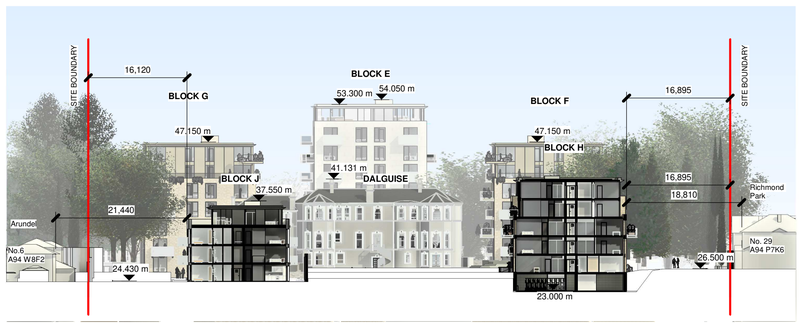

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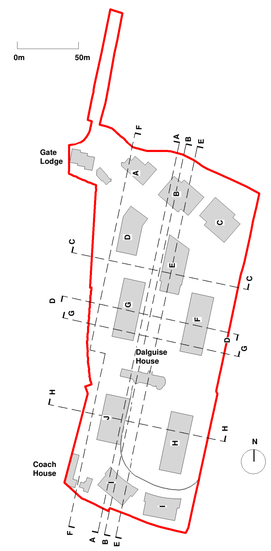

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Site Access

Issues & Revisions

Revision Number	Date	Dwn	Details of Issue / Revision
P01	12.10.22		Issued for Planning
P02	19.05.23		Response to RFI

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Drawing Title:
GA-Site-Proposed Sections - Sheet 02

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Issue Date:	Drawn By:	Reviewed By:		Revision
01/06/22	MG	EOB	MKS-RAU-ZZ-XX-DR-AR-301	P02

APPENDIX C

Water Quality Assessment

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

Roughan & O'Donovan

P00007357

December 2021

Dr Bláithín Ní Ainín

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Project reference: **P00007357**

Date of issue: **December 2021**

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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^{o}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

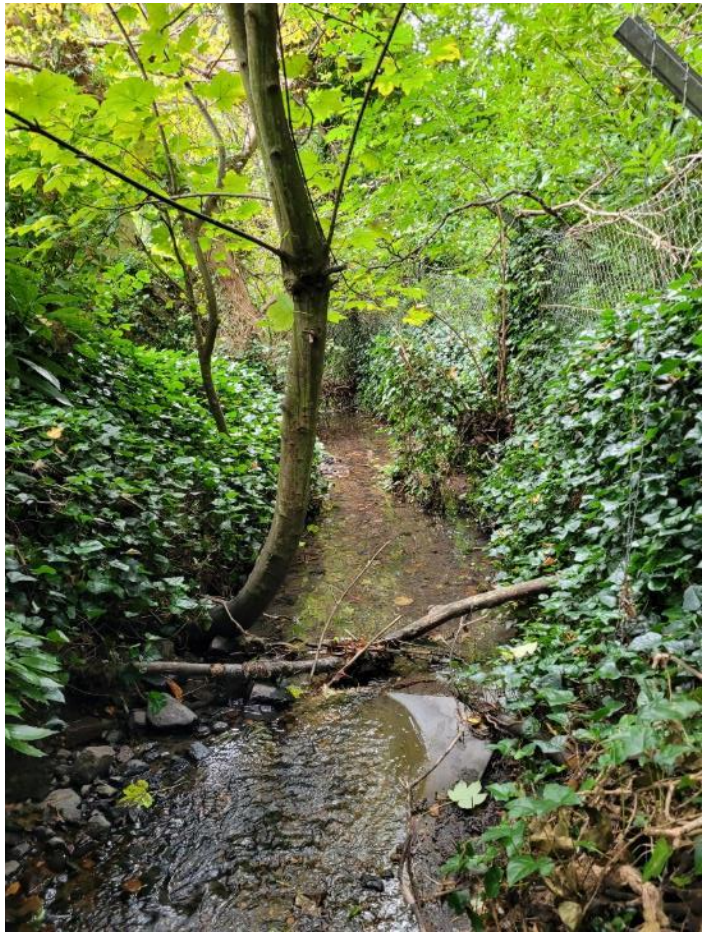

Figure B Site 1 - Facing Downstream

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 D

Construction and Environmental Management Plan

Development of Land at Monkstown Road, Dublin,

Construction & Environmental Management Plan

GEDV Monkstown Owner Limited

June 2023
Revision 03

BYRNELOOBY

IRELAND | UK | UAE | BAHRAIN | KSA

Document Control

Project: Development of Land at Monkstown Road, Dublin, Dalguise House

Document: Construction & Environmental Management Plan

Client: GEDV Monkstown Owner Limited

Report Number: W3683-BLP-XX-XX-RP-Z-04

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02	September 2022	Rev 02	D.Rehill	A.Gormley	D.Rehill
03	June 2023	Rev 03	D.Rehill	M.Gohery	D.Rehill
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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1 Introduction

ByrneLooby (BLA), in conjunction with Roughan & O'Donovan, has been commissioned by GEDV Monkstown Owner Limited to prepare a Construction & Environmental Management Plan (CEMP) for the proposed residential development at Dalguise House, Monkstown Road, Co. Dublin. This document should be read in conjunction with the AWN Consulting Ltd report *Resource & Waste Management Plan* (RWMP) and *Noise Impact Assessment*, which form part of this planning submission.

This CEMP aims to address issues that can arise during construction including noise and vibration, traffic management, working hours, pollution control, dust control, road cleaning, compound / public health facilities and staff parking, all associated with the construction works. This plan will be updated by the appointed Contractor and agreed upon with Dun Laoghaire Rathdown County Council in advance of the construction phase. This document has been prepared in accordance with the Dun Laoghaire Rathdown County Council document "*Good Practice Guide for Construction and Demolition Environmental Management*".

This CEMP has been prepared to give an overview of the processes to be employed during the construction of this project and should be read in conjunction with other documents prepared as part of this planning submission. Prior to the on-site activities commencing, this plan will be further expanded in detail by the appointed Lead Contractor and agreed upon with Dun Laoghaire Rathdown County Council.

The CEMP will be integrated into and implemented throughout the construction phases of the project to ensure the following:

- All site activities are effectively managed to minimise the generation of waste and to maximise the opportunities for on-site reuse and recycling of waste materials.
- All waste materials generated by site activities, that cannot be reused on-site, are removed from the site by appropriately permitted waste haulage contractors and that all wastes are disposed of at approved waste licensed/permitted facilities in compliance with the Waste Management Acts 1996 to 2005.

- Any environmental impacts (noise, vibration, dust, water) of project construction work activities on receptors and properties located adjacent to the project work areas, and on the local receiving environment, are managed and controlled.

2 Site Location

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*)

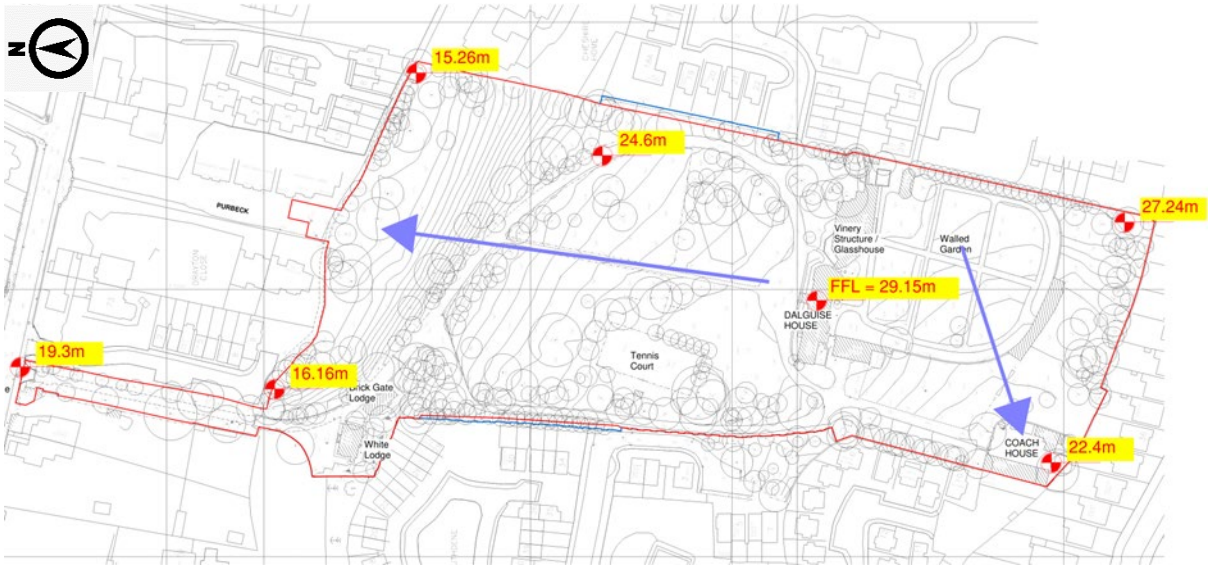

Figure 2 – Topographical Survey with key levels highlighted (falls on site indicated)

3 Development Description

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); 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.

3.1 Construction Phasing

The construction of the project is planned to take between 36 to 42 months. The current phasing suggests that the project will be split into three phases, with the accompanying infrastructure and green spaces being constructed with each phase (see indicative phasing below).

Phase 1

- Block D (total GFA 4,325 sq m) 7 storey over basement level car park, comprising 52 No. apartment units;
- Block E (total GFA 5,946 sq m) 9 storey over basement level car park, comprising 66 No. apartment units, with residents' support facilities and residents' amenities;
- Block F (total GFA 5,469 sq m) 7 storey over basement level car park, comprising 76 No. apartment units;
- Block G (total GFA 5,469 sq m) 7 storey over basement level car park, comprising 76 No. apartment units;
- Basement car park for carparking (148no.), bicycle parking, and motor cycle parking, plant and waste storage areas;
- Refurbishment and alteration works works to Dalguise House and the Coach House Buildings;
- Proposed new bridge crossing of the Stradbrook Stream and emergency access road;
- Access roadways, surface bicycle and car parking and associated landscaping.

Phase 2

- Block H (total GFA 4,252 sq m) 5 storey over Lower Ground Floor, comprising 54 No. apartment units;

- Block I1 (total GFA 1,038 sq m) 3 storey, comprising 12 No. apartment units;
- Block I2 (total GFA 1,038 sq m) 3 storey, comprising 12 No. apartment units;
- Block J (total GFA 1,844 sq m) 4 storey, comprising 20 No. apartment units;
- Access roadways, surface bicycle and car parking and associated landscaping.

Phase 3

- Block A (total GFA 2,015 sq m) 7 storey, comprising 19 No. apartment units;
- Block B (total GFA 3,695 sq m) 7 storey over undercroft car parking, comprising 48 No. apartment;
- Block C (total GFA 3,695 sq m) 7 storey over undercroft car parking, comprising 48 No. apartment units;
- Undercroft carparking level carparking (19no.), bicycle parking and motor cycle parking, plant and waste storage areas. Tunnel to link undercroft area with main central basement.
- Alterations to Gate Lodge (Brick Lodge) and Dalguise Lodge (Entrance Lodge);
- Remaining landscaping works.

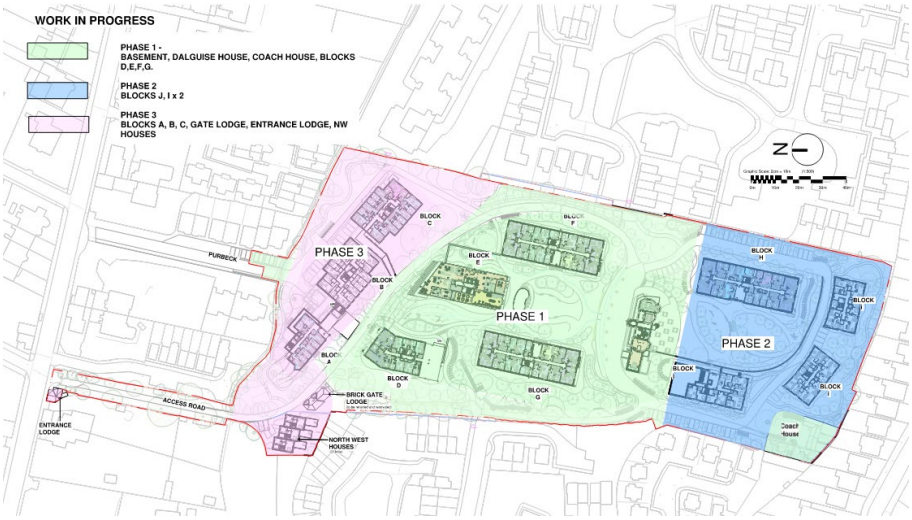

Figure 3 – Indicative Construction Phasing

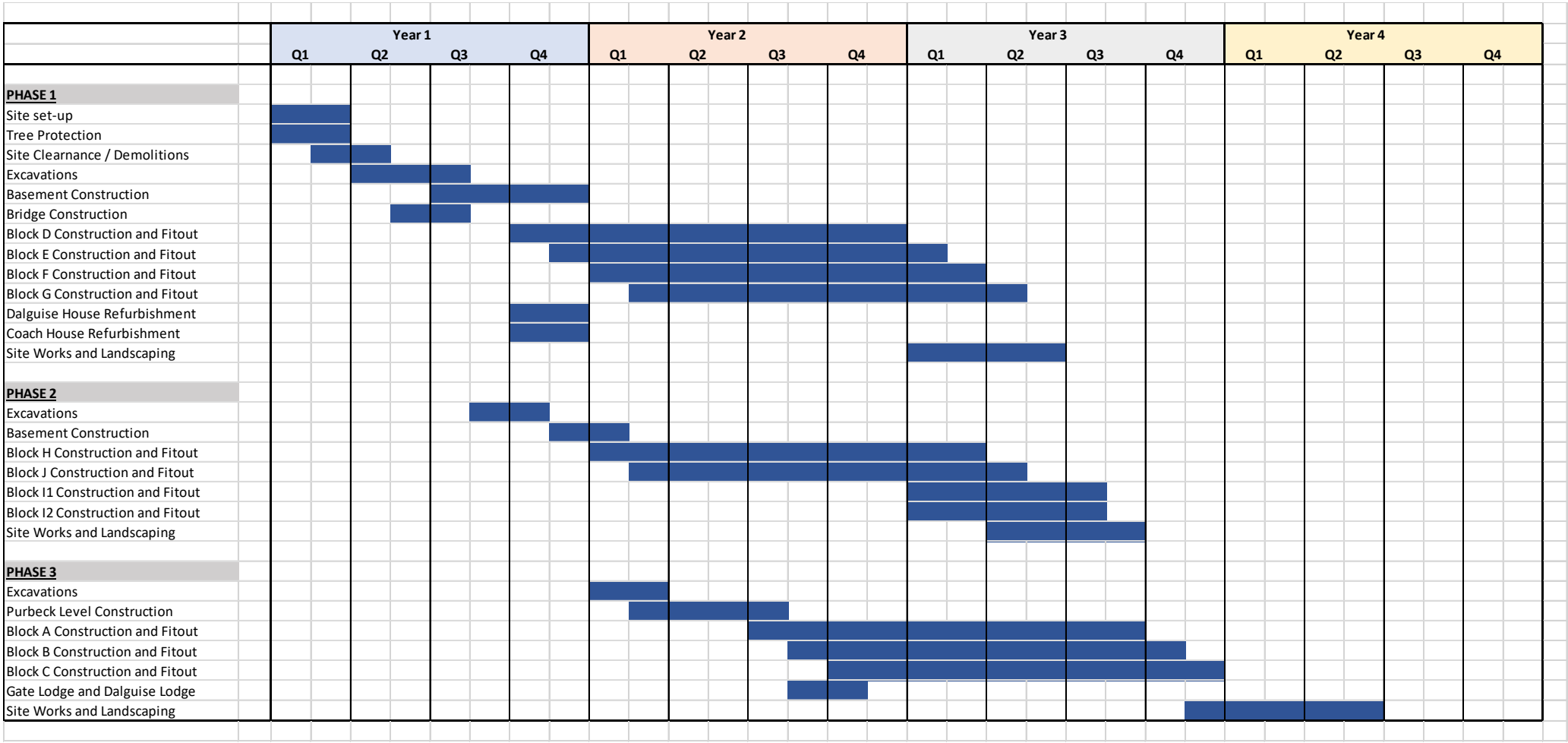

Table 1 – Indicative Construction Programme

3.1.1 Phase 1

The proposed bridge at Purbeck shall be constructed during Phase 1. The refurbishment works to Dalguise House and the Coach House buildings will be in Phase 1, with the works in parallel by a specialist contractor with suitable experience working on Protected / Historic structures. The removal of the existing swimming pool and vinery will occur at the early stages to facilitate the construction compound (see Figure 7). The installation of buried services and landscaping works shall be coordinated with the building substructure works, and the programming of the works shall be scheduled depending on the dismantling of scaffolds to buildings, the suitable planting period etc.

The final phasing and associated Construction Traffic Management Plans shall be submitted by the appointed Contractor to Dun Laoghaire Rathdown County Council for approval.

Phase 1 will incorporate the basement, with the image below (Figure 4) identifying approximate formation levels. A second and more comprehensive site investigation was carried out in early 2022. A total of eight rotary cores were carried out across the site and the bedrock was identified at 10.5m to 14.0m below ground level. This is well in excess of any basement excavations, and as such, it is not envisaged that any rock breaking will be required as part of the works. The majority of the excavations can utilise battered excavations (see the purple line in Figure 4 and drawing W3683-DR-1040-05), but some vertical temporary retaining walls will be required along the northern and western boundaries in close proximity to existing trees to be retained (see green line in Figure 4 and drawing W3683-DR-1040-05). The temporary retaining walls will include bored piles. All excavation banks shall be protected and inspected regularly. The accompanying drawing W3683-DR-1040-05 identifies the basement / undercroft excavation extent and the proximity to the site boundaries

The foundations in the basement area will be integral to the basement slab. Some anti-floatation anchors will be necessary at basement level, below podium areas, and the set-out of the anchors will be subject to further monitoring of the groundwater levels over the coming period (refer to Section 5.9). The superstructure will then be constructed from the podium level, as outlined in the following sections. Access to this phase will be via the existing roadway (see Figure 7), with a cellweb build-up provided on areas of the roadway that overlay with the tree Root Protection Zone (RPZ). The bridge crossing at the Stradbrook Stream will also be constructed in this initial phase (see Section 9.10).

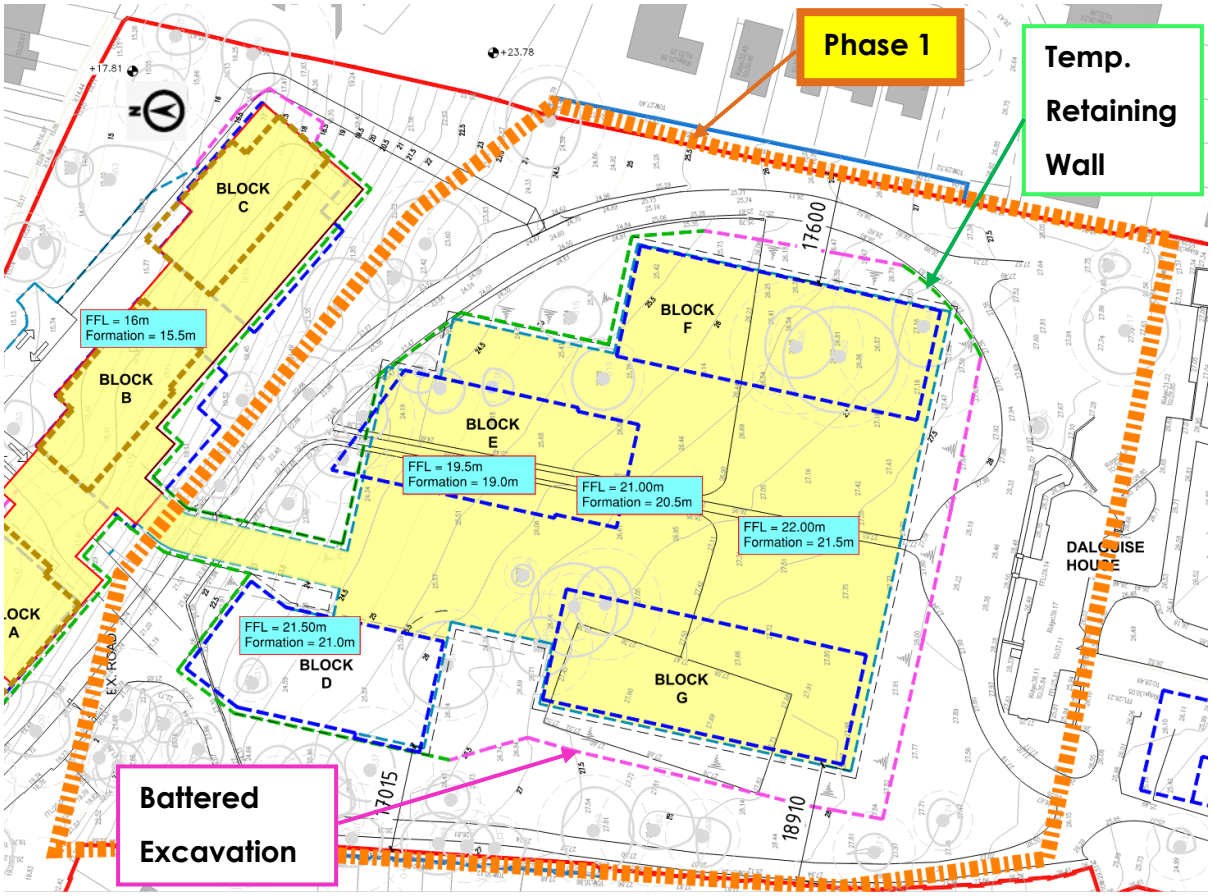

Figure 4 – Indicative Construction Phase 1 (plus Coach House see Figure 5)

3.1.2 Phase 2

The image below (Figure 5) shows the outline of Phase 2 and the approximate formation level at each block. The excavations at Phase 2 will overlap with the completion of excavations at Phase 1. As noted in the site investigation, bedrock

should not be encountered during excavations, and the bulk dig in Phase 1 shall be achieved using battered slopes to a safe angle of repose. All excavation banks shall be protected and inspected regularly. Excavations near trees to be retained shall incorporate specific construction techniques as outlined by the Arborist. The foundations in Phase 2 shall consist of shallow reinforced concrete strips or pad foundations. The superstructure will then be constructed from the foundation, as outlined in the following sections. Access to this phase will be via the existing roadway (see Figure 7). An existing septic tank serving Dalguise House will be removed at the footprint of Block J. The site investigations to date do not indicate any contamination in the area, however, a Remediation Plan as set out in the Engineering Services Report shall be implemented for the removal of the tank and backfill.

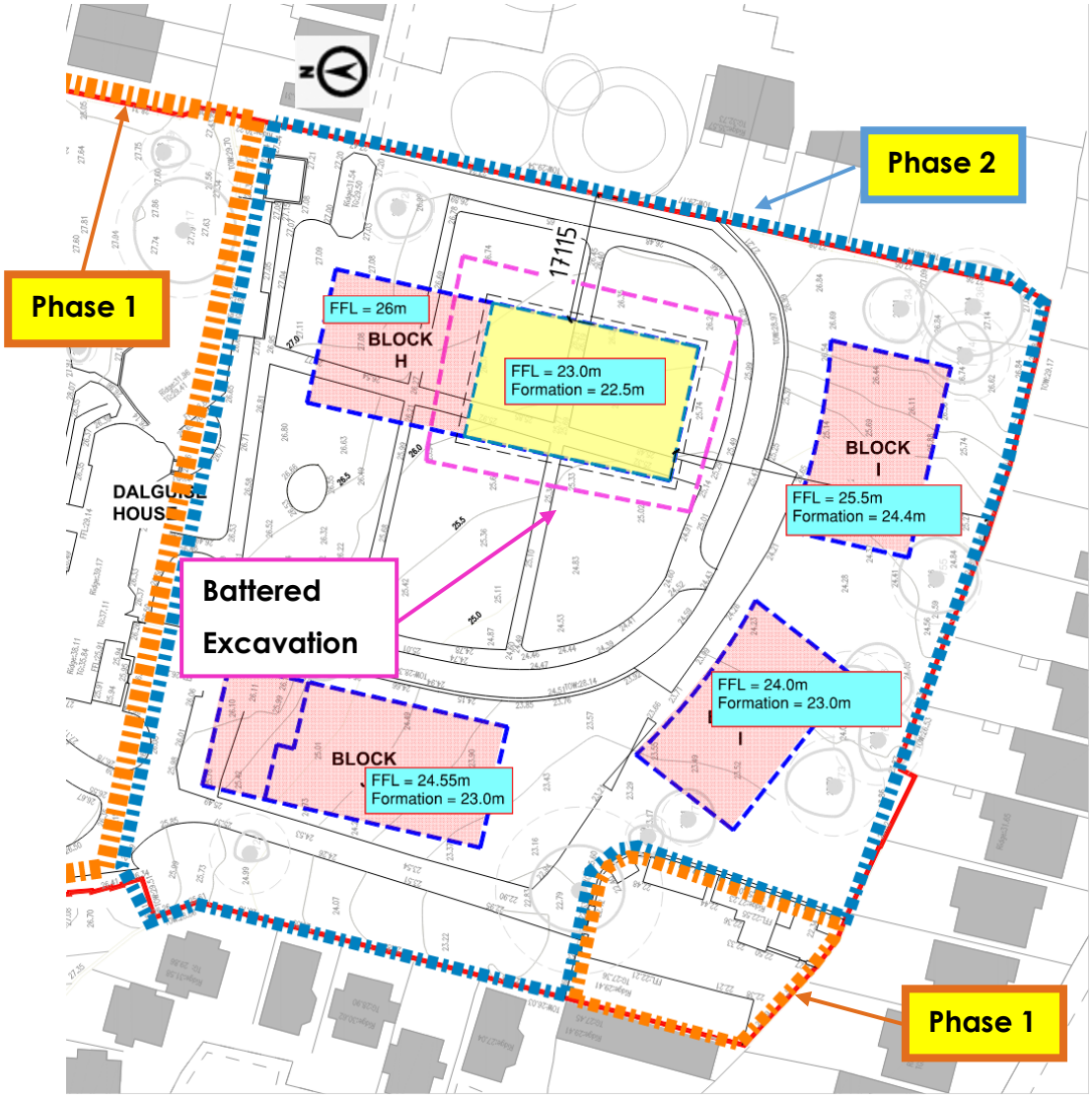

Figure 5 – Indicative Construction Phase 2

3.1.3 Phase 3

The third phase will include the construction of the final blocks. As with Phase 1, some of the excavations are adjacent to existing trees to be retained, and as a result, a temporary retaining wall shall be employed along the southern boundary of Block A, B and C (see green line in Figure 6 and accompanying drawing W3683-DR-1040-05). The foundations in the basement area will be integral with the basement slab. Some anti-floatation anchors will be necessary at the undercroft level, below podium areas, and the set-out of the anchors will be subject to further monitoring of the groundwater levels over the coming period (refer to Section 5.9). The superstructure will then be constructed from the podium level, as outlined in the following sections. Access to this phase shall be via a new temporary roadway constructed with a CellWeb buildup over RPZs. Finally, any temporary piling platforms will be agreed in advance with the Arborist.

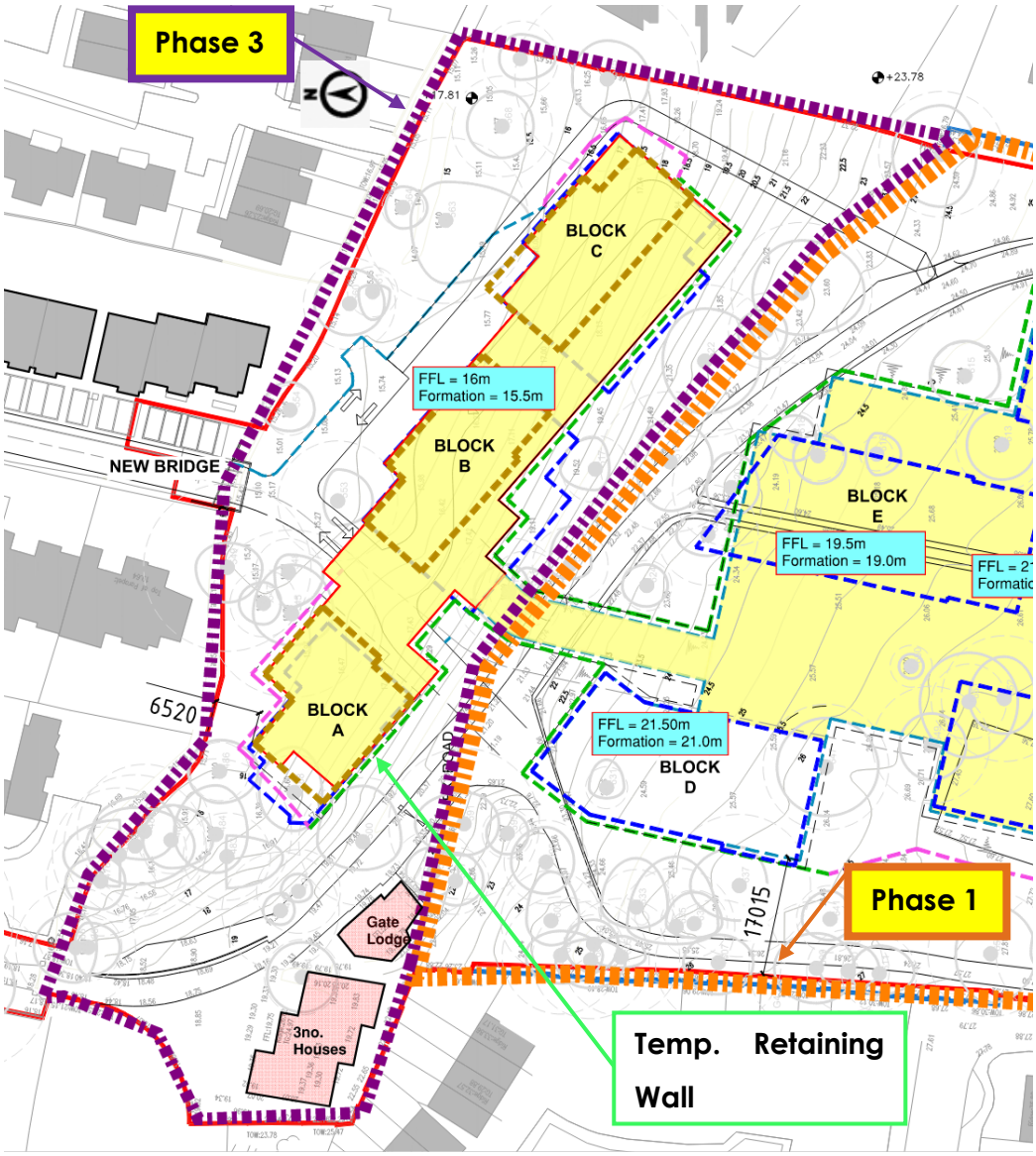

Figure 6 – Indicative Construction Phase 3 (plus Entrance Lodge, not shown for clarity)

4 Site Management

4.1 Site Establishment

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.

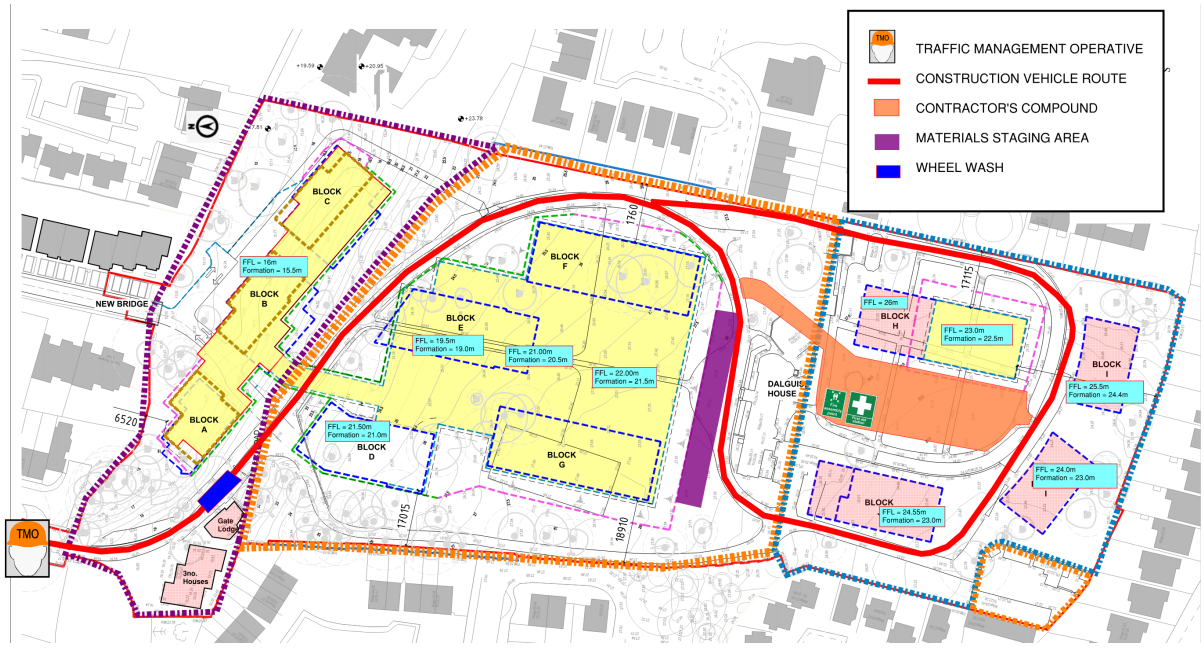

Figure 7 – Indicative Site Compound (Phase 1 & 2, plus Entrance Lodge, not shown for clarity)

The facilities to be provided and maintained by the Contractor shall include:

- Construction plant;
- Hoisting equipment and cranes;
- Scaffolding, platforms, access ladders, barriers, handrails;
- Barricades and hoardings;
- Temporary driveways, road crossovers and construction zone;

- 24/7 emergency vehicle access;
- On-site hardstand areas for vehicle loading and unloading;
- Storage sheds and compounds;
- Rubbish sorting areas;
- Site amenities with all required equipment and facilities;
- Construction worker accommodation;
- First aid facilities;
- Site administration accommodation.

Construction plant and site amenities shall comply with the requirements of all relevant authorities and be wholly contained within the hoarded site. All construction plant and equipment will be progressively removed when no longer required.

First Aid facilities for the use of all construction staff in the form of a fully provisioned first aid area within the site office with lifesaving and safety equipment as required by relevant statutes, authorities and awards will be maintained at all times by the contractor.

The Contractor shall obtain all required permits, pay the applicable fees and comply with all conditions.

As requested by DLR, the issue of maintaining flood storage and flood paths during construction was addressed by the applicant. The existing flood extent for a 1-in-1000-year flood event is indicated in Figure 8 below (refer to McCloy Consulting SSFRA and appended maps). The proposed buildings and the main construction works are located outside of the flood plain. It is proposed to locate the Contractor's Compound at the podium and basement level between Blocks F and G, which will be constructed in advance as part of Phase 1. A construction access route will link this area to the Phase 3 works as indicated below in Figure 8. No materials or machinery will remain in the floodplain outside of working hours.

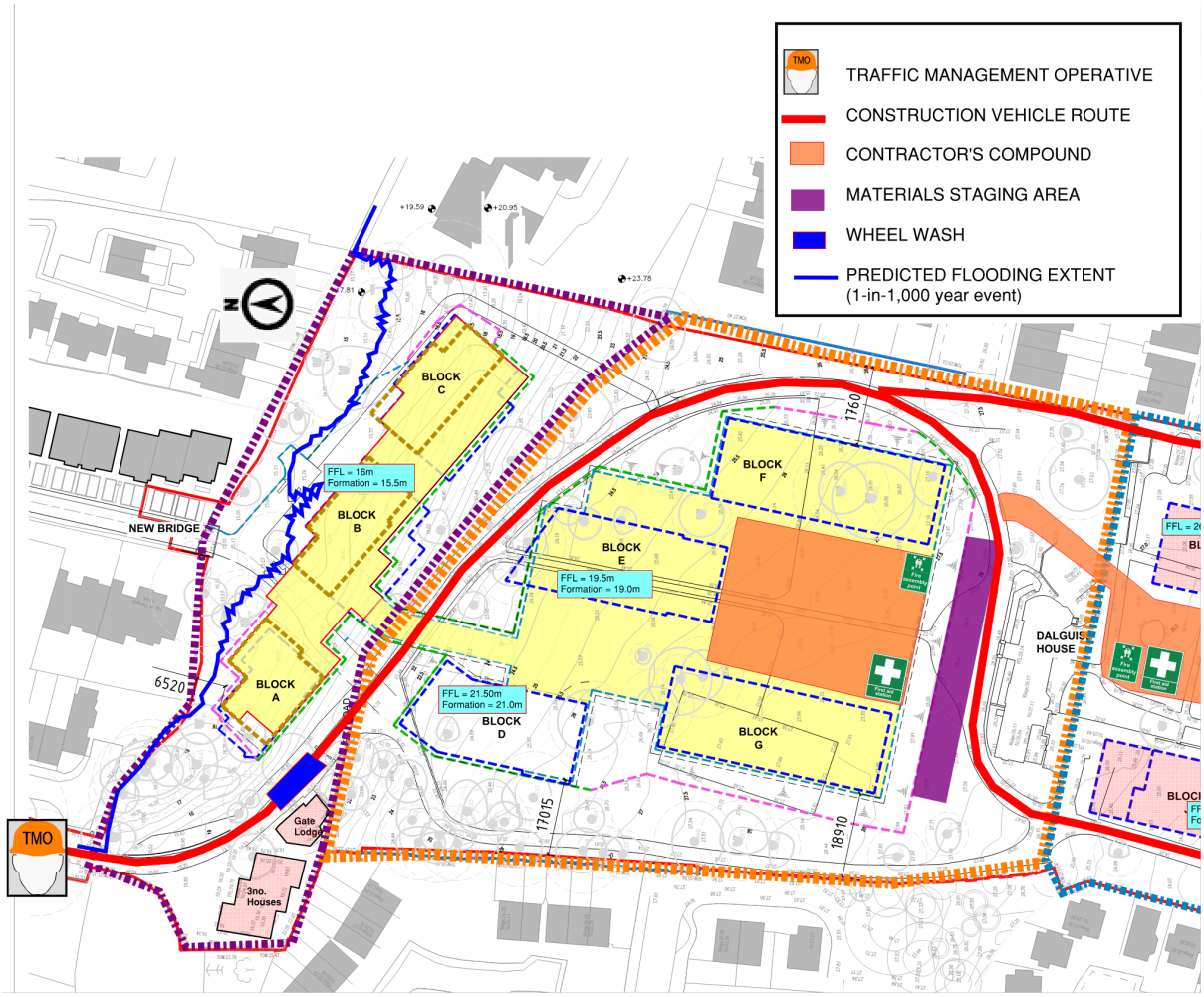

Figure 8 – Indicative Site Compound (Phase 3, plus Entrance Lodge, not shown for clarity)

4.2 Hoarding and Fences

Prevention of unauthorised access to the site is a very high priority and will be vigorously managed throughout the construction period. When the Contractor is appointed, the site shall be secured with site palisade fencing until a 2.4m high hoarding is erected in accordance with the final Construction Management Plan. Any hoardings and signboards on the perimeter of the site will comply with the requirements of the relevant authorities and the relevant Health and Safety Acts.

The Contractor shall be required to erect a single project signboard at the existing Dalguise and new Purbeck entrances to Monkstown Road to identify the site.

4.3 Temporary Protection of Public Domain

Prior to any works commencing on site, detailed dilapidation reports shall be carried out to properties and buildings adjoining the site.

Further dilapidation reports shall be carried out for footpaths, kerbs, road pavements and utility infrastructure features of the main access routes in the immediate vicinity to the site, both the Purbeck road and the junction with the Monkstown Road.

The Contractor shall provide protection to existing surrounding building elements potentially impacted by the works. Protection may be in the form of screened 2.4m high hoardings, scaffolding and fencing, taped drop sheets and the like. Similarly, suitable existing building materials to be re-used shall be suitably stored and protected from the elements.

The type of required hoardings, scaffolding and fencing will vary over the duration of the works, depending on how the site activities potentially impact on the adjoining public domain and neighbourhood.

"Dial-before-you-dig" enquiries and detailed services location investigations shall be carried out to identify any need for temporary protection of elements of existing utility infrastructure that are not to be diverted as part of the works.

All temporary protection is to be installed and maintained during the duration of the works until they are no longer required.

4.4 Major Plant and Equipment

Plant and equipment used during the entire work are:

- Articulated and rigid trucks;
- Pilling-rigs, bulldozers, excavators, and backhoes, with ancillary equipment;
- Tower and Mobile cranes;
- Concrete delivery trucks and Concrete pumps;

- Man, and material hoists;
- Scissor, boom and forklifts.

All plants and equipment will be operated by experienced and qualified personnel with the appropriate registrations.

4.5 Vehicular Access to Site

The primary access routes to the site shall be determined by the Contractor in their **Construction Traffic Management Plan (CTMP).** Primary vehicle movements shall be limited to access/egress via the existing access to the Dalguise House lands off Monkstown Road. The Contractor will identify primary access routes that provide the most direct access to the M50 and limit access along local roads. Based on the quantities of excavation and fill to be moved to or from the site, construction waste removal, and general site deliveries for the intended construction works, HGV traffic is estimated to be a maximum of 13no. two-way movements per hour (see Section 9.6). The figures below identify two routes to/from the site to the M50.

- **Route 1** (Accessing the site, same return trip): Via the M50 onto the N31 at Leopardstown, left onto the N11 (Stillorgan Road), right onto N31 (Mount Merrion Avenue), right onto Frascati Road, left on to R119 (Monkstown Road).

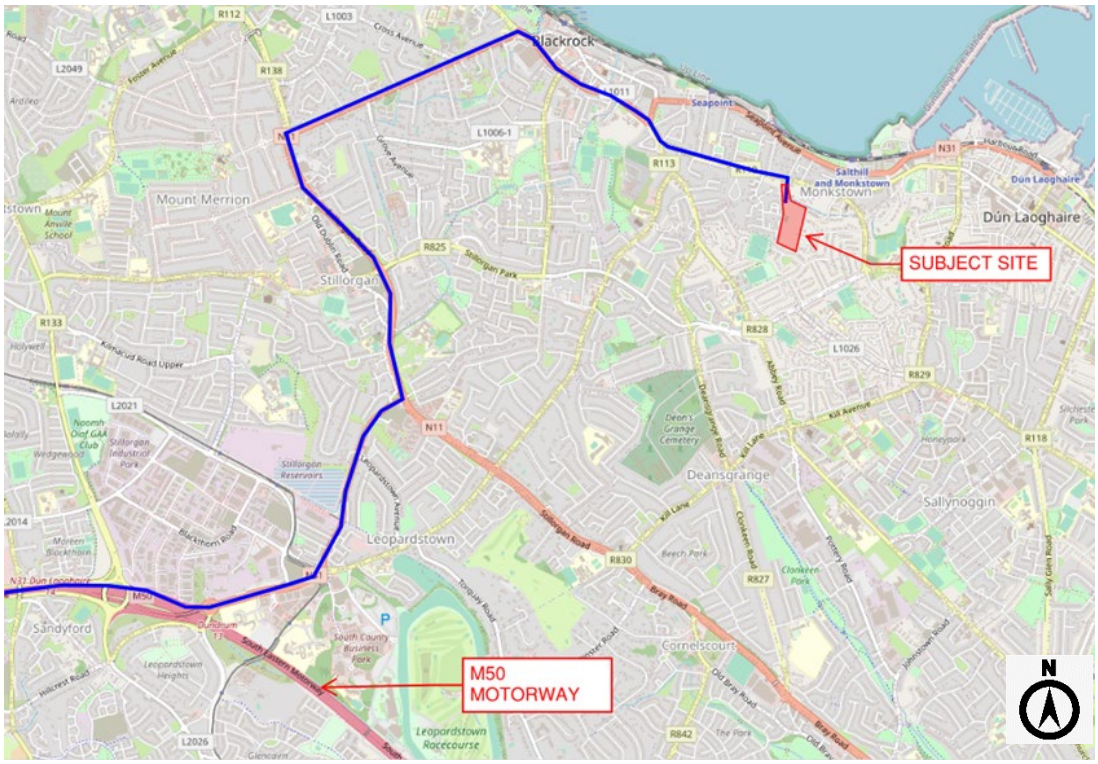

Figure 9 – Construction Route 1 (*Source EPA Maps*)

- **Route 2** (Accessing the site, same return trip): Via M11/M50 to the south, onto the N11 (Bray Road) through Cherrywood / Cornelscourt onto the Stillorgan Road, right onto N31 (Mount Merrion Avenue), right on to Frascati Road, left on to R119 (Monkstown Road).

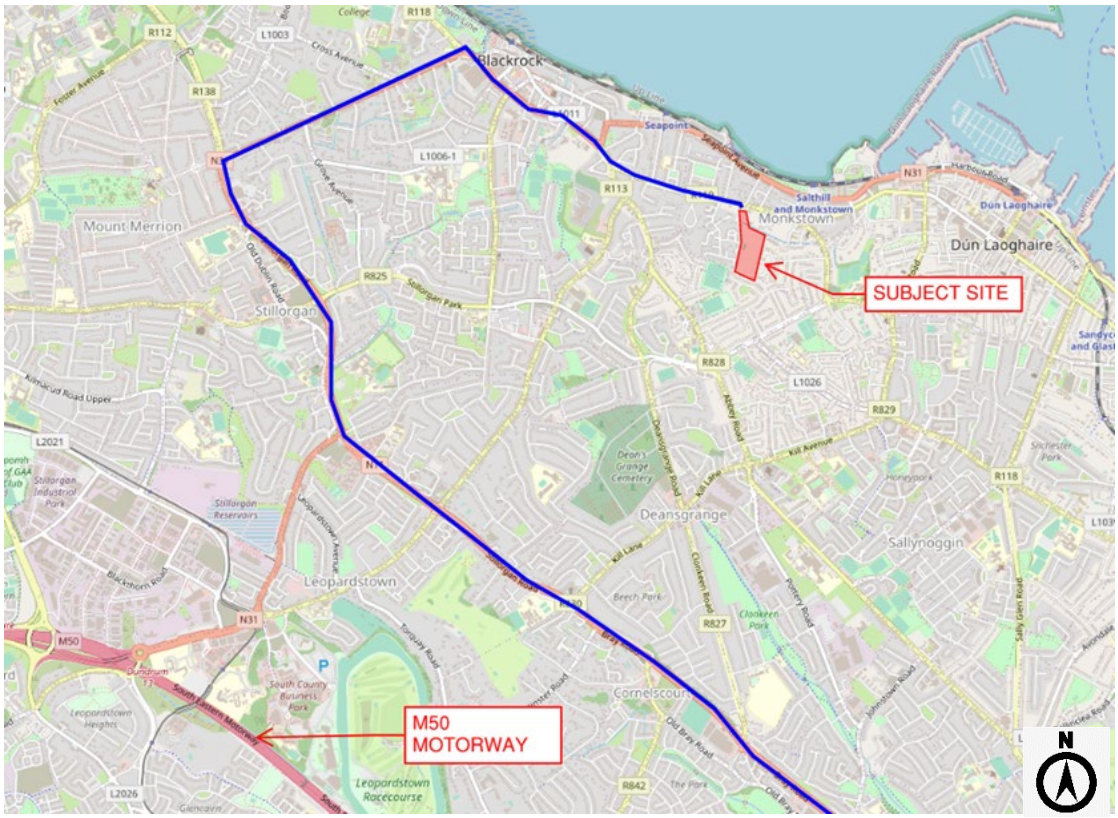

Figure 10 – Construction Route 2 (*Source EPA Maps*)

The following are some measures that will be implemented to accommodate smooth traffic flows:

- At the entrance, suitable laybys with a temporary one-lane traffic light system shall be provided, with priority to vehicles entering the site.
- Site entrance gate will be set back a minimum of 18m from the footpath edge to ensure all vehicles leave the road before stopping.
- Appropriate sight lines will be provided;
- Advanced warning provided to all users on the road and directional signage for site traffic.

In addition to construction vehicles, It is projected that the works will result in approximately 150 to 200 construction workers on site during typical construction period, with a maximum of 400 construction personnel on site concurrently during short period of peak activity. Given typical construction working hours the majority of these personnel are expected to arrive to site in advance of the 08:00 – 09:00 morning peak hour and to depart before or after the 17:00 – 18:00 evening peak hour depending on the shift working pattern.

Some construction workers will arrive on foot, cycle or use public transport. In addition, many construction workers come to site in groups by car or van. Vehicular movements carrying construction personnel can be broken down as follows:

- 400 peak staff working on site (Max) ;
- 40% arrive during AM or PM Peak Hours = 160no., 30% arrive via public transport, walk or cycle = 48no., Total arrive via car/van 112, (Average Car Occupancy = 2.2 (including driver)). Maximum additional movements AM/PM Peak (400 staff) 51 cars/vans
- With up to 200 staff normally on site
- Normal additional movements AM Peak 26 cars/vans

This volume of construction traffic estimated to be generated during peak traffic hours is lower than the peak volumes of non-construction traffic projected for the operational phase of the development. Beyond the bulk earthworks stage, other stages during construction are estimated to have lower HGV volumes and lower traffic volumes overall. The projected peak volume of construction traffic, including both truck and staff movements, is lower than the peak traffic volumes projected for the fully occupied development during the operational stage.

Detailed measures shall be developed further as part of the CTMP developed by the Contractor in consultation with the Design Team and Dun Laoghaire Rathdown County Council prior to commencement of works.

The principal objective of the CTMP is to ensure that the impacts of all building activities generated during the construction of the proposed development upon both

the public (off-site) and internal (on-site) worker's environments, are fully considered and proactively managed/programmed respecting key stakeholders requirements thereby ensuring that both the public's and construction workers safety is maintained at all times, disruptions minimised and undertaken within a controlled hazard free / minimised environment. It is noted that the impact of the construction works will be temporary in nature.

The CTMP shall be prepared in accordance with the principles outlined below and shall always comply with the requirements of:

- Chapter 8 of the Department of the Environment Traffic Signs Manual, current edition, published by The Stationery Office, and available from the Government Publications Office, Sun Alliance House, Molesworth Street, Dublin 2;
- Guidance for the Control and Management of Traffic at Road Works (June 2010) prepared by the Local Government Management Services Board; and
- Any additional requirements detailed in the Design Manual for Roads and Bridges & Design Manual for Urban Roads & Streets (DMURS).

In order to ensure satisfactory operation of the construction stage the following is proposed:

- Provision of sufficient on-site parking and compounding to ensure no potential overflow onto the local network.

As referenced previously, site offices and compound shall be located within the green space area just south of Dalguise House. The site will be able to accommodate employee and visitor parking throughout the construction period with construction of temporary hardstanding areas.

Finally, truck wheel washes will be installed and any specific recommendations regarding construction traffic management made by the Local Authority will be adhered to.

The following mitigation measures shall be incorporated into the CTMP:

- During the pre-construction phase, the site will be securely fenced off from adjacent properties, public footpaths and roads.
- The surrounding road network will be signed to define the access and egress routes for the development.
- The traffic generated by the construction phase of the development will be strictly controlled in order to minimise the impact of this traffic on the surrounding road network.
- All road works will be adequately signposted and enclosed to ensure the safety of all road users and construction personnel.
- All employees' and visitors' vehicle parking demands will be accommodated on-site.
- A programme of street cleaning if/when required.
- Any associated directional signage
- Any proposals to facilitate the delivery of abnormal loads to the site
- Measures to obviate queuing of construction traffic on the adjoining road network.

4.6 Site Security

Access to the site shall be controlled by means of an electronic access control system and camera remote monitoring system for out-of-hours use.

All personnel working on site shall be required to have a valid Safe Pass card.

4.7 Material Hoisting & Movement Throughout the Site

All lifting activities will have to be coordinated on-site by the appointed person on site. All lifts will have to have a proper lift plan in place prior to commencement. No loads will be lifted over the public domain or adjacent properties.

4.8 Deliveries & Storage Facilities

All deliveries to the site shall be scheduled to ensure their timely arrival and avoid the need for storing large quantities of materials on site. Deliveries shall be scheduled outside of rush hour traffic to avoid disturbance to pedestrian and vehicular traffic in the vicinity of the site.

4.9 Site Accommodation

On-site facilities shall include:

- a materials and equipment storage area;
- site offices and staff welfare facilities (e.g. toilets, drying room, canteen, etc.).

Electricity will be provided to the site via the national grid. Water supply to the site during construction works will be provided by means of a temporary connection to a public water main. Similarly, a temporary connection for foul water drainage will be made to the public network.

4.10 Site Parking

Vehicle parking for construction personnel shall be accommodated within the development site. To the extent possible, personnel will also be encouraged to use public transport, and information on local transportation will be published on-site (see Section 4.5).

4.11 Site Working Hours

Subject to the agreement of the Planning Authority, the following site operation hours are proposed:

- Monday to Friday: 07:00 to 19:00
- Saturdays: 08:00 to 14:00
- Sundays & Bank Holidays: Works not permitted

It may be necessary for some construction operations to be undertaken outside these times, for example, service diversions and connections; concrete finishing and fit-out works; etc. There may also be occasions where it is necessary to make certain deliveries outside these times, for example, where large loads are limited to road usage outside peak times. Any proposed works outside of normal working hours will be identified in advance, and the Local Authority and local neighbours will be notified of the likely affects (see Section 10). This update will be from the designated Community Liaison Officer who will issue a monthly Community Liaison Plan which will be circulated to the relevant stakeholders. Works outside of normal working hours shall not progress without written approval from the Local Authority.

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 and 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 woodland habitats, trees and adjoining properties.

5 Environmental Management

During construction, cognisance will have to be taken of the following guidance documents for construction work on, over or near water:

- Inland Fisheries Ireland (2016) Guidelines for the protection of fisheries in and adjacent to waters.
- CIRIA C532 Control of Water Pollution from Construction Sites Guidance for Consultants and Contractors.
- CIRIA C648 Control of Water Pollution from Constructional Sites.
- Guidelines for the Crossing of Watercourses during the Construction of National Road Schemes (TII, 2008).
- The Management of Invasive Alien Plant Species on National Roads – Technical Guidance (TII, 2020).

5.1 Preconstruction Surveys

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.

5.2 Timing of Works

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.

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.

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 Ecological Clerk of Works (ECoW).

5.3 Lighting

Any lighting being used at night on site during construction will 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.

5.4 Protection of Trees

An Arborist be retained as required by the principal contractor to monitor and advise on any works within the RPA of retained trees to ensure successful tree retention and planning compliance. All recommendations contained in the Tree Survey Report and the Tree Protection Plan submitted with this application shall be followed. Fencing shall be erected around trees which are to be retained and will include the Root Protection Area, as defined and directed by a professionally qualified Arborist.

5.5 Protection of the Heronry

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.

5.6 Cementitious Materials

The use and management of concrete in or close to watercourses must be carefully controlled to avoid spillage which has a deleterious effect on water chemistry and aquatic habitats and species. Alternate construction methods have been proposed where possible, e.g. use of pre-cast units, use of cofferdams to place concrete in the dry, and permanent formwork will reduce the risks associated with concreting works. Where the use of in-situ concrete near and in watercourses cannot be avoided the following control measures will be employed:

- 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;
- 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 the final discharge into the delivery pipe (tremie). Care will be exercised when slewing concrete skips or mobile concrete pumps over or near the watercourses;
- 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. 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;
- On-site concrete batching and mixing activities will only be allowed at the identified construction compound;

- 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).;
- 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.
- Method statements that are prepared for the works will be reviewed/approved by the Client Project Manager and where 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.

5.7 Surface Water Run-off

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 traps) for the removal of pollutants and/or silt prior to discharge under licence to the adjoining public sewer. Direct, uncontrolled run-off from the site to the adjacent Stradbrook Stream during construction will not be permitted.

5.8 Works adjacent to the Stradbrook Stream

Prior to commencement on site, as part of the overall Construction Management Plan for the works, consultation 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 runoff, 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 its surrounds and the detailed recommendations contained within should be adhered to where applicable.

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 regarding such discharges, if permitted, will be confirmed with the relevant Statutory bodies prior to commencement on site. Direct, uncontrolled run-off from the site to the adjacent Stradbrook Stream during construction will not be permitted.

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, were permissible, with the Local Authority.

Some baseline considerations to be taken during the proposed works are:

- 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.
- 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 runoff waters must be directed through sedimentation ponds prior to discharge under licence to the adjoining public sewer. 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 the pond and suspended solids are allowed to settle. Regular inspection of the settlement tanks shall be carried out and additional treatment used if settlement is not adequate.

- Any existing surface water or land-drains uncovered on site which discharge to the Stradbrook Stream shall be inspected and sealed to ensure no uncontrolled surface water or ground water ingress.

5.9 Groundwater and Temporary De-Watering

The proposed works will involve excavations for foundations, buried services and the basement / lower ground floor areas. The construction of the basement at Phase 1 (see Section 3.1.1) will involve excavations of up to 5-6m into the subsoil.

A Site Investigation was undertaken by Ground Investigations Ireland Ltd in 2018 including the installation of no. 1 groundwater monitoring well (Ground Investigations Ireland, 2018). Groundwater strikes were noted for Boreholes No. 1 and 2, at 2.4m and 3.7m, rising to 2.10m and 2.70m in 20 minutes.

Further investigations were undertaken by IGSL Limited in February 2022, with standpipes installed into four of the boreholes. No groundwater ingress was observed to the bored depths during installation. However, water was present in the boreholes at the end of the drilling. While this was mostly at depths greater than 10m BGL, two of the boreholes recorded standing water at depths of 3.1 and 3.2m BGL at the end of drilling (IGSL Ltd, 2022).

IGSL Limited have continued to carry out ground monitoring at the four standpipes, and the results are summarised in Table 2 below, to allow the groundwater level to be assessed with the seasonal variations.

Borehole / Rotary Location	**Groundwater Level (mBGL)**						
	08.08.22	**24.10.22**	**16.12.22**	**20.01.23**	**14.02.23**	**06.03.23**	**01.06.23**
RC03*	7.63m	7.05m	6.82m	6.83m	7.13m	7.09m	11.96m**
RC05*	3.49m	2.82m	1.32m	1.2m	1.83m	2.14m	2.14m
RC07*	7.46m	7.27m	6.9m	6.78m	6.97m	7.01m	6.96m
RC09*	2.32m	1.89m	1.75m	1.71m	2.12m	2.17m	2.21m

* Denotes 2022 IGSL Limited borehole. ** possible outlier (further investigation required July 2023)

Table 2 – Ongoing groundwater monitoring 2022-2023

Based on the water table levels noted at the boreholes in the site investigation, it is expected that groundwater will be encountered during the construction works. The relatively impervious clays noted in the site investigation will limit the ingress during the temporary excavations, however, a dewatering system shall be put in place to control groundwater. The extent of groundwater pumping will be negligible and temporary in nature, and will have no determential affect on the local area.

A series of localised sumps shall be provided below formation level, and duty & standby submersible pumps shall pump any groundwater ingress 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 licence submitted to the Local Authority and Irish Water shall outline the poposed volumes of water, settlement tank provision, testing regime etc, and shall comply with the Water Pollution Act (Section 4 licence).

The discharge of groundwater from the site to the adjacent Stradbrook Stream during construction will not be permitted.

Monitoring wells shall be installed by the contractor adjacent to the Phase 1 basement excavation and Phase 3 undercroft excavation. A live data logger will record any groundwater level changes, and this will be monitored during any temporary dewatering of the excavations. Should the loggers identify significant changes in groundwater level (in excess of seasonal variations), the level of groundwater pumping will be reduced and the sequence of excavation amended accordingly.

5.10 Wastewater

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.

5.11 Fuel/Hydrocarbons

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 provisions, 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).

5.12 Noise

During the construction works the Contractor shall comply with the Safety, Health and Welfare at Work (General Application) Regulations 2007, Part 5 Noise and Vibration.

In addition, BS 5228-1: 2009 +A1 2014: "*Code of practice for noise and vibration control on construction and open sites, Part 1: Noise*" presents some guidance as how

appropriate target values for noise emissions may be derived through the consideration of various factors.

The AWN Consulting report "*Noise Impact Assessment*" which forms part of this submission, provides a detailed assessment of baseline noise levels and predicted construction noise levels at the subject site. Taking this into account and the guidance set out in BS 5228-1: 2009, AWN Consulting have proposed the following initial values for alert trigger levels at the boundary of the site (in proximity to the nearest noise sensitive locations located offsite).

Location	Day	Period	Alert Level	Noise Levels, $L_{Aeq,1hr}$ (dB re. $2x10^{-5}$ Pa)
Boundary with Private Residences	Monday to Friday	07:00 – 19:00hrs	Amber	65
			Red	70
	Saturdays	08:00 – 14:00hrs	Amber	65
			Red	70

Table 3 – Suggested Alert Trigger Levels for Noise (Source: AWN Consulting "Noise Impact Assessment)

Refer to the comprehensive Noise Impact Assessment and the Noise and Vibration chapter of the Environmental Impact Assessment Report which form part of this planning submission.

5.13 Vibrations

BS5228-1:2009+A1:2014 recommends that for soundly constructed residential properties and similar structures that are generally in good repair, a threshold for minor or cosmetic (i.e. non-structural) damage should be taken as a peak component particle velocity (in a frequency range of predominant pulse) of 15mm/s at 4Hz increasing to 20mm/s at 15Hz and 50mm/s at 40Hz and above. Below these values minor damage is unlikely. Where continuous vibration is such as to give rise to dynamic

magnification due to resonance, the guide values may need to be reduced by up to 50%. BS 5228-2:2009+A1:2014 also comments that important buildings which are difficult to repair might require special consideration on a case-by-case basis.

It is not envisaged that the construction works will result in significant sources of vibration at the site boundary. Notwithstanding, all works on site shall comply with BS5228-1:2009+A1:2014 Part1 Noise & Part 2 Vibration which gives detailed guidance on the control of noise and vibration from construction activities. In general, the contractor shall implement the following mitigation measures during the proposed infrastructure works.

5.14 Noise Control & Mitigation Measures

A noise and vibration monitoring specialist will be appointed to carry out independent monitoring of noise and vibration during critical periods at sensitive locations for comparison with limits and background levels. It is proposed that noise and vibration levels be maintained below those outlined above as part of these infrastructure works.

The Contractor's **Community Liaison Officer**' will be appointed and charged with the responsibility of keeping people informed of progress and by setting down procedures for dealing with complaints (see Section 10).

- No plant used on-site will be permitted to cause an ongoing public nuisance due to noise;
- The best means practicable will be employed to minimise the noise produced by on-site operations;
- All vehicles and mechanical plant will be fitted with effective exhaust silencers and maintained in good working order for the duration of the contract;
- Compressors will be attenuated models fitted with properly lined and sealed acoustic covers which will be kept closed whenever the machines are in use and all ancillary pneumatic tools shall be fitted with suitable silencers;
- Machinery that is used intermittently will be shut down or throttled back to a minimum during periods when not in use;

- During construction, the appointed Contractor will manage the works to comply with noise limits outlined in BS 5228-1:2009+A1 2014. Part 1 – Noise;
- 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;
- Limiting the hours during which Site activities which are likely to create high levels of noise or vibration are permitted; and
- Monitoring levels of noise and vibration during critical periods and at sensitive locations.

Furthermore, it is envisaged that a variety of practicable noise control measures will be employed. These may include:

- Selection of plant with low inherent potential for generation of noise and/or vibration;
- Erection of good quality site hoarding to the site perimeters which will act as a noise barrier to general construction activity at ground level;
- Erection of noise screens as necessary around items such as generators or high duty compressors. For piling plant, noise reduction can be achieved by enclosing the driving system in an acoustic shroud.
- Situate any noisy plant as far away from sensitive properties as permitted by site constraints.
- The lifting of bulky items, dropping and loading of materials will be restricted to normal working hours.
- 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.

5.15 Vibration Control & Mitigation Measures

The following specific vibration mitigation and control measures shall be considered during the construction phase:

- Breaking out concrete elements using low vibration tools.
- Choosing an alternative, lower-impact equipment or methods wherever possible.
- Scheduling the use of vibration-causing equipment, such as jackhammers, at the least sensitive time of day.
- Routing, operating or locating high vibration sources as far away from sensitive areas as possible.
- Sequencing operations so that vibration causing activities do not occur simultaneously
- Isolating the equipment causing the vibration on resilient mounts
- Keeping equipment well maintained.
- Confining vibration-generating operations to the least vibration-sensitive part of the day which could be when the background disturbance is highest.

5.16 Noise and Vibration Monitoring

The Contractor will be required to ensure construction activities operate within the noise and vibration limits. The contractor will be required to undertake regular noise and vibration monitoring at locations representative of the closest sensitive locations to ensure the relevant criteria are not exceeded (see Figure 11).

5.16.1 Noise Monitoring

As noted in Section 5.12 (Table 3), appropriate alert trigger levels have been proposed by AWN Consulting in their report "*Noise Impact Assessment*", which accompanies this submission (see monitoring locations in Figure 11).

Noise monitoring should be conducted in accordance with the International Standard ISO 1996: 2017: Acoustics – Description, measurement and assessment of environmental noise. Noise Monitoring Terminals (NMT) to be installed with the following specifications (or similar approved):

- Logging of two concurrent periods, e.g. 15-minute & hourly;
- Daily CIC automated calibrations;
- E-mail alert on threshold exceedance;
- E-mail alert on low battery and low memory;
- Remote access to measured data, and;
- Live display of noise levels.

Whenever an alert threshold level is exceeded the monitor in question will issue an alert by way of text or email message to designated recipients as follows:

- The company responsible for the monitoring;
- The Main Contractor;
- Any parties nominated by the main contractor or developer;
- The Contractor's Community Liaison Officer.

In the event of an alert being received, the following actions are to be taken:

- "Amber" – the Contractor should assess activities currently taking place on the site and may take steps to limit emissions where practicable; and
- "Red" – the Contractor should conduct a detailed review of activities on the site, in particular those deemed responsible for the exceedance

of the alert threshold level. In particular, it should be verified that noise control measures have been implemented in accordance with BS5228 and Best Practicable Means (BPM). Additional measures should be considered and introduced as required. This may include possible plant replacement or alternative methods of working.

5.16.2 Vibration Monitoring

Vibration monitoring should be conducted in accordance with BS 6472:2008 Guide to evaluation of human exposure to vibration in buildings. Vibration sources other than blasting (human disturbance) and BS ISO 4866:2010 Mechanical vibration and shock. Vibration of fixed structures. Guidelines for the measurement of vibrations and evaluation of their effects on structures (building damage).

The mounting of the transducer to the vibrating structure will need to comply with BS ISO 5348: 1998: Mechanical vibration and shock – Mechanical mounting of accelerometers. In summary, the following ideal mounting conditions apply:

- The transducer and its mountings should be as rigid as possible;
- The mounting surfaces should be as clean and flat as possible;
- Simple symmetric mountings are best, and;
- The mass of the mounting should be small in comparison to that of the structure under test.

The monitoring equipment should be set to monitor vibration in 5 minute periods. Noise and vibration data should be downloaded and reviewed on a fortnightly basis.

In addition, it is recommended that spot check noise & vibration measurements are conducted on a monthly basis. These spot checks can be organized to coincide with works that have potential to generate high levels of noise or vibration on site in order to confirm the potential extent of impact.

A monthly noise & vibration monitoring report should be prepared by the contractor. Reports should identify any exceedances above nominal limit values and attempts to

clarify the causes etc. Where remedial measures are required and identifiable these should also be clearly stated.

Indicative noise and vibration monitoring positions include but are not limited to those illustrated in Figure 11. Residential buildings adjacent to the site boundaries will be considered. One noise monitor should be positioned to address noise levels experienced at the nearest apartments or residential units. Subject to constraints on site and the location of construction works, additional noise monitors should be considered and/or moved to address monitoring requirements.

Figure 11 – Noise and Vibration Monitoring Locations

5.17 Air Quality Monitoring

An air quality monitoring (Air Quality and Dust monitoring) specialist will be appointed to carry out independent monitoring during critical periods at sensitive locations for comparison with limits and background levels. Central to this is the implementation of a Dust Management Plan.

5.18 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 steps have 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).

Proposed monitoring locations have been outlined by AWN Consulting Ltd in Figure 12 below. These monitoring locations are indicative only and can be modified based on specific constraints on the site once works commence. Monitoring locations should have regard for the sensitive receptors within close proximity to the site; these include the numerous residential properties borderin the site. Specifically the residential properties in Arundel and the Orchard to the west; Brook Court to the south; Richmond Park to the east; and Purbeck and Dayton Close to the north.

Figure 12 – AWN Consulting Ltd Proposed Construction Dust Monitoring Locations

5.18.1 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. 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:

- 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;
- 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;

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.

5.18.2 Preparing and Maintaining the Site

- The site layout shall be planned so that machinery and dust causing activities are located away from receptors, as far as is possible. Site compounds and storage facilities are to the centre of the site.
- Solid screens or barriers shall be erected around dusty activities or the site boundary that are at least as high as any stockpiles on site.
- Specific operations where there is a high potential for dust production shall be fully enclosed;
- Site fencing, barriers and scaffolding shall be kept clean using wetting methods.
- Materials that have a potential to produce dust shall be removed from site as soon as possible, unless being re-used on site. If they are being re-used on-site cover as described below.
- Seed or fence stockpiles shall be covered to prevent wind whipping.

5.18.3 Operating Vehicles / Machinery and Sustainable Travel

- All vehicles shall switch off engines when stationary - no idling vehicles.
- The use of diesel or petrol powered generators shall be minimized and mains electricity or battery powered equipment shall be used where practicable.

- A maximum-speed-limit of 20 kph shall be implemented on haul roads and work areas;
- A plan shall be applied to manage the sustainable delivery of goods and materials.
- A Travel Plan shall be implemented that supports and encourages sustainable travel (public transport, cycling, walking, and car-sharing)

5.18.4 Operations

- Only cutting, grinding or sawing equipment fitted or in conjunction with suitable dust suppression techniques such as water sprays or local extraction shall be used, e.g. suitable local exhaust ventilation systems.
- An adequate water supply shall be provided on the site for effective dust/particulate matter suppression/mitigation, using non-potable water where possible and appropriate.
- Only enclosed chutes and conveyors and covered skips shall be used.
- Drop heights from conveyors, loading shovels, hoppers and other loading or handling equipment shall be limited and fine water sprays on such equipment will be implemented wherever appropriate.
- Equipment shall be 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.

5.18.5 Waste Management

- Bonfires and burning of waste materials will be prohibited.

5.18.6 Measures Specific to Earthworks

- Earthworks and exposed areas/soil stockpiles shall be re-vegitated to stabilise surfaces as soon as practicable.

- Hessian, mulches or trackifiers will be used where it is not possible to re-vegetate or cover with topsoil, as soon as practicable.
- The cover in small areas shall only be removed during work and not all at once.
- During dry and windy periods, and when there is a likelihood of dust nuisance, a bowser shall operate to ensure moisture content is high enough to increase the stability of the soil and thus suppress dust.

5.18.7 Measures Specific to Construction

- Sand and other aggregates shall be stored in bunded areas and will not be allowed to dry out, unless this is required for a particular process, in which case appropriate additional control measures will be put in place.
- Bulk cement and other fine powder materials shall be 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, bags shall be sealed after use and stored appropriately to prevent dust.

5.18.8 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.
- Water-assisted dust sweeper(s) will operate on the access and local roads, to remove, as necessary, any material tracked out of the site.
- All vehicles entering and leaving sites shall be covered to prevent escape of materials during transport.

- An ongoing inspection of on-site haul routes shall be implemented for integrity and instigate necessary repairs to the surface as soon as reasonably practicable.
- All inspections of haul routes and any subsequent action shall be recorded in a site log book.
- A temporary surface shall be applied to the existing avenue, which shall be regularly damped down with fixed or mobile sprinkler systems, or mobile water bowsers and regularly cleaned.
- A wheel washing system shall be provided inside the site entrance, see Figure 8 (with rumble grids to dislodge accumulated dust and mud prior to leaving the site where reasonably practicable).
- An adequate area of hard surfaced road shall be provided between the wheel wash facility and the site exit, wherever site size and layout permits.
- The access gates shall be located at least 10 m from receptors where possible.

5.19 Harmful Materials

Harmful material will be stored on site for use in connection with the construction works only. These materials will be stored in controlled manner. Where on site facilities are used, there will be a bunded filling area using double bunded steel tank at a minimum.

5.20 Biosecurity

In order to minimise the risk of the introduction or spread of invasive alien plant species (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 Biosecurity 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:

- Good construction site hygiene will be employed to prevent the introduction and spread of problematic IAPS by thoroughly washing vehicles prior to leaving any site.
- 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.
- All washing must be undertaken in areas with no potential to result in the spread of IAPS.
- 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.

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

- 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.
- The bulbs will be broken up using a spade and buried on site to a minimum depth of 1m.
- 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.

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 Waste Management

AWN Consulting Ltd have developed a Resource & Waste Management Plan (RWMP) which accompanies this document as part of the planning submission. This RWMP includes information on the legal and policy framework for Construction and Demolition (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.

6.1 Responsibility for Construction Phase Waste Management

Prior to construction commencing, the Contractor shall nominate a suitably competent and experienced representative as Construction Waste Manager for the project. The function of the Waste Manager is to communicate effectively the aims and objectives of the Waste Management programme for the project to all relevant parties and contractors involved in the project, for the duration of construction works on site.

6.2 Construction Waste Genrated by the Proposed Development

Waste generated during construction typically includes the following:

- Concrete, bricks, tiles, and cement
- Glass and composite cladding systems
- Wood
- Plastics
- Bituminous mixtures, coal tar, and tarred products
- Metals (including their alloys)
- Soil and stones

- PCB-containing materials (e.g. sealants, resin-based floorings, capacitors, etc.)
- Oil wastes and waste of liquid fuels
- Batteries and accumulators
- Packaging (paper/cardboard, plastic, wood, metal, glass, textile, etc.)

The RWMP outlines an approximate estimate of waste generated during demolition and construction stages, and identifies targets in terms of material re-use/recovery, recycle and disposal.

6.3 Waste Management and Mitigation Measures

The following measures are proposed to ensure effective management of construction waste at the development site, to maximise recycling of construction waste, and to minimise the environmental impact of construction waste.

A waste storage compound shall be set up on-site from the commencement of site activities. The compound shall include the following:

- Separate waste skips labelled with signage stating the nature of waste materials that can only be placed in the skips.
- Waste oils / containers shall be placed in dedicated mobile bunds units.
- Soils contaminated by accidental on-site spillages of oils / construction hydrocarbons shall be stored in clearly identified hazardous waste storage containers.
- Spill kits with instructions shall be located in the waste storage compound.
- On-site segregation of all waste materials into appropriate categories, including:
    - Top-soil, sub-soil;
    - Concrete, bricks;
    - Asphalt, tar, and tar products;

- Metals;
- Dry recyclables (e.g. Cardboard, plastic, timber).

- All waste material will be stored in skips or other suitable receptacles in a designated waste storage area on the site.
- Wherever possible, left-over material (e.g. timber cut-offs) and any suitable demolition materials shall be reused on or off site.
- Uncontaminated excavated material (top-soil, sub-soil) will be reused on site in preference to the importation of clean fill, as soil to be reused or removed from site must be tested to confirm its contamination status and subsequent management requirements.
- All waste leaving the site will be transported by a suitably licensed/permitted contractor and taken to a licensed/permitted facility.
- All waste leaving the site will be recorded and copies of relevant documentation retained.

These measures are intended to ensure that the waste arising from construction of the proposed development is dealt with in compliance with the provisions of the Waste Management Acts 1996 to 2013, the Litter Act of 1997, and the Eastern-Midlands Region (EMR) Waste Management Plan 2015-2021, achieving optimum levels of waste reduction, re-use and recycling.

The excavation of the basement will generate a large volume of spoil which will need to be removed off site. This inert material could be reused as a by-product (and not as a waste) in accordance with Regulation 15 (By-products) (previously Article 27) 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. 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 useful construction material.

6.4 Predicted Impacts of the Proposed Development

Waste materials will be generated during the construction of the proposed development. Careful management of these, including segregation at source, will help to ensure maximum recycling, reuse and recovery is achieved, in accordance with current local and national waste targets. It is expected, however, that a certain amount of waste will still need to be disposed of at landfill.

Given the provision of appropriate facilities, environmental impacts (e.g. litter, contamination of soil or water, etc.) arising from waste storage are expected to be minimal. Particular attention must be given to the appropriate management of any construction waste containing contaminated or hazardous materials. The use of suitably licensed waste contractors will ensure compliance with relevant legal requirements and appropriate off-site management of waste.

In summary, with a high level of due diligence carried out at the site, it is envisaged that the environmental impact of the construction phase of the proposed development will be of small scale and short duration, with respect to waste management.

7 Traffic Management

7.1 Site Traffic, Traffic and Pedestrian Management

The anticipated truck movements from and to the site in relation to the preliminary programme for the works will be nominated in the construction methodology by the Contractor. It is anticipated that all truck movements to and from the site will utilise the M50, which is c6km due south west of the site – See Section 4.5.

The construction site will be delineated by means of hoardings and lockable gates with screened fencing at the entry and exit points. The Contractor will pay particular attention to pedestrian traffic and safety at the entrance onto Monkstown Road. All vehicles will enter and exit the site in a forward direction.

Pedestrians will have right of way. If required, alternate pedestrian routes around the site will be created and clearly signed.

7.2 Minimization of Construction Vehicle Movements

Construction-related vehicle movements will be minimized through:

- Consolidation of delivery loads to/from the site and scheduling of large deliveries to occur outside of peak periods;
- Use of precast/prefabricated materials where possible;
- Provision of adequate storage space on site;
- Development of a strategy to minimise construction material quantities as much as possible;
- Promotion of public transport use by construction personnel, in order to minimise staff vehicle movements

The following headings identify some of the measures to be encouraged (see also Section 4.5).

7.2.1 Cycling

Cycle parking spaces will be provided on the site for construction personnel. In addition, lockers will be provided to allow cyclists to store their cycling clothes.

7.2.2 Car Sharing

Car sharing among construction personnel will be encouraged, especially from areas where construction personnel may be clustered. The Contractor shall aim to organize shifts in accordance with personnel origins, hence enabling higher levels of car sharing. Such a measure offers a significant opportunity to reduce the proportion of construction personnel driving to the site and will minimise the potential traffic impact on the surrounding road network.

7.2.3 Public Transport

Construction personnel will be encouraged to use public transport as means to travel to and from the site. An information leaflet shall be provided to all personnel as part of their induction on site, highlighting the location of the various public transport services in the vicinity of the construction site.

7.3 Public Roads

A Visual Condition Survey (VCS) will be carried out the Purbeck Cul-de-Sac and the local area of the Monkstown Road prior to commencement of works. The Contractor will liaise with the Transportation and Infrastructure department of Dun Laoghaire Rathdown County Council to agree any changes to load restrictions and construction access routes for the site. Measures will be put in place as required to facilitate construction traffic whilst simultaneously protecting the built environment.

The following measures will be taken to ensure that the site, public roads and surroundings are kept clean and tidy:

- a regular program of site tidying will be established to ensure a safe and orderly site;
- scaffolding will have debris netting attached to prevent materials and equipment being scattered by the wind;
- food waste will be strictly controlled on all parts of the site;
- mud spillages on roads and footpaths outside the site will be cleaned regularly and will not be allowed to accumulate;
- wheel wash facilities will be provided for vehicles exiting the site;
- in the event of any fugitive solid waste escaping the site, it will be collected immediately and removed.

8 Compounds Facilities

The construction compound shall be to the south of Dalguise House, please see Figure 7, which identifies the indicative site compound. The compound shall be constructed using a clean permeable stone finish and will be enclosed with security fencing. Site accommodation to be provided will include suitable washing / dry room facilities for construction staff, canteen, sanitary facilities, first aid room, office accommodation etc. Access to the compound will be security controlled and all site visitors will be required to sign in on arrival and sign out on departure.

A permeable hardstand area will be provided for staff parking and these areas will be separate from designated machinery / plant parking.

A material storage zone will also be provided in the compound area. This storage zone will include material recycling areas and facilities .A series of 'way finding' signage will be provided to route staff / deliveries into the site and to designated compound / construction areas.

On completion of the works all construction materials, debris, temporary hardstands etc. from the site compound will be removed off site and the site compound area reinstated in full on completion of the works.

8.1 Coronavirus Policy

COVID-19 is an infectious disease caused by coronavirus that can affect an individual's lungs and airways and is potentially fatal. It has been declared a pandemic by the World Health Organisation (WHO). The appointed contractor shall incorporate site specific protection measures within their Construction Stage Safety & Health Plan. This shall include guidance such as displayed poster style information from the WHO, hand sanitizing units and regular cleaning etc.

9 Provisions for Construction

9.1 Hoarding, Set-up of Site & Access/Egress Points

The site area will be enclosed with 2.4m high hoarding details as previously mentioned. The primary public interface in terms of access is at the southern end of the Purbeck Lane, and suitable hoarding shall be provided at this location. Hoarding panels shall be maintained and kept clean for the duration of the project.

9.2 Removal/Diversion of Services

Prior to site clearance, a utility survey will be carried out by the Contractor to identify existing services. It is not anticipated that there will be any services, however if unchartered services are encountered, all services will be disconnected, diverted or removed as agreed with service providers.

9.3 Site Clearance & Demolitions

The existing land has been laid as open gardens, which have been maintained to a high standard up to recent years. An initial Invasives Species Survey has been carried out. Prior to any excavations or site clearance, the Contractor shall carry out an updated invasive species survey using a qualified and approved surveyor.

Some minor buildings will be demolished as part of the development works. In advance of any works. An Asbestos Survey has been carried out. Prior to any demolitions, the Contractor shall carry out an updated asbestos survey using a qualified and approved surveyor. Any existing slabs or hardstanding and concrete foundations will be broken by excavators. All reinforced concrete will be partially processed on site to separate the steel from the concrete. All materials will either be fully separated on site and disposed of to the applicable landfills / processing facility or failing that material will be sent to a processing facility for separation. Relevant certification and documentation confirming the final separation and most environmentally friendly disposal will be available.

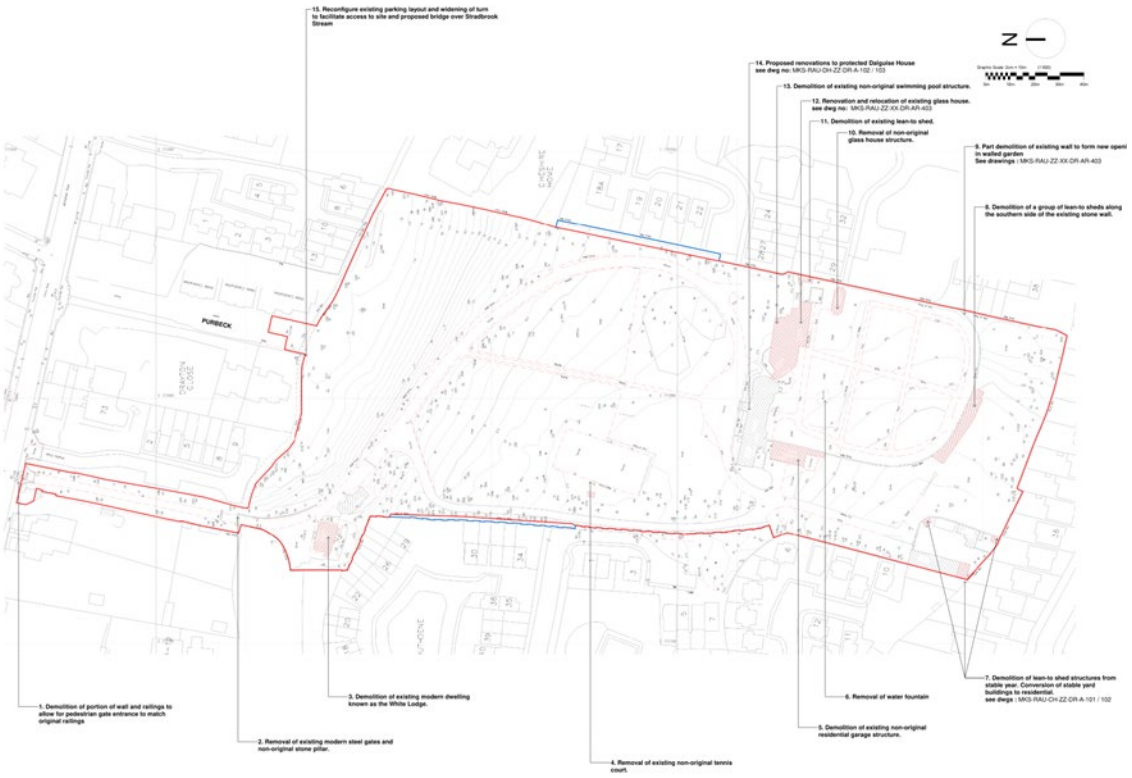

Figure 13 – Extent of Demolition (Existing Site Plan)

9.4 Tree Protection

The presence of many high value Category A and Category B mature trees on the site is a very unique highlight, and as such, very specific measures shall be taken by the contractor to protect the trees during the construction works. Please refer to the Tree Survey Report and associated drawings which accompany this document. The Contractor shall engage an Arborist, and the Root Protection Zone (RPZ) of all trees to be retained shall be carefully marked out on site. A heras fence shall be erected to prevent any access to the enclosed areas of the RPZ during the construction works.

A number of the trees to be retained are located along the existing Avenue. It is intended that this Avenue shall be retained, and as construction vehicles will traverse this roadway, it will be necessary to construct a temporary road build-up to protect the roots below. The temporary road build-up shall incorporate a "Cellweb" system (or similar). This polymer cellular confinement system into which specified crush stone is placed will spread axle loads of vehicles, thus reducing the loading by the time it

reaches the soil and root area underneath. This system shall also be used on other areas where construction vehicles travel adjacent to retained trees.

9.5 Installation of Services

The drainage strategy incorporates gravity outfalls for foul and surface water sewage on the northern site boundary (refer to the drainage drawings). The internal site drainage predominantly operates by gravity. The high point of the site is at Dalguise House, and as such, to achieve a gravity flow northwards from Phase 1, this results in some deep areas of drainage to the north of Dalguise House. The Contractor shall assess the form of construction for the services, as excavations shall also be necessary to the centre of the site for the basement structure. To limit excessively deep narrow foundations, and to minimize disruption of adjacent trees, the Contractor may choose to use micro-boring techniques for services installation. This trenchless form of installing services utilises a horizontal auger which traverses between excavated pits.

9.6 Excavation

The proposed site levels are determined by a combination of factors such as tie-ins with existing roads, existing topography, TGD Part M compliant access to ground floor levels etc. The profiling of the site to accommodate the proposed site levels, construction of foundations, forming of landscaping features etc will result in a surplus of "cut" material which will be exported off site to suitably licensed landfill facilities.

A 3D computer model was created of the site based on the topographical survey, and the following are the estimated nett volumes of material which will be excavated and exported off site in order to construct the foundations / basements:

- Phase 1: 41,885m^3
- Phase 2: 3,508m^3
- Phase 3: 3,355m^3
- **TOTAL: 48,748m^3**

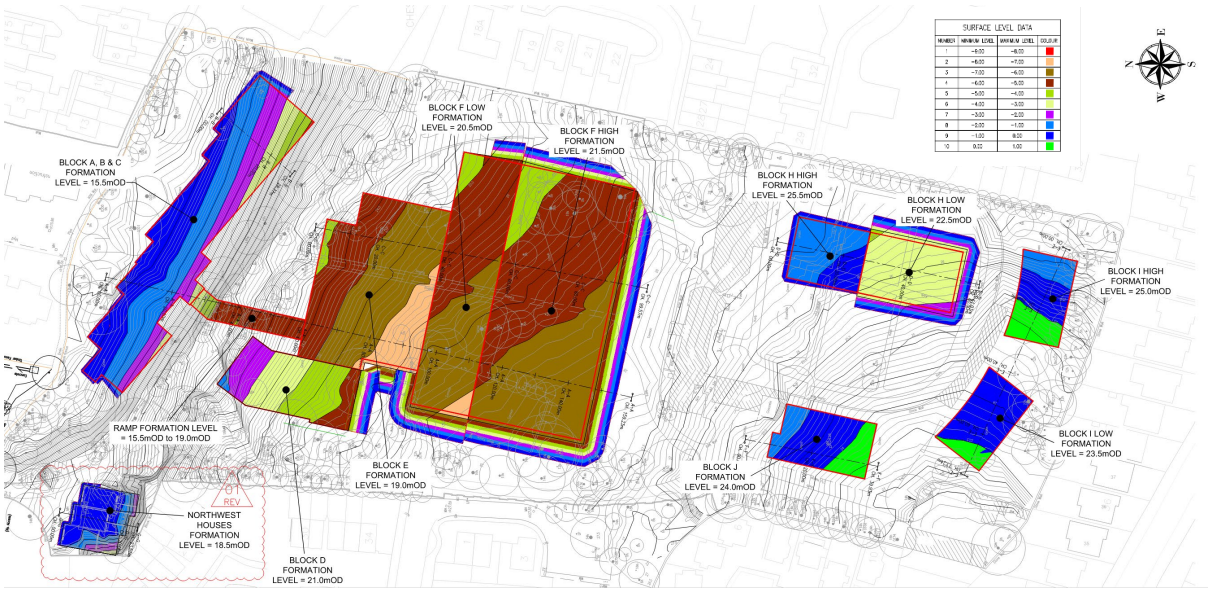

Figure 14 – Extract from Civils 3D software of approx. excavation depths

A 20% bulking factor has been included in the volumes above. Some topsoil material maybe retained on site for use in landscaped areas. During the excavations, HGV traffic is estimated to be a maximum of 13no. two-way movements per hour. The excavations at Phase 1 will generate the highest number of truck movements. This is assessed over an approximate three month period, where it is estimated that there will be 5,236no two-way truck movements or approximately 375no two-way movements per week.

The overlap of excavations at each Phase will be determined by the Contractor, but it is envisaged that the excavation period and associated truck movements would be over a two to three month period.

The majority of the excavations can utilise battered excavations, but some vertical temporary retaining walls will be required at localised areas along the existing avenue and near existing trees to be retained. The temporary retaining walls will include bored piles. All excavation banks shall be protected and inspected regularly. The accompanying drawing W3683-DR-1040-05 identifies the basement / undercroft excavation extent and the proximity to the site boundaries. A second and more comprehensive site investigation was carried out in early 2022. A total of eight rotary cores were carried out across the site and the bedrock was identified at 10.5m to

14.0m below ground level. This is well in excess of any basement excavations, and as such, it is not envisaged that any rock breaking will be required as part of the works.

The Contractor must prepare a Construction Waste Management Plan in accordance with the "Best Practice Guidelines on the Preparation of Waste Management Plans for Construction and Demolition Projects" (Department of Environment, Heritage and Local Government, 2006) and ensure that all material is disposed of at an appropriately licensed land fill site. The Contractor must also outline detailed proposals within the Construction Management Plan to accommodate construction traffic.

9.7 Foundation Works

It is likely that the foundations to apartment blocks will consist of shallow foundations on the underlying stiff glacial clays. The excavation and preparation of the foundation works will generate spoil that must be disposed of at an appropriate licensed land fill site. The concrete operations associated with the foundation will require concrete deliveries to site. The frequency of construction movements to site shall be outlined by the Contractor in their CTMP.

9.8 Superstructure

The construction of the superstructure will involve complex sequencing of activities and various construction methodologies could be adopted to deliver the Contract. As noted the construction methodology and therefore the programme of the construction activities will be dictated by the Contractor.

The following are potential options for the superstructure design:

- RC Column & Flat Slab
- RC/Masonry Cross Wall & Precast Slab
- Precast Concrete Twin Wall & Precast Slab

The following outlines a general construction sequence for the superstructure:

9.8.1 Building Structure:

- Construction of the foundations/substructure.
- Construction of rising elements to 1st floor and 1st floor slabs.
- Similar sequence of construction of rising elements and floor slabs.
- Note allowance for service construction concurrently or before superstructure.

9.8.2 Envelope / Cladding:

- Envelope works will follow in a sequential manner.

9.8.3 Mechanical & Electrical fit-out:

- First fix will commence at each level behind structure.
- This will be followed by the second fix and the final connections.

9.8.4 Fit-out:

- Initial installation of any stud work when cladding is complete and floor is weather tight.
- Installation of equipment and associated connection to services.
- Completion of finishes.

9.8.5 Commissioning:

- The final commissioning period will commence during fit-out.

The above is an indicative construction sequence. The final sequence shall be dictated by the Contractor. The Contractor must issue a detailed construction programme as part of their Construction Management Plan outlining the various stages prior to commencement of works.

9.9 Erection and Operation of Cranes

It is envisaged that two to four tower cranes will be temporarily erected in each phase to accommodate the construction works for the distribution of reinforcing steel, concrete skips, concrete formwork element and general building materials. The Contractor will need to obtain all necessary licences from the Local Authority. A "mast climber" may be installed at some local areas to facilitate façade features. The mast climber is essentially a climbing platform that allows the user to safely access any level without the requirement for a full scaffold tower.

9.10 Construction of Bridge at the Stradbrook Stream

The abutments to the bridge shall be supported by mini piles installed using augering techniques to the south of the Stream. The pile shall be sleeved to prevent any grout loss to the sub-soil. Following installation of the piles, a reinforced concrete ground beam shall be cast in order to form the southern bridge support. The northern support shall be via the existing reinforced concrete retaining wall forming the northern bank of the stream.

The bridge deck shall be constructed using a series of precast concrete planks which will span from the existing northern retaining wall to the new southern abutment noted above. An insitu topping shall be provided in order to achieve the necessary structural ties and falls to the deck etc. Proprietary barriers shall be provided to the bridge sides.

The works will included localized regrading of the existing surfacing of the Purbeck road at the interface with the new bridge deck.

It is envisaged that mobile cranes shall be required to accommodate the construction works for the distribution of reinforcing steel, concrete skips, concrete formwork element, precast planks and general building materials.

The flood plain extent is indicated in Figure 8 above (refer to McCloy SSFRA document). 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 15). 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.

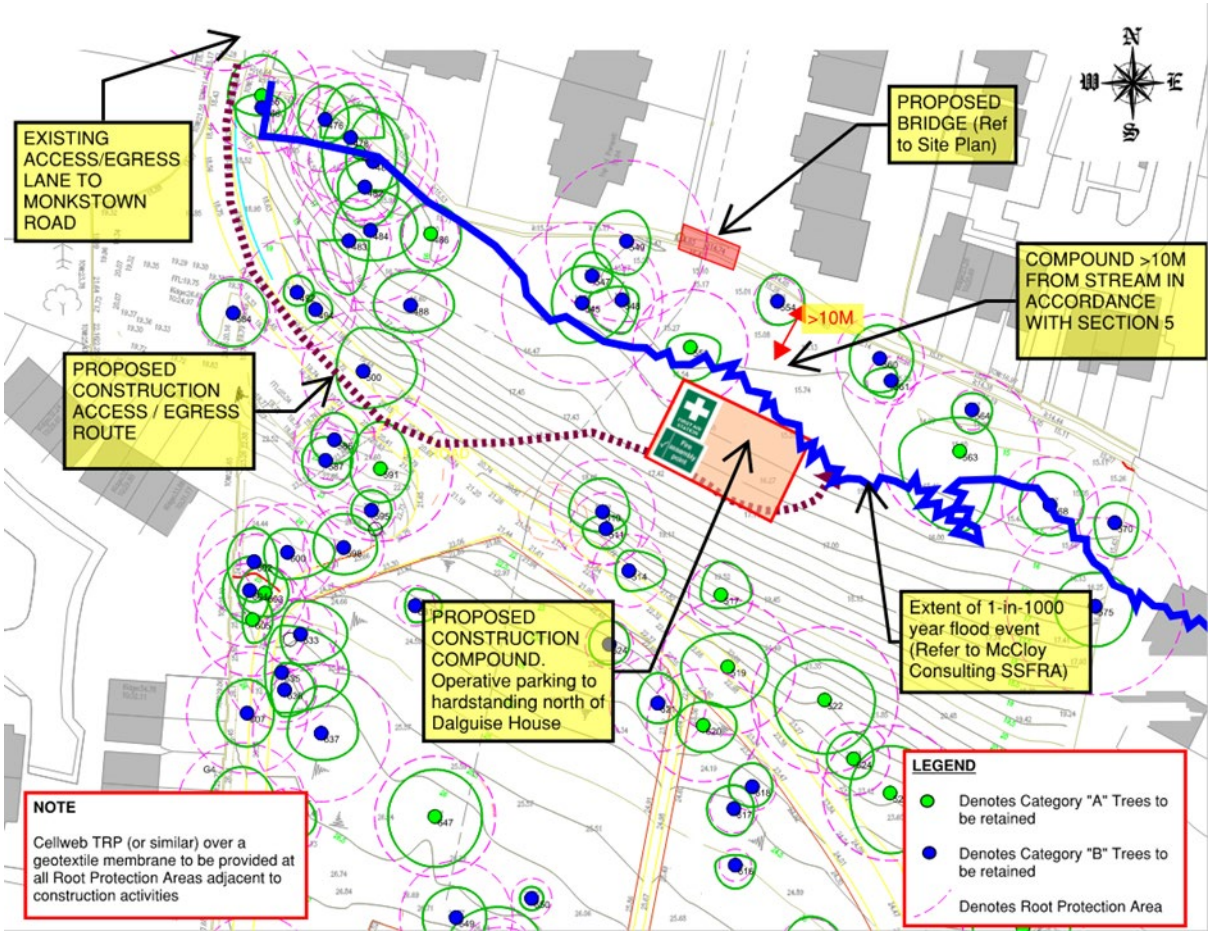

Figure 15 – Construction of Bridge over Stradbrook Stream

9.11 Works to Existing Buildings

The existing Dalguise House, Coach House, Entrance Lodge and Brick Gate Lodge buildings will be retained and remedial works carried out to ensure the fabric of the buildings is improved, and necessary alterations to suit the proposed layouts. All works to the buildings will be sympathetic to the original construction, and incorporate suitable mortar, protective treatments and adequate ventilation to concealed elements. Following extensive opening-up to inspect the structural elements, a detailed schedule of works shall be agreed with the Conservation Architect.

10 Stakeholder Management and Community Engagement

The proposed development is in close proximity to neighbouring residential properties, and as such, the management of stakeholders will a key consideration for all site logistics, planning, programming and works sequencing decisions. The project will also involve interfacing with other key parties including Dun Laoghaire Rathdown Council, Dublin Bus and An Garda Siochana.

A Site Manager will be appointed as the designated '**Community Liaison Officer**' (CLO) for the duration of the project with a focus on day-to-day issues affecting the adjoining properties including the site establishment, access, major deliveries, tower crane erection/dismantling operations, noisy work activities etc.

A detailed **Community Liaison Plan** will be developed identifying the key stakeholders, methods of communication, key requirements and timelines, project contacts and level of reporting required. The objective of plan will be to manage the expectation of the adjoining properties and minimize the impact of the construction works.

Prior to commencing works on site, the CLO will meet each stakeholder individually, where they will be provided with information on the project including the plans for the site setup/logistics and early stages of the project. The CLO shall advise on the procedures for contacting the site team with any queries or issues which may arise, with out-of-hours phone and email contact details. These meetings will be the starter meeting for the future monthly meetings to be held with the key stakeholders to review any construction issues on a regular basis in a managed and agreed forum. The Community Liaison Plan will be updated each month, taking on board issues raised, and circulated to the relevant stakeholders.

The CLO will also identify where conditional surveys are required of any properties and the requirement for temporary works, protections, scaffolding, building monitoring or alterations to existing boundaries or access routes. Finally, the CLO will receive all noise/vibration monitoring alerts, and they will actively engage with the Contractor to mitigate repeat accurances.

Other forms of regular contact will be made including monthly newsletters, letter drops, text alerts for site notifications, etc providing the stakeholders with regular updates on the project and advising of any changes to logistics plans, access routes and any upcoming works which may affect them including lane or road closures, services diversions or planned or of hours activities completed under licence from DLRCC.

Information noticeboards will be placed at the site access point and a communications log will be maintained with every contact/complaint made recorded and responded to within an agreed time period. The log will have a **Green** (Initial) / **Amber** (Repeat) / **Red** (Major) 'traffic light' rating system which will be shared and reviewed with the Client at the project progress meetings and will be made available to DLRCC upon request.

11 Conclusion

This Construction & Environmental Management Plan (CEMP) has been prepared in conjunction with Roughan & O'Donovan for the proposed development at Dalguise House, Monkstown to give an overview of the processes to be employed during construction of this element. This document should be read in conjunction with the AWN Consulting Ltd report *Resource & Waste Management Plan* (RWMP) and *Noise Impact Assessment*, which form part of this planning submission.

The aim of this CEMP is to address the following issues that can arise during construction;

- Noise and Vibration
- Traffic management
- Working hours
- Pollution control
- Dust control
- Road cleaning
- Compound / public health facilities and staff parking
- Indicative construction methodology
- Stakeholder management and community engagement

This plan will be revised by the appointed Contractor and expanded to produce a Detailed Construction Management Plan which will be agreed with Dun Laoghaire Rathdown County Council in advance of the construction phase.