GLL PRS Holdco Limited

Proposed Strategic Housing Development
"Kenelm"
Deer Park
Howth
Co. Dublin

VOLUME II
ENVIRONMENTAL IMPACT ASSESSMENT REPORT

MAY 2021

Document Control Sheet

Client	GLL PRS Holdco Limited			
Project Title	Kenelm, Howth			
Document Title	EIAR Volume II			
Document No.	3865			
Document Comprises	DCS	TOC	Chapters	Appendices
	1	1	17	0
Prepared by	CLG	**Checked by**	PG	

Revision	**Status**	**Issue date**
A	ISSUED	04.06.2021

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INTRODUCTION

MAY 2021

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1 Introduction

This Environmental Impact Assessment Report (EIAR) was prepared by McCutcheon Halley Planning Consultants together with a team of specialist consultants on behalf of GLL PRS Holdco Limited to accompany an application for a Strategic Housing Development (SHD) to An Bord Pleanála (ABP) on undeveloped lands at Howth Road, Howth, Co. Dublin.

This EIAR identifies, describes and assesses the likely significant effects of the project as a whole, in accordance with the EIA Directive 2011/92/EU as amended by Directive 2014/52/EU the description of the proposal should comprise *"(…) information on the site, design, size and other relevant features of the project".*

A comprehensive description of the proposed development is set out in **Chapter 2**. The description sets the basis against which specialist assessments presented in this EIAR were undertaken.

Briefly, the proposed development (see **Figure 1.1**) will consist of the construction of 162 no. residential apartment units together with resident amenity rooms (co-working, community room, and meeting room) distributed in 3 no. blocks (A,B & C) ranging in height from 5 storeys to the north and 6 storeys to the south.

The proposed mix of units is as follows:

- 29 no. 1-bedroom units, - 17.9%
- 104 no. 2-bedroom units and – 64.2%
- 29 no. 3-bedroom units – 17.9%

The proposed development includes a landscape scheme. Private open space (2,196 sq.m) is proposed as balconies and ground floor terraces; communal amenity space (2,192 sq.m) in the form of courtyards and roof gardens and public open space (1,161 sq.m) including a botanic garden and pocket park play area located to the north of the site.

132 no. car parking spaces are proposed at basement level including 6 no. accessible spaces, 13 no. electric vehicle spaces and 4 no. 'Go-Car' spaces.

325 no. resident cycle parking spaces are proposed at basement level for long stay parking and 30 no. at grade for visitor (short stay) parking.

Primary access (vehicular/cyclist/pedestrian) is proposed on the northwest of the existing demesne northern boundary wall and a separate pedestrian and cyclist access is proposed at the centre.

A 45.5 sq.m single storey ESB substation and switch room is proposed along the site's western boundary. Waste storage and plant rooms are proposed at basement level.

Drainage, lighting, and all ancillary site development works including undergrounding of the existing ESB overhead 10/20 kV line, and realignment of the existing gas main to facilitate the proposed development also for part of the scheme.

Figure 1.1 Application Area (MCA Architects)

1.1 Development Site – Wider Context

The proposed development site is located to the south of the Howth Road (R105), west of Howth DART Station and to the east of Sutton Cross. Howth is largely characterised by low to medium density residential dwellings with large expanses of amenity areas (Howth Head, golf clubs, waking trials). Howth Village lies in close proximity to the seafront with a busy and active pier area to the north of the Main Street.

The exceptional character of Howth is recognised through the making of the Howth Special Amenity Area Order that encompasses 547 hectares of land, see **Figure 1.2**. It includes Ireland's Eye (28 hectares) and the heathland, woods, cliffs, shingle beaches and wooded residential areas of the south-eastern half of the Howth peninsula (519 hectares).

The Order aims to preserve and enhance the character and special features of Howth. It designates a 21-kilometre network of rights-of-way as public footpaths and 35 sites and areas of special natural, historical, architectural, archaeological, and geological interest. Neither the trails or sites are located within the subject site, however, they do offer significant amenity value for the existing and future residents of Howth.

Figure 1.2 is extracted from the Howth SAAO Map A. The residential zoned northern portion of the proposed development site is not within the SAAO boundary or 'Other Areas' zone. The southern part of the proposed development site, zoned HA, comes within an area defined as 'other areas' within the SAAO which acts as a buffer zone for the actual SAAO.

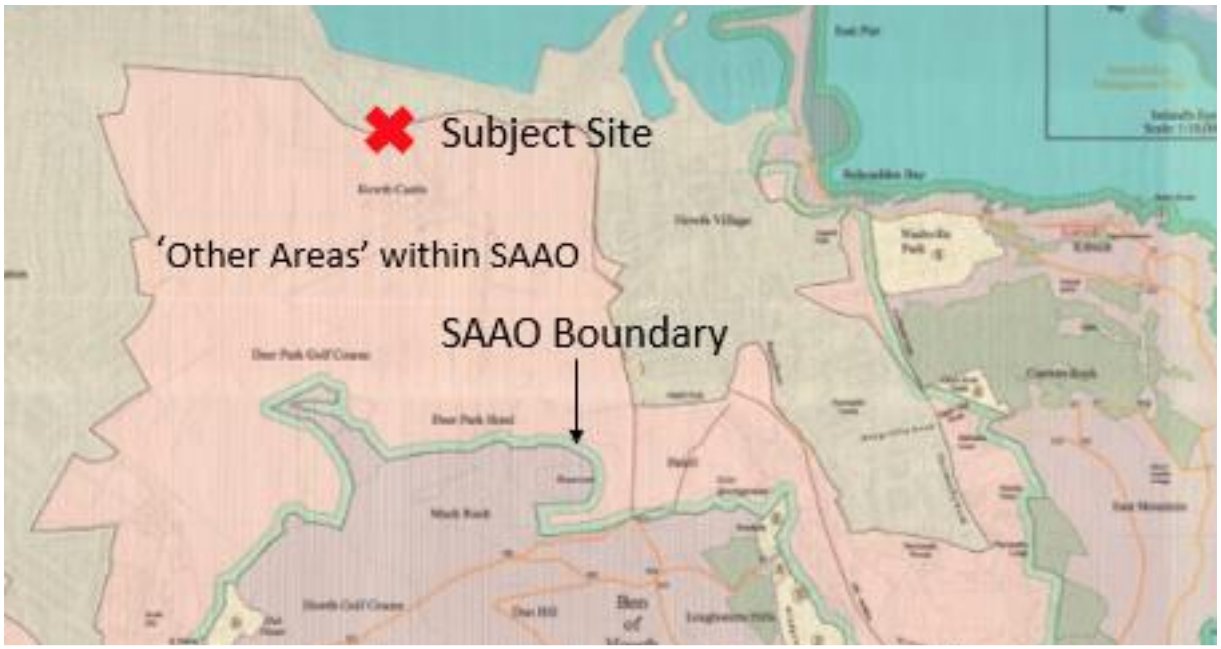

Figure 1.2 Howth SAAO (Extract from Map A)

1.2 Proposed Development Site

The proposed development site is approx. 1.7 hectares and is an undeveloped greenfield site. The proposed residential element is confined to the area that is zoned for residential use (1.2 ha residential zoned land). There is no existing access to the development site from public roads.

The site has frontage onto Howth Road (R105), and to the east, it is bounded by the existing entrance to Howth Castle demesne. To the west, the site is bounded by boundary walls and immediately beyond are suburban houses. The lands to the immediate south are occupied by Deer Park Golf Club and, further south is the National Transport Museum and Howth Castle. To the north of Howth Road are M2 zoned lands – city/town/village central area – which is currently being development for residential use (512 no. residential units) on foot of Strategic Housing Development permission reference TA06F.306102. See **Figure 1.3.**

Figure 1.3 Site Local Context (Design Statement, MCA Architects)

1.3 The Applicant / Project Developer

GLL PRS Holdco Limited, is part of Glenveagh, a leading Irish home builder founded in 2017, whose vision is to build high-quality homes that support sustainable communities Their focus on people, homes and communities has created successful developments nationally by understanding that well planned, well designed and well-built homes is the essence of thriving communities.

Glenveagh are focused on three core markets - suburban housing, urban apartments and partnerships with local authorities and state agencies. Since the Initial Public Offering (IPO), the company have opened 23 no. sites, delivering more than 1,800 no. units (700 no. units in 2020) with 1,150 no. units in the pipeline for 2021. Glenveagh presently have 6,000 no. units in design/pre lodgment stage.

1.4 Environmental Impact Assessment

The Environmental Impact Assessment (EIA) of Projects is a key instrument of European Union environmental policy to ensure a high level of protection of the environment and human health. The EIA Directive 2014/52/EU requires that public and private projects that are likely to have significant effects on the environment be made subject to an assessment by the competent authority, in this case An Bord Pleanála, prior to development consent being given.

EIA is defined as a process consisting of:

a) the preparation of an Environmental Impact Assessment Report (EIAR) by the developer;
b) the carrying out of consultations;
c) the examination by the competent authority of the EIAR, any supplementary information provided, where necessary, by the developer and relevant information received through consultations with the public, prescribed bodies and any affected Member States;
d) the reasoned conclusion of the competent authority on the significant effects of the project on the environment; and,
e) the integration of the competent authority's reasoned conclusion into any development consent decision.

The definition of EIA thus provides for a clear distinction between the process of environmental impact assessment to be carried out by the competent authority and the preparation by the developer of an Environmental Impact Assessment Report (EIAR).

EIAR is defined in the Planning and Development Act 2000, (as amended) as '*a report of the effects, if any, which proposed development, if carried out, would have on the environment and shall include the information specified in Annex IV of the Environmental Impact Assessment Directive'.*

Projects requiring EIA are set out in Annex I and II of the Directive. These Annexes are broadly transposed by way of the Planning and Development Regulations 2001, as amended, in Schedule 5, Parts 1 and 2.

EIA is a process and involves the following key steps;

i. Screening - decide if the project is EIA development
ii. Scoping - decide on scope of the information to be included in the Environmental Impact Assessment Report (EIAR)
iii. Prepare the Environmental Impact Assessment Report to accompany the application.
iv. Competent Authority carries out consultation
v. Competent Authority examines the EIAR and any other relevant information including information received from consultations
vi. Competent Authority comes to a reasoned conclusion on the potential significant effects of the project on the environment
vii. Competent Authority integrates the reasoned conclusion into a decision to Grant consent for a development together with a description of measures to avoid, prevent, reduce or offset significant adverse effects and where necessary monitoring measures.

1.4.1 Screening for Environmental Impact Assessment

The first stage of Screening is to decide if a proposed development falls within a class set out in Annex I or II of the Directive. These Annexes are broadly transposed by way of the Planning and Development Regulations 2001, as amended, in Schedule 5, Parts 1 and 2.

Part 1 developments meeting or exceeding the thresholds set out therein require mandatory EIA and, as such, there is no screening determination required. For Part 2 developments, in cases where thresholds are met or exceeded, or where no threshold is set, there is mandatory EIA; again, there is no screening determination required.

For all sub-threshold developments listed in Schedule 5 Part 2, a screening determination is required to be undertaken by the competent authority unless, on preliminary examination it can be concluded that there is no real likelihood of significant effects on the environment . This is initiated by the competent authority following the receipt of a planning application.

The proposed development does not fall within development classes set out in Part 1 of Schedule 5 and EIA is therefore not mandatory.

The proposed development falls within the category of an 'Infrastructure Project' listed in Schedule 5, Part 2 (10) (b) of the PDRs, which provides that a mandatory EIA must be carried out for projects including inter alia:

10b) (i) Construction of more than 500 dwellings

The proposed development is for 162 no. residential units and is significantly below the 500 dwellings threshold. Accordingly, it does not meet or exceed the threshold of 500 dwellings and EIA is therefore not mandatory.

10b) (iv) Urban development which would involve an area greater than 2 hectares in the case of a business district, 10 hectares in the case of other parts of a built-up area and 20 hectares elsewhere. (In this paragraph, "business district" means a district within a city or town in which the predominant land use is retail or commercial use.)

The proposed development site is surrounded by residential development, a golf course and demesne lands and does not satisfy the definition of business district. The applicable area threshold is therefore 10 hectares, and the proposed development site is 1.7 hectares. Accordingly, a mandatory EIA is not mandatory.

1.4.2 Sub-threshold Screening for EIA

In cases where a project is listed in Part 2 but is classed as 'sub-threshold development', it is necessary for the competent authority, in this instance An Bord Pleanála, to undertake a case-by-case examination to determine whether the proposed development is likely to have significant effects on the environment and requires an EIA. Where the assessment concludes that this is the case, the application for development must be accompanied by an EIAR.

The criteria for determining whether development listed in Part 2 of Schedule 5 should be subject to an EIA are set out in Schedule 7 of the PDRs; and the information to be provided by the Applicant to the Competent Authority for the purposes of screening sub-threshold development for EIA is set out in Schedule 7A. The requirements and information required are set out below.

1. *A description of the proposed development, including in particular—*
   a) *a description of the physical characteristics of the whole proposed development and, where relevant, of demolition works.*

The proposed development site is greenfield comprising a field of 1.16 hectares and part (0.58 hectares) of the Deer Park golf course, zoned High Amenity. demolition is limited to 2 no. openings in the demesne boundary wall to the north of the site, to facilitate vehicular and pedestrian access.

The development will consist of the construction of:

i. 162 no. residential units distributed across 3 no. blocks (A, B & C) ranging in height from 5-6 storeys, with a cumulative gross floor area (GFA) of 13,337.10 sq.m comprising;
   a. 29 no. 1-bedroom units, - 17.9%
   b. 104 no. 2-bedroom units and – 64.2%
   c. 29 no. 3-bedroom units – 17.9%
ii. 3 no. resident services and amenity rooms (1 no. in each block A-C) to accommodate co-working space, a community room and a meeting room (combined GFA 108 sq.m)
iii. 132 no. car parking spaces at basement level (underlying Blocks A & B) including 6 no. accessible spaces, 13 no. electric vehicle spaces and 4 no. car sharing spaces;
iv. 325 no. residents bicycle parking spaces (long-stay) at basement level, and 30 no. visitor bicycle parking spaces (short-stay) at surface level;
v. communal amenity space in the form of courtyards and roof gardens (combined 2,192 sq.m)
vi. public open space of 1,161 sq.m including a botanic garden and pocket park;
vii. a single storey ESB sub-station and switch room (45.5 sq.m);
viii. demolition of 2 no. sections of the existing demesne northern boundary wall to provide, a primary access (vehicular/pedestrian/cyclist) to the northwest and a separate pedestrian/cyclist access at the centre;
ix. restoration and refurbishment of the remaining extant northern and eastern demesne boundary wall;

x. change of use and regrading of part of the Deer Park Golf Course from active recreation use to passive amenity parkland and planting of a woodland belt on the southern boundary;

xi. undergrounding of existing ESB overhead lines, and, relocation of the existing gas main; and,

xii. all ancillary site development works including waste storage and plant rooms at basement level, drainage, landscaping/boundary treatment and lighting.

b) a description of the location of the proposed development, with particular regard to the environmental sensitivity of geographical areas likely to be affected.

The proposed development site is in an area of high environmental sensitivity in terms of *inter alia* landscape, biodiversity, and cultural heritage.

The site is enclosed by a wall along its northern and eastern boundary. It is proposed to make 2 no. openings in the wall to facilitate access to the site and enhance permeability.

There is a shelter belt of early mature native trees to the south of the residential zoned area that extend east to west. It is proposed to partially remove this belt of trees. A woodland belt will be planted further south along the application area boundary.

The mature trees that form the avenue to Howth Castle are predominantly outside the proposed development site and will not be affected by the proposed development. These trees are a highly valuable element of the landscape - for its cultural heritage value (the entrance avenue to the castle/demesne), biodiversity, and as a structural/spatial and visual feature of the landscape.

The site is greenfield, being comprised of a field and a part of the neighbouring golf course. In the wider context, it is characterised by an abundance of high value open space and woodland.

Howth Castle Architectural Conservation Area (ACA) adjoins the site to the east and the proposed development site is in proximity to the main entrance gates to Howth Castle and the 19th Century St. Mary's Church, both Protected Structures.

The exceptional character of Howth is recognised through the making of the Howth Special Amenity Area Order (SAAO). The Order aims to preserve and enhance the character and special features of Howth. The land zoned for residential development is not within the SAAO boundary, however, the land zoned High Amenity to the immediate south is defined as 'other areas' within the SAAO and is identified in the Fingal County Development Plan, 2017-2023, as a 'buffer zone'.

From the upper elevations of the SAAO area, panoramic views are generally afforded, with compositions including the upland landscape and golf courses, the Howth urban area, the wider city, the coastline to the north and south of Howth Head and the seascape.

Howth falls into the Coastal Character Type in the Development Plan which is characterised as having an exceptional landscape value: *"This value is arrived at due to the combination of visual, ecological, recreational and historical attributes. The area has magnificent views out to sea, to the islands and to the Mourne and Wicklow mountains and contains numerous beaches*

and harbours. The area's importance is highlighted by the High Amenity zoning covering substantial parts of the area..."

There are several protected views in the site vicinity, indicated on Sheet No. 10 of the Fingal Development Plan Map. These include:

- The view into the Howth Castle entrance from the Howth Road, and the reverse view, from the castle (and Deer Park golf club) access road out through the gate towards the north;
- A view from the fairway to the west of the Deer Park clubhouse, north towards the castle;
- Views from Muck Rock;
- Views from the ends of the piers of Howth Harbour.

Baldoyle Bay is located approx. 150m to the north of the site. It is a European Site (Special Area of Conservation [SAC, site code IE0000199] and a proposed Natural Heritage Area (pNHA, site code 000199). There is a direct connection between the proposed development site and Baldoyle Bay via the storm water network.

There is a known roost of Brown Long-eared Bat *Plecotus auritus* outside of the proposed development within approximately 150m.It is necessary to undertake surveys during the appropriate season to determine if the proposed development site is of value for commuting and foraging bats.

Wintering bird species associated with European sites are known to be present in Howth, it is necessary to undertake surveys to determine if the proposed development site is a foraging area for these birds.

The R105, Howth Road is to the north of the proposed development site and traffic congestion is known to occur at Sutton Cross to the west.

2. A description of the aspects of the environment likely to be significantly affected by the proposed development.

The aspects of the environment likely to be significantly affected by the proposed development are:

i. cultural heritage,
ii. the landscape and visual environment,
iii. biodiversity, and,
iv. the local road network

The boundary wall to the north and east of the proposed development site, while not protected, is of heritage value. It is proposed to make 2 no. openings in the northern wall to facilitate access to the site. Therefore, it is concluded at the screening stage, in the absence of detailed design, that cultural heritage, is likely to be significantly affected by the proposed development.

There will be a direct impact on an existing tree belt of approx. 25 years. However, this tree removal will be offset through appropriate replacement tree planting. In light of this and the

known presence of the high quantity and quality of trees local to the site, this screening stage ruled out a likely significant effect.

The introduction of buildings of urban scale will likely change the local landscape and views within the immediate environs. The assessment of potential landscape/townscape effects involves (a) classifying the sensitivity of the receptors (the main elements, features, characteristics and character areas that could be affected), (b) classifying the potential magnitude of change to each of the receptors, (c) combining these factors to arrive at an assessment of significance of the effects on each receptor, and (d) making a judgement as to the quality of the effects, i.e. classifying them as positive, neutral or negative. In the absence of a detailed study at this screening stage, a precautionary approach is applied having regard to the overarching objective of the EIA Directive. It is thus concluded that there is likely to be significant effects on the landscape and visual character, as a result of the proposed development.

Impacts arising from the proposed development may affect key ecological features. These key ecological features may occur within the subject lands or within the considered zone of influence (ZoI) of the proposed development. Typically, the ZoI of general construction activities (i.e. habitat loss, habitat fragmentation, risk of spreading/introducing non-native invasive species and disturbance due to increased noise, vibration, human presence and lighting) is not likely to extend more than several hundred metres from the proposed development. At this screening stage key ecological receptors (KERs) for the proposed development are identified as;

- Watercourses and the downstream aquatic environment.
- European Designated sites located in the downstream receiving environment.
- Fauna species which commute / forage within the proposed development site and/or immediate vicinity.

At this screening stage there is a known presence of bats immediately outside the proposed development site and wintering birds are known to forage in the wider Howth area. Accordingly, it is concluded that a precautionary approach be adopted at this early stage of the process and it is assumed in the absence of full studies that the conservation interests of nearby Designated European Sites and bats and their roosts are likely to be significantly affected by the proposed development.

It is known that there are congestion issues at Sutton Cross, the effect of the proposed development is indeterminable at this early stage of the proposed development. Accordingly, a precautionary approach is adopted, and it is determined that in the absence of a project specific traffic and transport assessment, a likely significant effect may arise.

3. A description of any likely significant effects, to the extent of the information available on such effects, of the proposed development on the environment resulting from—
a) the expected residues and emissions and the production of waste, where relevant,

Foul Water Emissions

It is proposed to deliver a residential development and emissions associated with this type of development are waste water effluent, storm water runoff and energy related emissions from energy consumption and emissions associated with use of private vehicles.

There is a known municipal foul sewer adjacent to the site and it is intended to connect into this. At the time of undertaking this screening assessment, Irish Water (IW) had confirmed the feasibility of this connection with the Applicant. In providing this response IW will have considered the capacity of their infrastructure (current and future capacity) and environmental impact.

The wastewater generated will discharge to the Ringsend Wastewater Treatment Plant (WwTP), where it is treated and ultimately discharges into Dublin Bay. The WwTP is required to operate under an EPA licence (D0034-01) and to meet environmental legislative requirements.

The Ringsend WwTP received planning permission for upgrade works in 2012. In June 2018, Irish Water submitted a planning application for strategic infrastructure development to An Bord Pleanála seeking permission to further progress the upgrade of the Ringsend Wastewater Treatment Plant (WWTP) and in April 2019, Irish Water was granted planning permission by An Bord Pleanála to further progress the upgrade of the Ringsend WwTP.

The 2019 planning permission facilitated upgrading works to meet nitrogen and phosphorus standards set out in the licence. The design includes aerobic granular sludge which will result in treatment of sewage to a higher quality than current thereby ensuring effluent discharge to Dublin Bay will comply with the Water Framework Directive, Urban Wastewater Treatment Directive and Bathing Water Directive. It is understood that the upgrade to use of aerobic granular sludge and other phased upgrades will achieve a population equivalent of 2.4 million and are to be completed between 2027 and 2028. As outlined in the EIAR, with the 2018 planning submission, modelling has shown that the upgrades which are currently underway will result in improved water quality within Dublin Bay. The 2018 EIAR predicts that the improvement in effluent quality achieved by the upgrade will compensate for the increase in flow through the plant.

The project is being progressed in stages to ensure that the plant continues to treat the wastewater (1.98 million population equivalent) to the current treatment levels throughout the delivery of the upgrade. The project comprises 3 key elements and underpinning these is a substantial programme of ancillary works:

1. Provision of additional secondary treatment capacity with nutrient reduction (400,000 population equivalent);
2. Upgrade of the 24 existing secondary treatment tanks to provide additional capacity and nutrient reduction, which is essential to protect the nutrient-sensitive Dublin Bay area; and
3. Provision of a new phosphorous recovery process.

In February 2018, the work commenced on the first element, the construction of a new 400,000 population equivalent extension. These works are at an advanced stage with testing and commissioning stages expected to be completed in the second half of 2021.

Even without treatment at the Ringsend WwTP, the peak effluent discharge from a development of this scale would not have a measurable impact on the overall water quality within Dublin Bay and therefore would not have an impact on the current Water Body Status as defined within the Water Framework Directive.

Surface Water Emissions

The design of the surface water drainage network must take cognisance of the objectives and guidance contained in the Greater Dublin Strategic Drainage Study (GDSDS). The objective of this study is to ensure an environmentally sustainable drainage (foul and stormwater) strategy for the Region consistent with the EU Water Framework Directive.

At the time of screening the project for EIA, it is known that there is an existing surface water sewer to the north of the proposed development site that discharges north towards the Baldoyle Bay c. 160m to the subject site. There is therefore a direct hydrological connectivity between the proposed development site and Baldoyle Bay SAC/pNHA via the surface water drainage network and the potential for a likely significant effect to arise during the construction phase. This is because

i. runoff during the construction phase may contain increased silt levels or become polluted from construction activities. Runoff containing large amounts of silt can cause damage to surface water systems and receiving watercourses.
ii. During the construction phase there is potential for an increase in run-off due to the introduction of impermeable surfaces and the compaction of soils. This will reduce the infiltration capacity and increase the rate and volume of direct surface run-off. The potential impact of this is a possible increase in surface water run-off and sediment loading which could potentially impact local drainage.

Potential for impacts during the operational phase are deemed to be low due to the nature of the proposed development. The development will be fully serviced with separate foul and stormwater sewers as required by the GDSDS which will have adequate capacity for the facility and discharge limits as required by Irish Water licencing requirements.

Emissions from Energy Usage

The proposed development will generate a need for energy, electricity and heating. Technical Guidance Document Part L 2019 – Conservation of Fuel and Energy – Dwellings (public consultation edition)' stipulates requirements on, minimum fabric and air permeability requirements, maximum primary energy use and carbon dioxide (CO_2) emissions as calculated using the DEAP (Domestic Energy Assessment Procedure) methodology. This is a national standard and compliance is compulsory for all new dwellings.

Nearly Zero Energy Buildings (NZEB) means a building that has a very high energy performance, and in which "*the nearly zero or very low amount of energy required should be covered to a very significant extent by energy from renewable sources, including energy from renewable sources produced on-site or nearby"*.

Three design aspects demonstrate compliance with Part L/NZEB:

i. The limitation of primary energy use and CO_2 emissions
ii. Building fabric - to limit heat loss
iii. The use of renewable energy sources

At the time of screening the proposed development, it is understood that the proposed development will comply with the requirements of Part L of the Building Regulations. Accordingly, it is concluded that a positive likely significant effect will occur.

Emissions from Vehicles

Car parking will be required to serve the proposed development. The provision of housing at this location served by a railway and bus routes would facilitate travel by alternative modes of travel other than the private car.

The 2018 Design Standards for New Apartments (updated 2020) promote reducing/minimising car parking. Further the guidelines promote active travel modes through the provision of safe and secure cycle parking facilities. It is understood that it is intended to comply with these requirements and while increased vehicular movements may affect air quality locally, this will be balanced with a targeted focus on increasing active modes of transport and promoting more sustainable transport mode usage.

Waste

A review of historic mapping indicates that the proposed development site has always been greenfield. Therefore, it is reasonably concluded at this screening stage that the underlying soils are free from contamination. It is not anticipated that the excavation of soils to facilitate the construction of the proposed development would give rise to waste generation.

Sustainability is a key objective for the Applicant and the waste hierarchy principles of reduce, reuse, recycle will be implemented in the development phase. It is therefore anticipated that waste will be minimized during construction and likely significant effects will not arise.

During the operational stage, 3-bin systems to facilitate the source segregation of organics and recyclables will be in place which will assist with meeting the EUs municipal waste recycling target and achieve a circular economy.

3. A description of any likely significant effects, to the extent of the information available on such effects, of the proposed development on the environment resulting from—

b) the use of natural resources, in particular soil, land, water and biodiversity.

Land Use

The redevelopment of this site for residential development will result in a land use change. This is considered positive having regard to the site's location within a built-up area, the availability of infrastructural services (drainage and water supply) with confirmed capacity to service the proposed development. The change in land use is compliant with the site's zoning and this designation would in itself have been confirmed as environmentally acceptable during the making of the Fingal Development Plan 2017-2023 that was itself subject to a strategic environmental assessment (SEA).

Soil

Development of the site will necessitate the stripping of topsoil and excavation of subsoils. Owing to the historical use of the site, it is anticipated that the material will be classified as uncontaminated, and the Applicant intends classifying it as a byproduct through an Article 27 notification to the Environmental Protection Agency (EPA).

The notification of a potential by-product would provide the Applicant with an opportunity to demonstrate, with an appropriate level of rigour, that:

- the material can have a further use and no longer be defined as waste;
- the material can be used as a 'secondary' resource in place of, and fulfilling the same role as a non-waste derived or virgin 'primary' resource; and
- the material can be used without causing overall adverse impacts to the environment or human health.

There is nothing to suggest at this stage that the notification would be rejected. The fundamental objective of classifying the stripped and excavated material as a byproduct would be to avoid unnecessary waste and allow for the use of the material as a resource. This in turn would minimise the requirement for the extraction of additional natural resources thereby promoting the circular economy objectives.

Water

The proposed development will require a connection to the water supply. At the time of screening the project it is known that (i) there is an existing watermain on the Howth Road and (ii) Irish Water have confirmed the feasibility of making a connection through the pre-connection enquiry system. Accordingly, the supply of water to the proposed development is not anticipated to generate a likely significant effect.

Biodiversity

The proposed development site is predominantly greenfield with a small area of amenity lands (golf course). It is surrounded by habitat that would likely support a rich array of biodiversity. It is necessary to undertake detailed habitat, flora and fauna studies to understand the significance of the effect on biodiversity arising from the proposed development.

4. *The compilation of the information at paragraphs 1 to 3 shall take into account, where relevant, the criteria set out in Schedule 7.*

Schedule 7 of the PDRs sets out the criteria for determining whether development listed in Part 2 of Schedule 5 should be subject to an EIA.

It requires consideration of:

The characteristics of the proposed development, in particular;

a) *the size and design of the whole of the proposed development*

This is set out in the preceding section.

b) *cumulation with other existing development and/or development the subject of a consent for proposed development for the purposes of section 172(1A)(b) of the Act and/or development the subject of any development consent for the purposes of the Environmental Impact Assessment Directive by or under any other enactment*

To inform this screening assessment, a review of existing and consented development has been undertaken. The most notable consented development that cumulatively may result in a significant effect is the permitted mixed use SHD, 'Claremont' (Ref. PL06F.306102) on the former Techrete site to the north of Howth Road. The permitted development will include the demolition of existing structures to make way for the development of 512 apartments, 2 shops, a creche, a restaurant and a café.

The construction phase of the proposed development may overlap with the development of Claremont. There is thus a potential for a cumulative impact on the use of the junction at Sutton Cross if both developments proceeded at the same time. However, the impact from construction traffic would be temporary and the implementation of a Construction Traffic Management Plan would alleviate likely significant impacts.

c) *the nature of any associated demolition works*

As outlined previously, demolition works are minor in nature and are limited to openings in the northern demesne boundary wall to facilitate access to the site.

d) *the use of natural resources, in particular land, soil, water and biodiversity*

This aspect is dealt with above and with the exception of biodiversity, based on the available information at the screening stage it is possible to exclude significant effects on natural resources.

e) *the production of waste*

It has been concluded that where waste does arise it will be minimised and dealt with in accordance with the waste hierarchy.

f) *pollution and nuisances*

There is a risk of pollution of the local water environment during the construction phase but the application of standard proven construction practices for the protection of water will mitigate likely significant effects. Noise, vibration and dust nuisance during the construction

phase are likely to occur and these will be mitigated using best industry practices. The duration of effects would be short-term in duration.

g) *the risk of major accidents, and/or disasters which are relevant to the project concerned, including those caused by climate change, in accordance with scientific knowledge*

Having regard to the nature of the proposed development, consideration must be given to the risk of a natural disaster, specifically, flood risk. To inform this screening assessment, a search of the Office of Public Works (OPW) national flood information portal was undertaken and did not identify any historical flood events at or proximate to the site. Similarly, predictive flood mapping (https://www.floodinfo.ie/map/floodmaps/) was examined and it did not identify the site as being at risk of fluvial or coastal flood risk. Accordingly, the site is classified as Flood Zone C with a low probability of flooding and in line with the OPWs Planning System and Flood Risk Management Guidelines (2009) development in this zone is appropriate from a flood risk perspective. In line with best practice, climate change factors will be applied to the drainage design.

h) *the risks to human health (for example, due to water contamination or air pollution).*

This is dealt with earlier in the screening and it is concluded that with best practice construction measures in place, the risk to human health is low. Owing to the nature of the proposed development and integrated design measures (energy efficiency, reduced car parking and promotion of active and sustainable transport modes) the risk to human health during the operational stage is imperceptible.

Location of proposed development, the environmental sensitivity of geographical areas likely to be affected by the proposed development, with particular regard to -

a) *the existing and approved land use*

The proposed development site is greenfield and amenity (golf course). The proposed residential development is wholly contained within that area zoned residential. An area to the south is zoned High Amenity and works in this area are confined to reprofiling the existing topography and planting of a woodland tree belt.

b) *the relative abundance, availability, quality and regenerative capacity of natural resources (including soil, land, water and biodiversity) in the area and its underground,*

Howth SAAO encompasses 547 hectares. It includes Ireland's Eye (28 hectares) and the heathland, woods, cliffs, shingle beaches and wooded residential areas of the south-eastern half of the Howth peninsula (519 hectares). This designation provides a high level of protection for land and by extension soil on the peninsula.

The core settlement strategy for Howth in the Fingal Development Plan indicates a figure of 498 potential residential units. Table 2.8 of Variation No. 2 *Alignment of the Fingal Development Plan with the National Planning Framework (NPF) and the Regional Spatial and Economic Strategy (RSES)* identifies 14 hectares of residential zoned land in Howth, this is minor in the context of the overall land availability and demonstrates that the natural resources of land, soil and biodiversity benefit from a very high degree of protection.

The confirmation of feasibility received from Irish Water confirms that there is sufficient water supply and wastewater treatment capacity to service the proposed development.

The Irish Sea Dublin (HA 09) coastal waterbody hosts the Baldoyle Bay and according to the EPA information, has a 'Good' WFD status and is 'Not at risk' of not achieving good status.

Water quality data is collected for nearby Claremont Beach bathing area and is reported by the EPA on www.beaches.ie. The EPA bathing status is not based on single events, rather it is based on a review of data over 4 years (based on data collected during the bathing season only). Bathing classes are determined as Excellent (highest cleanest class), Good (Generally good water quality), Sufficient (The water quality meets the minimum standard) and Poor (The water quality has not met the minimum standard). A review of this data for the last four years, shows that the Claremont Beach is classified as achieving Sufficient Water Quality in 2019 based on the assessment of bacteriological results for the period 2016 to 2019. Claremont Beach had a Sufficient Water Quality rating in 2018 and 2017 and achieved a Good Water Quality rating in 2016.

The proposed development is located over the 'Dublin' (EU Code IE_EA_G_008) WFD groundwater body (GWB). The most recent WFD groundwater status (2013-2018) is 'Good' for this GWBs and the WFD environmental risk score is under review.

c) *the absorption capacity of the natural environment, paying particular attention to the following areas: (i) wetlands, riparian areas, river mouths; (ii) coastal zones and the marine environment; (iii) mountain and forest areas; (iv)nature reserves and parks; (v) areas classified or protected under legislation, including Natura 2000 areas designated pursuant to the Habitats Directive and the Birds Directive and; (vi)areas in which there has already been a failure to meet the environmental quality standards laid down in legislation of the European Union and relevant to the project, or in which it is considered that there is such a failure; (vii)densely populated areas; (viii) landscapes and sites of historical, cultural or archaeological significance.*

As identified earlier, the proposed development site is in an environmentally sensitive location with respect to cultural heritage, landscape, biodiversity and European Designated sites. A precautionary approach is required in this instance to assess the ability of the site to absorb the proposed development without residual significant environmental impacts. This screening assessment was undertaken at the early stages of the design development and applying the precautionary principle, a worst-case outcome was applied and it was recommended that EIA would be necessary.

Types and characteristics of potential impacts

The likely significant effects on the environment of proposed development in relation to criteria set out under paragraphs 1 and 2, with regard to the impact of the project on the factors specified in paragraph (b)(i)(I) to (V) of the definition of 'environmental impact assessment report' in section 171A of the Act, taking into account— (a) the magnitude and spatial extent of the impact (for example, geographical area and size of the population likely to be affected), (b) the nature of the impact, (c) the transboundary nature of the impact, (d) the intensity and complexity of the impact, (e) the probability of the impact, (f) the expected onset, duration, frequency and reversibility of the impact, (g) the cumulation of the impact with the impact of other existing and/or development the subject of a consent for proposed development for the purposes of section 172(1A)(b) of the Act and/or development the subject of any development consent for the purposes of the Environmental Impact Assessment Directive by or under any other enactment, and (h) the possibility of effectively reducing the impact

Based on the foregoing and the fact that the design of the proposed development is at an early stage when undertaking this screening assessment, it is concluded that the main likely potential effects of the proposed development on the environment are as follows:

i. Temporary potential effects locally on human health, air quality and noise and vibration from the construction phase.
ii. Temporary effects on the local road network, specifically Sutton Cross from the construction phase and in particular if the proposed development overlaps with the construction phase of the Claremont development.
iii. Potential temporary to permanent effects on key ecological features including European Designated Sites, downstream aquatic environment and species which commute / forage within the proposed development site and/or immediate vicinity.
iv. Potential permanent effect on the townscape and the wider Howth area when viewed from elevated locations and in combination with the approved Claremont development.
v. Potential permanent effect on cultural heritage in particular built heritage i.e. the demesne wall and local Protected Structures.

To conclude with certainty that the proposed development would not result in likely significant effects on the environment, it is our professional opinion that this sub-threshold project requires EIA to fully address the likely significant environmental effects identified in this screening stage.

1.4.3 Art. 299B Requirement

Section 7 (1) of the Planning and Development Act 2016 states that following the pre application consultation meeting, a prospective applicant may separately request the Board to do (a) (i) (I);

"Where the development is of a class standing specified in Part 2 of Schedule 5 of the Planning and Development Regulations 2001 (S.I. No. 600 of 2001) that does not exceed the relevant quantity, area or other limit standing specified in that Part, whether it is likely to have significant effects on the environment"

Having regard to the environmental sensitivities of the proposed development site and locally, such a request was not made to the Board by the Applicant, as based on its own screening, it

was determined by the Applicant that the proposed development is sub-threshold development. Accordingly, it was decided to prepare an EIAR to accompany the application.

Pursuant to the requirements of the Planning and Development Regulations; 299B. (1) (a) It is noted that paragraph (b) applies where;

(i) a planning application for a sub-threshold development is made and a request for a determination under section 7(1)(a)(i)(I) of the Act of 2016 was not made, and

(ii) such application is not accompanied by an EIAR.

In this case, a request for determination was not made to the Board as outlined above and the application is accompanied by an EIAR. Accordingly, paragraph 299B (1) (b) is not required as it is dealt with in accordance with Art. 299A.

"Where a planning application for a sub-threshold development is accompanied by an EIAR and a request for a determination under section 7(1)(a)(i)(I) of the Act of 2016 was not made, the application shall be dealt with as if the EIAR had been submitted in accordance with section 172(1) of the Act.

1.5 Content of EIAR

This EIAR addresses the provides the following information:

a) A description of the project comprising information on the site, design, size and any other relevant features of the project;
b) A description of the likely significant effects of the project on the environment;
c) A description of the features of the project and/or measures envisaged in order to avoid, prevent or reduce and, if possible, offset likely significant adverse effects on the environment;
d) A description of the reasonable alternatives studied by the developer, which are relevant to the project and its specific characteristics and an indication of the main reasons for the options chosen, taking into account the effects of the project on the environment;
e) A non-technical summary; and,
f) Any additional information specified in Annex IV of the Directive/Schedule 6 to the 2001 Regulations, as amended, relevant to the specific characteristics of the project and to the environmental features likely to be affected.

As is required by Annex IV of the 2014 Directive, this EIAR addresses matters including proposed demolition works, risks to human health, major accidents / disasters, biodiversity, climate change and cumulative effects with other existing and / or approved projects.

1.6 Competency

It is a requirement that the EIAR must be prepared by competent experts. For the preparation of this EIAR, GLL PRS Holdco Limited engaged McCutcheon Halley Chartered Planning Consultants to direct and coordinate the preparation of the EIAR and a team of qualified specialists were engaged to prepare individual chapters, the consultant firms and lead authors are listed in **Table 1.1**.

Details of competency, qualifications and experience of the lead author of each discipline is outlined in the individual chapters.

1.7 Format and Structure of the EIAR

This EIAR is prepared according to the 'Grouped Format Structure' as described in the Guidelines on Information to be Contained in an EIS (EPA, 2002). This means that each topic is considered as a separate section. The advantages of using this format are that it is easy to investigate a single topic and it facilitates easy cross-reference to specialist studies.

Chapter	Aspect	Consultant	Lead Consultant
1	Introduction	McCutcheon Halley Chartered Planning Consultants	Paula Galvin
2	Development Description	McCutcheon Halley Chartered Planning Consultants	Paula Galvin
3	Alternatives	McCutcheon Halley Chartered Planning Consultants	Paula Galvin
4	Population and Human Health	McCutcheon Halley Chartered Planning Consultants	Paula Galvin
5	Landscape and Visual	Modelworks	Richard Butler
6	Material Assets: Traffic & Transport	Barret Mahony Consulting Engineers	Martin Rogers
7	Material Assets: Built Services	Barret Mahony Consulting Engineers & Ethos Engineering	Stephen O'Connor (Barret Mahony Consulting Engineers) & Gavin Murphy (Ethos)
8	Material Assets: Waste Management	Byrne Environmental Consulting Ltd	Ian Byrne
9	Land, Soils, Geology & Hydrogeology	AWN Consulting Ltd	Marcelo Allende & Teri Hayes
10	Water & Hydrology	AWN Consulting Ltd	Marcelo Allende & Teri Hayes
11	Biodiversity	Scott Cawley Ltd	Lorna Gill & Caroline Kelly
12	Noise and Vibration	Byrne Environmental Consulting Ltd	Ian Byrne
13	Air Quality & Climate	Byrne Environmental Consulting Ltd	Ian Byrne
14	Cultural Heritage: Archaeology	John Purcell Archaeological Consultancy	John Purcell
15	Cultural Heritage: Built Heritage	David Slattery Conservation Architects Ltd	James Slattery
16	Interactions of the Foregoing	McCutcheon Halley Chartered Planning Consultants	Paula Galvin
17	Summary of Mitigation Measures	McCutcheon Halley Chartered Planning Consultants	Paula Galvin

Table 1.1 Chapters of EIAR & Contributors

This EIAR is sub divided into **3 No. volumes** as follows:

- Volume I Non-Technical Summary;
- Volume II Environmental Impact Assessment Report; and,
- Volume III Appendices to Environmental Impact Assessment Report.

Volume II is presented in **17 No. chapters** as shown in **Table 1.1**.

In preparing this EIAR regard was had to the following guidelines:

- Environmental Impact Assessment of Projects Guidance on the preparation of the Environmental Impact Assessment Report (European Commission, 2017);
- Guidelines on information to be contained in Environmental Impact Statements (EIS) (Environmental Protection Agency, 2002)
- Guidelines on the Information to be Contained in Environmental Impact Assessment Reports – DRAFT (Environmental Protection Agency, August 2017); and
- Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment (Department of Housing, Planning and Local Government, 2018).

In addition, specialist disciplines have had regard to other relevant guidelines, and where relevant these are noted in individual chapters of the EIAR.

1.8 Scoping

The purpose of scoping is to identify the information to be contained in an EIAR and the methodology to be used in gathering and assessing that information. Applicants are not required to seek a Scoping Opinion.

The scope of this EIAR is informed by the requirements of the 2014/52/EU Directive and their transportation into national legislation in the Planning and Development Act 2000 (as amended) and the Planning and Development Regulations 2001 (as amended).

The scope was also informed by information provided by the Design Team and specialists engaged to prepare the EIAR.

Guidance provided by Fingal County Council during the Section 247 pre-planning meetings in June 2019 and January 2020. Matters discussed related to visual impact, traffic and parking, connectivity, daylight and sunlight and surface water management. A detailed narrative of the pre-planning meetings is contained in the **Planning Statement** that accompanies this application under separate cover.

Direction provided by An Bord Pleanála in the form of an Opinion issued on foot of a pre-application consultation (PAC) meeting (ABP-308497-20) held on the 13rd of January 2021 relating to issues such as zoning, density, scale and height, landscape setting, landscaping, provision of public open space are considered in the scope of this EIAR.

1.9 Cumulative Projects

Directive 2014/52/EU substituted a new Annex IV into Directive 2011/92/EU. Annex IV of the EIA Directive is to be read in conjunction with article 5(1) and sets out the information to be included in an EIAR. Annex IV was transposed into national law via article 97 of the European Union (Planning and Development) (Environmental Impact Assessment) Regulations 2018 (the "2018 Regulations") which substituted a new Schedule 6 into the Planning and Development Regulations 2000, as amended.

The Directive requires that the EIAR describes the cumulation of effects with other existing and/or approved projects.

Cumulative effects may arise from:

> *"- The interaction between the various impacts within a single project;*
>
> *- The interaction between all of the differing existing and / or approved projects in the same areas as the proposed project."*

In August 2018, the Department of Housing, Planning and Local Government issued Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment. The Guidelines summarise "cumulative effects" in the following way at page 40;

> *"Effects are not to be considered in isolation but cumulatively i.e. when they are added to other effects. A single effect on its own may not be significant in terms of impact on the environment but, when considered together with other effects, may have a significant impact on the environment. Also, a single effect which may, on its own, have a significant effect, may have a reduced and insignificant impact when combined with other effects.*

Paragraph 2(e)(i)(V) of Schedule 6 (paragraph 5(e) of Annex IV) provides as follows;

> *"the cumulation of effects with other existing or approved developments, or both, taking into account any existing environmental problems relating to areas of particular environmental importance likely to be affected or the use of natural resources." (emphasis added).*

The site is bounded by Howth Road (R105) to the north and beyond that a brownfield site, former 'Techrete' site, that has recently received approval (reg. ref. 306102) for a high-density mixed-use development including 512 apartments, 2 shops, a crèche, a café and a restaurant across 4 buildings up to 8 storeys in height. Accordingly, each chapter of this EIAR assesses the cumulative effect of this proposal in combination with the above-mentioned mixed-use scheme.

Individually, each specialist consultant has reviewed under construction, permitted and or under consideration development in the local area and using their expertise they have identified projects relevant to their discipline that may interact to produce a cumulative effect.

Wastewater from the proposed development will be treated at Ringsend Wastewater Treatment Plant prior to its discharge to Dublin Bay. The cumulative effect of the additional loading on the treatment plant is assessed in the Material Assets: Built Services chapter, the

Biodiversity Chapter and in the Appropriate Assessment Screening Report that accompanies this application under separate cover.

Cumulative effects are not limited to projects, and it is necessary to also consider relevant Plans. According to the Environment Protection Agency (2020), in Ireland, key cumulative effects – where environmental receptors are at, or near, their thresholds or their capacity to assimilate more change – include climate change; water quality, flood risk, air quality, biodiversity and landscape.

- **Fingal County Development Plan 2017-2023** – gives spatial expression to the county's economic, social, housing and cultural development. The Plan has a key role in protecting the environment, heritage and amenities of the county and in mitigating against the impacts of climate change. It includes policies and objectives for all of the aspects included in this EIAR. Accordingly, each chapter of the EIAR provides a narrative on the cumulative effect of the proposed development together with the Development Plan policies and objectives.

- **The Climate Action Plan, 2019** - climate change is the ultimate cumulative effect, nationally and internationally. Thresholds for greenhouse gas emissions are being exceeded. Under the Paris Agreement, Ireland pledged to reduce greenhouse gas emissions to 20% below 2005 levels by 2020, but it is set to exceed this target by 5–6%, and to exceed the 2021–2030 target by 25%. The Climate Action Plan 2019 puts forward measures for improving these trends, including increased use of renewable energy, and improved building energy efficiency, empowering a modal shift, expanding the EV charging network, (DCCAE 2019). The cumulative effects of this Plan together with the proposed project is considered in the following chapters; Population & Human Health, Material Assets: Traffic & Transport and Air Quality & Climate.

- **The Greater Dublin Strategic Drainage Study (GDSDS)** – healthy waters are a valuable natural resource. They support a rich and diverse range of ecosystems, habitats and species. They are also important for recreational activities and tourism. The GDSDS was prepared to develop an environmentally sustainable drainage strategy for the Region consistent with the EU Water Framework Directive. The strategy outlines the requirements for foul and stormwater drainage capable of meeting the demands and longer-term development potential of the Region. The Study is relevant to this subject proposal and it is considered in the cumulative effects sections of the Material Assets – Built Services chapter and the Water & Hydrology chapter.

- **Flood Risk Management Plan for the Liffey & Dublin Bay River Basin** - Increases in population can pose development pressures resulting in changes in land use. The purpose of the plan is to set out the strategy, including a set of measures, for the cost effective and sustainable, long-term management of flood risk in the Liffey-Dublin Bay River Basin. The cumulative effects of this Plan together with the proposed project is considered in the Water and Hydrology chapter.

- **National Biodiversity Plan -** The Plan sets out actions through which a range of government, civil and private sectors will undertake to achieve Ireland's 'Vision for Biodiversity'. It has been developed in line with the EU and International Biodiversity strategies and policies. The cumulative effects of this Plan together with the proposed project is considered in the Biodiversity chapter.

- **Transport Strategy for the Greater Dublin Area 2016-2035** - Land use and the manner in which it is developed is the primary influencing factor for travel demand. The cumulative effect of this strategy together with the proposed project is considered in the Material Assets – Transport & Traffic chapter.

- **Standards in the EU Air Quality Directive and 'daughter' directives** – establish the levels of air pollutants that have no significant impacts on human health or the environment. The cumulative effects of the Directive together with the proposed project is considered in the Population & Human Health Chapter and the Air Quality & Climate Chapter.

1.10 Impact Assessment Methodology

Each chapter of this EIAR assesses the direct, indirect, cumulative and residual impact of the proposed development for both the construction and operational stage of the proposed development.

The identified quality, significance and duration of effects for each aspect is largely based on the terminology set out in the EPAs *Draft Guidelines on the information to be contained in Environmental Impact Assessment Reports* (2017) as summarised in **Table 1.2** below;

Quality of Effect	
Positive	A change which improves the quality of the environment (for example, by increasing species diversity; or the improving reproductive capacity of an ecosystem, or by removing nuisances or improving amenities.
Neutral	No effects or effects that are imperceptible, within normal bounds of variation or within the margin of forecasting error.
Negative / Adverse Effects	A change which reduces the quality of the environment (for example, lessening species diversity or diminishing the reproductive capacity of an ecosystem; or damaging health or property or by causing nuisance).
Significance of Effect	
Imperceptible	An effect capable of measurement but without significant consequences.
Not Significant	An effect which causes noticeable changes in the character of the environment but without significant consequences.
Slight Effect	An effect which causes noticeable changes in the character of the environment without affecting its sensitivities.
Moderate Effect	An effect that alters the character of the environment in a manner that is consistent with existing and emerging baseline trends.
Significant Effect	An effect which, by its character, magnitude, duration or intensity alters a sensitive aspect of the environment.
Very Significant Effect	An effect which, by its character, magnitude, duration or intensity significantly alters most of a sensitive aspect of the environment.
Profound Effect	An effect which obliterates sensitive characteristics.
Duration of Effects	
Momentary	Seconds to minutes
Brief	Less than 1 day
Temporary	Less than 1 year
Short-term	1-7 years
Medium-term	7-15 years
Long-term	15-60 years
Permanent	Over 60 years

Extent & Context of Effects	
Extent	Describe the size of the area, the number of sites, and the proportion of a population affected by an effect.
Context	Describe whether the extent, duration, or frequency will conform or contrast with established (baseline) conditions (is it the biggest, longest effect ever?)
Probability of Effects	
Likely	The effects that can reasonably be expected to occur because of the planned project if all mitigation measures are properly implemented.
Unlikely	The effects that can reasonably be expected not to occur because of the planned project if all mitigation measures are properly implemented.
Type of Effects	
Indirect	Impacts on the environment, which are not a direct result of the project, often produced away from the project site or because of a complex pathway.
Cumulative	The addition of many minor or significant effects, including effects of other projects, to create larger, more significant effects.
Do Nothing	The environment as it would be in the future should the subject project not be carried out.
Worst Case	The effects arising from a project in the case where mitigation measures substantially fail.
Indeterminable	When the full consequences of a change in the environment cannot be described.
Irreversible	When the character, distinctiveness, diversity or reproductive capacity of an environment is permanently lost.
Residual	The degree of environmental change that will occur after the proposed mitigation measures have taken effect.
Synergistic	Where the resultant effect is of greater significance than the sum of its constituents, (e.g. combination of SOx and NOx to produce smog).

Table 1.2 Impact Rating Terminology

1.11 Consultation

A dedicated website for the proposed development is established and all application documents including this EIAR are available at www.kenelmshdhowth.ie

Additionally, prior to lodging this application, the required information has been issued to the Department of Housing, Planning and Local Government's EIA Portal. The purpose of this tool is to inform the public, in a timely manner, of applications that are accompanied by an EIAR. The portal reference ID is 2021106.

Pre-planning consultation meetings were held with Fingal County Council in June 2019 and January 2020 in advance of lodging this application. Guidance received is integrated into the proposed design and in turn is assessed in this EIAR.

Where relevant specialists engaged with prescribed bodies individually, the details of advice received is provided in the individual chapters of this EIAR.

An Opinion was received from An Bord Pleanála following the pre-application consultation meeting on 13th January 2021 (ABP-308497-20) and it contained details of the prescribed bodies to be notified of the making of this application. We can confirm that each identified body has received a copy of the application including the EIAR. These prescribed bodies include:

1. Irish Water
2. Department of Culture, Heritage and the Gaeltacht
3. The Heritage Council
4. An Taisce
5. An Chomhairle Ealaíon
6. Fáilte Ireland

CHAPTER 2
DEVELOPMENT DESCRIPTION

MAY 2021

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2 Development Description

2.1 Introduction

This chapter of the Environmental Impact Assessment Report (EIAR) sets out a description of the proposed development and the existing site, and provides details regarding the construction and operational phases of the scheme. It should be read in conjunction with drawings submitted with this application together with supporting reports.

The proposal seeks to deliver a high quality, high density residential development, that makes sustainable use of a strategically located development site, which;

a) is within walking distance of a town centre, Howth, that is within *Dublin City & Suburbs*,
b) is served by Dublin Bus and DART services, with the DART station only 500m from the site, and
c) has access to high quality open space amenities locally.

The local cultural and natural heritage assets are both sensitivities and opportunities for development lands in their vicinity and the proposed development responds appropriately to this historic and natural context.

The type of housing proposed, 162 no. build to sell apartments, responds to an identified need (see **Planning Statement & Statement of Consistency with Fingal Development Plan 2017-2023)** for diversification in the form of housing type in Howth.

The feedback provided by Fingal County Council (FCC) during preplanning meetings[1] and in their opinion to An Bord Pleanála provided during the pre-application consultation stage, together with the Opinion of the Board, has been considered and the design has evolved in response to matters highlighted.

2.1.1 Author Details

This chapter has been prepared by Paula Galvin of McCutcheon Halley Chartered Planning Consultants. Paula holds an MSc in Spatial Planning, a BA in Geography, a Diploma in Environmental Impact Assessment (EIA) Management and a Diploma in Planning and Environmental Law.

Paula has practised as both a planning and environmental consultant for over 15 years and has directed the preparation of Environmental Impact Assessment Report (EIARs) for a range of development types including residential, commercial, renewable energy and waste. Directly relevant experience to this proposed development is that Paula has been involved in is the direction of EIARs and Environmental Reports to accompany residential led applications that received permission for development including;

- Bailey Gibson (PL29S.307221) - Demolition of all structures, construction of 416 no. residential units (4 no. houses, 412 no. apartments) and associated site works.

[1] *S.247 Pre-Planning Meetings took place in June 2019 and January 2020.*

- Player Wills (TA29S.308917) - Demolition of all buildings excluding the original fabric of the former Player Wills Factory, construction of 492 no. Build to Rent apartments, 240 no. Build to Rent shared accommodation along, creche and associated site works.
- Connolly Quarter (PL29N.305676) - Demolition of 4 no. structures, construction 741 no. build to rent apartments, retail space and associated site works.
- Chesterfield, Cross Avenue (PL06D.302921) - Demolition of the non-original fabric of Chesterfield House (a protected structure) and derelict sheds. Construction of 214 apartments and 7 no. houses, residents amenity facility and all associated works.
- Hansfield SDZ (FW18A/1061) permission for development of 247 no. apartments at Zone 7, Hansfield SDZ, Hansfield, Dublin 15.

2.2 Proposed Development Site

The site is located in Deer Park, Howth, to the south of the Howth Road, R105, and is part of the Howth Castle demesne. The site (approx. 1.7 ha) encompasses (1.16 ha) of greenfield land zoned for residential development, 'RA', the objective is to provide for residential development and to protect and improve residential amenity. The proposed residential development is confined to the area zoned for residential purposes.

The balance (0.58 ha) of the application area is zoned high amenity, 'HA', and the objective is to protect and enhance high amenity areas. This area encompasses part of the Deer Park golfclub and comprises managed amenity grassland together with a hedgerow (approx. 25 years old) with an east-west alignment, that forms the boundary with the golf course. The lands zoned HA are part of the buffer area for the Howth Special Amenity Area Order (SAAO).

Figure 2.1 Site Zoning Designations (Excerpt Sheet No. 10: Baldoyle/Howth)

The site is enclosed along its northern and eastern boundary by the demesne wall which has heritage value.

Plate 2-1 Demesne Wall to Howth Road

The proposed development site is approx. 110m south of the castle and approx. 100m west of St Mary's Church, both protected structures. A large area of historic demesne woodland surrounds and offers screening to these buildings and their setting as illustrated in the Plates below.

Plate 2-2 St. Mary's Church relative to proposed development site

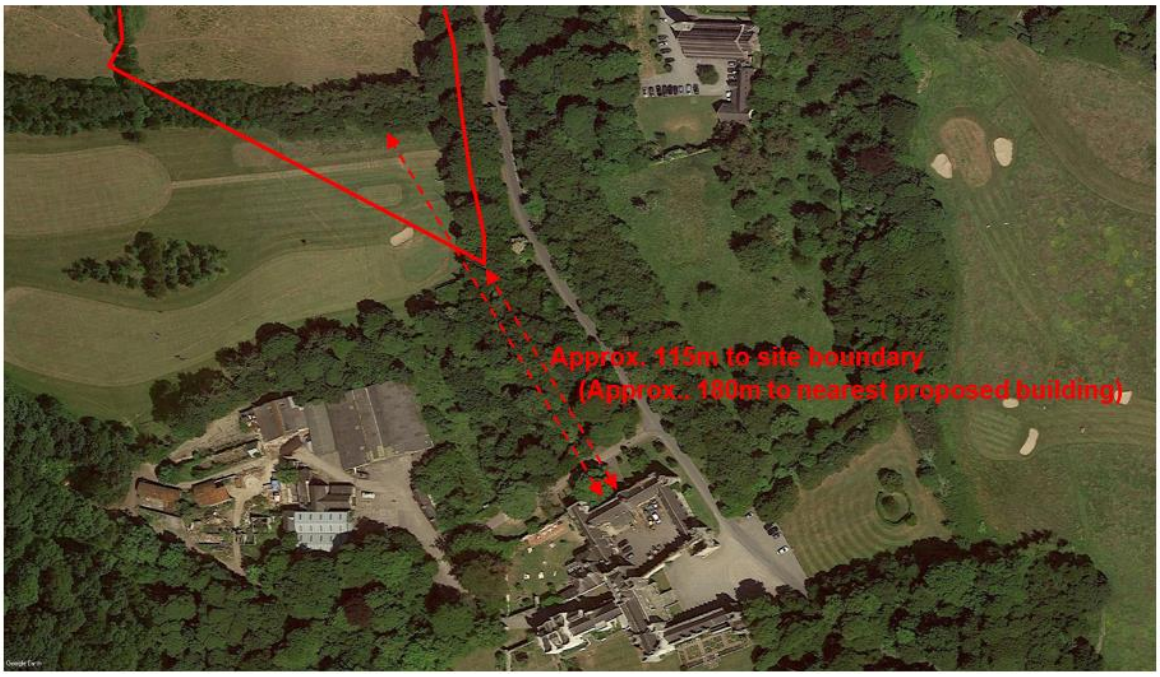

Plate 2-3 Howth Castle & Associated Building relative to proposed development site

The Howth Castle Architectural Conservation Area (ACA) adjoins the proposed development site to the east as illustrated in the Figure below. Recognising that much of the demesne lands have been altered to accommodate the Deer Park golf course and hotel complex, the boundary of the ACA was limited to a core area surrounding Howth Castle and the entrance avenue.

Figure 2.2 Howth Castle Architectural Conservation Area

Fingal County Councils (FCC) Statement of Character for the ACA States;

The boundary of the Howth Castle ACA extends from the Howth Road to just south of Howth Castle and includes St. Mary's Church, the formal gardens and old orchard to the castle, the ruins of an ancient church, the Howth Transport Museum complex, a large copse of trees to the west of the castle, as well as Howth Castle itself and adjoining outbuildings."

A large part of Howth Head is covered by a SAAO in recognition of the landscape's recreation and amenity value, see Figure below. That part of the subject site, currently within the golf course, comes within an area defined as 'other areas' within the SAAO. The Biodiversity Chapter of this EIAR details that amenity grassland is one of the most widespread habitat types in urban and suburban areas. The variant in the golf course is heavily managed through an intensive mowing regime, and application of fertilisers. It is concluded that the habitat is of local importance on account of its low floristic diversity and abundance in the context of the Dublin area.

The proposed apartment buildings together with all ancillary infrastructure are contained within the area zoned for residential development. It is noted that the An Bord Pleanála Inspector in assessing the Claremont scheme on the site opposite the proposed development stated in relation to the SAAO;

Most of the city is visible from some parts of the special amenity area, so the mere fact that the apartment buildings would be visible from the area does not imply that it would have an adverse effect on its landscape." In that instance it was stated that "*Therefore the proposed development would not contravene the special amenity area order for Howth or the provisions of the development plan which protect it."*

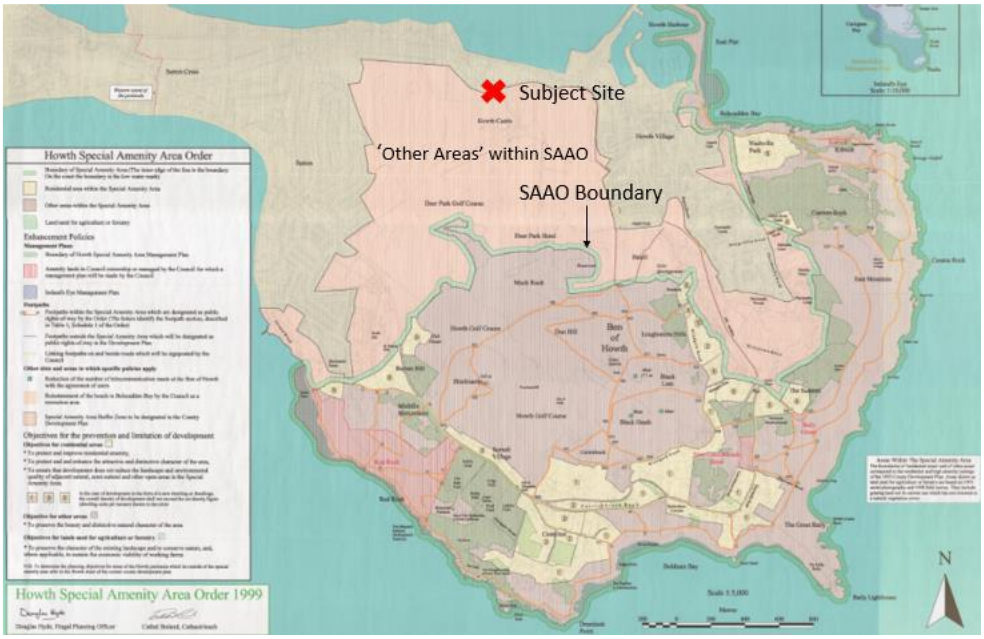

Figure 2.3 Howth Special Area Amenity Order

These cultural and natural heritage assets are both sensitivities and opportunities for development lands in their vicinity and the proposed responds appropriately to this historic and natural context.

The neighbouring lands include:

- to the north across the Howth Road - between the road and the DART line along the coast - a public park (Baltray Park) and the extensive Techrete factory, now disused and the site of the permitted Claremont strategic housing development which extends to the town centre 500m to the east;
- to the west, a corridor of low density housing on both sides of the Howth Road;
- to the south, the Deer Park Golf Club and Howth Castle (protected structure), including an extensive area of historic demesne woodland surrounding the castle, and the National Transport Museum housed in a complex of outbuildings near the castle;

- to the east, the entrance and main access road to Howth Castle and Deer Park Golf Club, and beyond that St Mary's Church (protected structure), surrounded by historic demesne woodland.

The site context is illustrated below.

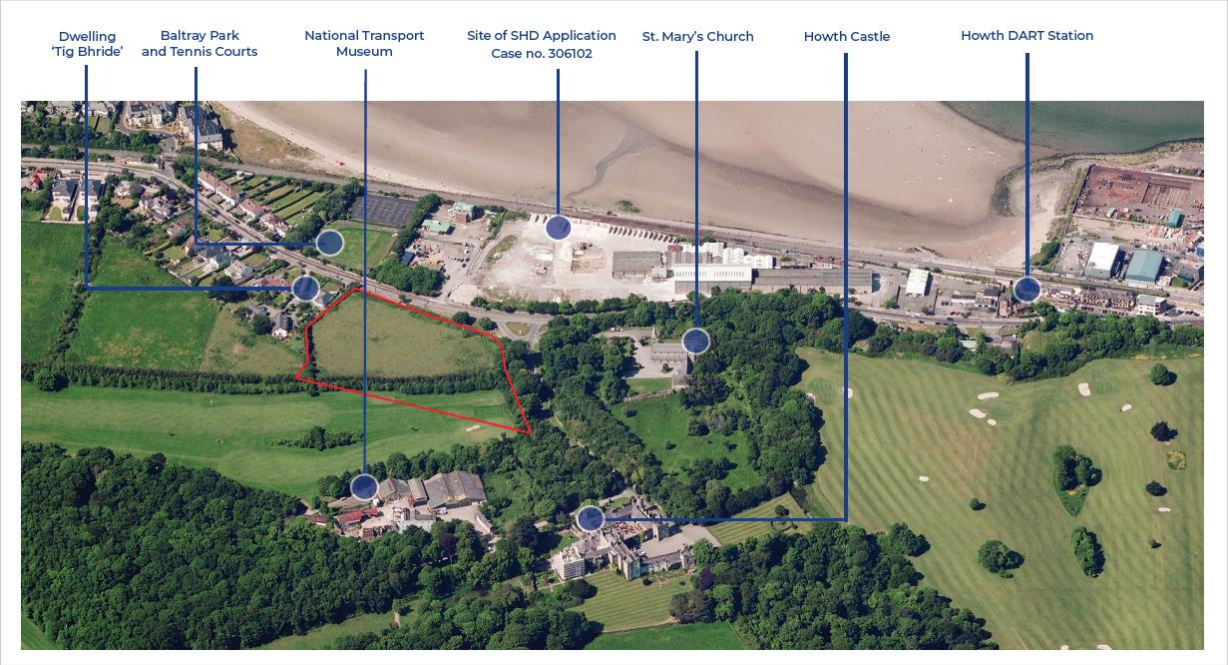

Figure 2.4 Site Context

2.3 Proposed Development

The proposed development is for the construction of a strategic housing development located in Deer Park, Howth, Co. Dublin.

The design rationale is to create and deliver a high quality, sustainable, strategic housing development which respects its setting and maximises the site's natural attributes while achieving maximum efficiency of existing infrastructure. The Proposed Site Layout is illustrated on **Drawing No. 1101** contained within the architectural suite of drawings.

The development will consist of;

i. 162 no. residential units distributed across 3 no. blocks (A, B & C) ranging in height from 5-6 storeys, with a cumulative gross floor area (GFA) of 13,337.10 sq.m comprising;
   a. 29 no. 1-bedroom units, - 17.9%
   b. 104 no. 2-bedroom units and – 64.2%
   c. 29 no. 3-bedroom units – 17.9%

ii. 3 no. resident services and amenity rooms (1 no. in each block A-C) to accommodate co-working space, a community room and a meeting room (combined GFA 108 sq.m)

iii. 132 no. car parking spaces at basement level (underlying Blocks A & B) including 6 no. accessible spaces, 13 no. electric vehicle spaces and 4 no. car sharing spaces;
iv. 325 no. residents bicycle parking spaces (long-stay) at basement level, and 30 no. visitor bicycle parking spaces (short-stay) at surface level;
v. communal amenity space in the form of courtyards and roof gardens (combined 2,192 sq.m)
vi. public open space of 1,161 sq.m including a botanic garden and pocket park;
vii. a single storey ESB sub-station and switch room (45.5 sq.m);
viii. demolition of 2 no. sections of the existing demesne northern boundary wall to provide, a primary access (vehicular/pedestrian/cyclist) to the northwest and a separate pedestrian/cyclist access at the centre;
ix. restoration and refurbishment of the remaining extant northern and eastern demesne boundary wall;
x. change of use and regrading of part of the Deer Park Golf Course from active recreation use to passive amenity parkland and planting of a woodland belt on the southern boundary;
xi. undergrounding of existing ESB overhead lines, and, relocation of the existing gas main; and,
xii. all ancillary site development works including waste storage and plant rooms at basement level, drainage, landscaping/boundary treatment and lighting.

An overview of the **key characteristics of the proposed development** is set out in **Table 2.1** below.

Proposed Development – Key Characteristics	
Exiting Site	Undeveloped greenfield (1.16 ha) & part of Deer Park golf course (0.58 ha)
Site - Area	1.7 ha • 1.16 ha zoned Residential - RA • 0.58 ha zoned High Amenity - HA
Density	140 units per ha
Dual Aspect Units	61% (99 units)
Plot Ratio	1.46
Site Coverage	32%
No. Units / Mix of Units	162 no. apartment units • 29 no. 1-bedroom units, - 17.9% • 104 no. 2-bedroom units and – 64.2% • 29 no. 3-bedroom units – 17.9%

Proposed Development – Key Characteristics	
Building Height	3 no. Blocks (A, B & C): 5 to 6 storeys • Southern Elevation (5 storeys + 6th recessed) • Northern Elevation (5 storeys + 5th recessed)
Car Parking	132 no. car parking spaces (basement level), including: • 6 no. accessible spaces • 13 no. electric vehicle spaces • 4 no. 'Go-Car' spaces
Bicycle Parking	355 no. bicycle parking spaces, including: • 325 no. spaces at basement (long term stay) • 30 no. spaces at ground level (short term stay – visitors)
Resident Amenity Rooms	1 no. room in each Block • 108 sq.m cumulative to facilitate co-working floor space, community room and meeting room)
ESB Substation & Switch room	45.5sq.m
Total Private Amenity Space *(Balconies & ground floor terraces)*	2,435.8 sq.m
Total Communal Amenity Space	2,192 sq.m
Total Public Open Space	1,161 sq.m

Table 2.1 Key Development Characteristics

Table 2.2 sets out a summary of the key design parameters of the three proposed buildings.

Block	Height	No. Units	Residential GFA (inc. circulation)	Residents Amenity	Communal Amenity Space Roof Garden
A	5-6 storey	52	5,355m^2	36 m^2	244 m^2
B	5-6 storey	52	5,355 m^2	36 m^2	244 m^2
C	5-6 storey	58	5,801 m^2	36 m^2	244 m^2
Total			**16,277.10 m^2**	**108 m^2**	**732.5 m^2**

Table 2.2 Summary – Building Design Parameters

2.3.1 Site Layout

The proposed development layout is illustrated on drawing no. **no. 1101** (Site Layout Plan, MCA Architects) that accompanies this application. **Figure 2.5** illustrates the site layout.

The proposed layout seeks to:

- Respond to the sensitivities and opportunities in the receiving environment and to deliver a high quality living environment that protects the historical setting of the site as part of the Howth Castle demesne.
- Create a strong built frontage to Howth Road and complete the urban gateway effect that will be achieved at the former Techrete site opposite, once the Claremont permission is implemented.
- Create a permeable interconnected series of paths that are easy and logical to navigate around by all which will maximise permeability for both pedestrians and cyclists, leading to places and destinations, not purely functional paths.

The proposed development comprises three apartment blocks (A-C), each with a resident amenity room, communal amenity space at ground and roof level. Private amenity space is predominately balconies with ground floor units incorporating private terraces.

Figure 2.5 Proposed Site Layout

Car parking is proposed in a basement that underlies Blocks A and B and this measure facilitates a high-quality landscape design at surface level. Vehicular movement and access are restricted to the north-western boundary of the site which allows for segregation from the landscape amenities.

The historic boundary wall that wraps around the northern and eastern site boundary will be largely retained. Two openings are proposed in the northern wall, one to the north west to facilitate vehicular, pedestrian and cyclists access and the second to facilitate pedestrian/cyclist access only.

Each Block is separated by a landscaped courtyard, ensuring that visual connections are maintained. All open space is overlooked by surrounding homes so that the amenities enjoy passive surveillance at all times.

Public open space including a botanic garden, lawns, and pocket park play area are proposed to the north of the proposed buildings adjacent to the public road. A combination of hard and soft landscaping that facilitate active and passive uses, provide a high-quality landscape.

The existing boundary treatment along the east and west of the proposed development site will be retained and supplemented with additional planting.

To the south, it is proposed to largely remove the existing hedgerow that forms the boundary with the golf course. This area will be reprofiled and reinstated as amenity grassland, consistent with its zoning designation and allowing it to continue as a buffer area for the SAAO. The landscape proposal includes planting of a new hedgerow further south along the application area boundary and this will connect with the existing landscaping in the wider demesne.

2.3.2 Residential Unit Mix

The development provides for a diverse range of apartment types that will cater for a range of household sizes. The total number and mix of apartment units is set out in **Table 2.3.**

Building Ref.	1 Bed	2 Bed (3P)	2 Bed (4P)	3 Bed	Total
A	9	1	31	11	**52**
B	9	1	31	11	**52**
C	11	1	39	7	**58**
Total	**29**	**3**	**101**	**29**	**162**
Mix	**17.9 %**	**64.2 %**		**17.9 %**	

Table 2.3 Proposed Residential Unit Mix

2.3.3 Architectural Treatment

The front (Howth Road) and rear (South) volumes of the proposed buildings have different primary materials. The rear volumes are clad in grey brick, the material selected to blend in with the woodlands on the lower slopes of the headland to the rear of the site. The front volumes are of buff brick, the colour intended to provide a lighter presence in the road corridor. The top floors (front and rear volumes) are clad in bronze coloured metal, matching the window frames throughout the buildings.

The front volumes have balconies on the east and west elevations so that the buildings present simple, clean forms to the Howth Road corridor. The rear volumes have projecting balconies, improving the visibility of the surrounding landscape and seascape from the apartments.

A feature of the proposed buildings is their large windows, intended to take maximum advantage of the visual amenities of the site environs. The façade design is informed by this objective, with the elevations all variations of simple grid patterns of glazing framed by brick or zinc cladding. As a result of the large windows, recessed balconies and the variations in material, the facades would be highly articulated and the perception of massing/scale would be reduced.

Figure 2.6 CGI view of the proposed development as seen from the Howth Road

2.3.4 Height

A full description is contained in the **Architectural Design Statement** (MCA Architects) and plans that accompany this application under separate cover and it should be read in conjunction with this section.

The development is comprised of three buildings (A-C) of linear form arranged side-by-side, aligned north-south, roughly perpendicular to Howth Road. Each building is divided into a front and rear volume, with the two volumes offset so that the floorplan is staggered, providing the apartments in the rear volumes with views north towards the sea.

The height of the three apartment buildings is set out in the Table below.

Block	Front Volume (North)	Rear Volume (South)
A / B / C	**5 storeys** (fifth storey set back)	**6 storeys** (6th storey set back)

Table 2.4 Building Height

The front volumes of the proposed buildings are five storeys, with the top floor set back behind a shallow terrace. The rear volumes step up to six storeys, so that the buildings would reflect the topography of the site, which rises towards the south, away from the road and the coastline.

Plate 2-4 Detail of Scale and Elevation

The layout would create a strong built frontage to the road, on the road's approach to the town centre, while retaining a visual connection between the buildings to the woodlands and upland to the south. The north-south aligned spaces between the buildings allow for sunlight penetration to the scheme.

The **Daylight, Sunlight and Overshadowing Report** demonstrates that the proposed Block A, located in closest proximity to existing dwellings to the west of the proposed development site will retain their amenity in terms of sunlight to gardens and daylight within dwellings and is compliant with the BRE standards. As such, the proposed development will not negatively affect existing residential properties.

2.3.5 Access, Car & Bicycle Parking

A combined vehicular, cyclist and pedestrian entrance is located on the north-western site boundary of the site. The design and location of this entrance will allow for separation by more than 22 metres between Block A and the closest existing dwellings to the west.

From this entrance point, an internal access road leads to a basement that underlies Blocks A and B. 132 no. car parking spaces are proposed, including 6 no. disability parking spaces. Recognising the increased penetration of electric vehicles, 13 no. of the proposed car parking spaces are fitted with electric vehicles (EV) charging points. Further to this, 4 no 'Go-Car' spaces will also be provided. The proposed car parking provides a ratio of 0.81 no car parking spaces per unit. This is consistent with recent permissions locally, most notably, Claremont (ABP-306102-19), a mixed use SHD scheme to the north of Howth Road, that received permission in April 2020 from An Bord Pleanála for a parking ratio of 0.7 spaces per unit.

Principles of permeability are integrated in the design through the inclusion of separate pedestrian and cyclist access through the existing demesne northern boundary wall which will provide enhanced connectivity eastwards towards Howth Village and the DART Howth Station as well as convenient access for residents to the proposed public park that will form part of the Claremont development. The inclusion of 2 no. pedestrian accesses along Howth Road will also

encourage greater use of the proposed public open space within the proposed development site which is located to the north, inside the demesne wall.

Development of the entrances will require two openings to be made in the demesne wall. The proposed punctuation of the boundary wall would introduce physical links and would further enhance the visual connectivity and permeability across the site, where none existed previously.

An **Architectural Heritage Assessment Report** (Slattery Conservation) and **Method Statement** (Appendix 15.3, Vol III of EIAR) accompanies this application, which deals with the architectural treatment of the demesne wall and the manner in which the openings must be constructed to avoid any adverse impact on the wall. The **Construction Environmental Management Plan** (Barrett Mahony Consulting Engineers (BMCE) includes a **Method Statement** for structural aspects. The wall, in its current condition, is at risk of degradation, due to ivy growth and the poor condition of stonework. The work to the wall will facilitate an opportunity to rectify these issues and the stone removed for the creation of the openings will be reused in any rehabilitation works in so far as is feasible.

To support a transport modal shift, 355 no. cycle parking spaces are provided, a ratio of 2.19 no. spaces per unit. 325 no. cycle parking spaces are provided in the basement and 30 no. cycle spaces at surface level for short stay visitors.

The proposed development is consistent with both the principles and guidance outlined within the Design Manual for Urban Roads and Streets (DMURS) 2013 (Updated May 2019). The proposed vehicular, pedestrian and bicycle access is illustrated in the Figure below.

Figure 2.7 Proposed Movement Strategy

The location of proposed car and bicycle parking spaces is illustrated on the **architectural and landscape plans** that accompany this application.

BMCE Consulting Engineers have liaised with Fingal County Council Traffic and Transport Planning Department as part of the preplanning process in relation to the scope of the required **Traffic and Transport Assessment** (TTA). Items addressed as part of this applications discussions with Fingal County Council include:

- To analyse the following junctions: Sutton Cross Signalised junction; Howth Road / Church Road priority junction; Howth Road / Offington Park priority junction; and Harbour Road / Church Street priority junction.
- To identify the impact that the flows predicted to be generated by the proposed development relative to the proposed adjacent developments at Techcrete and Balscadden[2].

The traffic and transportation strategy proposed responds to all matters highlighted and full details are contained in the **Traffic & Transport Assessment** (BMCE), which accompanies the application under separate cover.

2.3.6 Landscape

The **Landscape Design Report** (Bernard Seymour Landscape Architecture (BSLA)) accompanying this application provides a more detailed description of the communal and open space design rationale. In addition, the **Housing Quality Audit** (MCA Architects) submitted with this application includes a comprehensive schedule of resident amenities areas, including communal and private amenity areas.

The provision of all car parking at basement level allows the ground surface (apart from the access road to the basement) to be dedicated to open space.

A key element of the landscape is the demesne wall which runs around the site's north and east boundaries. It is proposed to retain this wall as a feature of the development, opening two entrances as described above.

Another key feature of the site environs is a belt of historic demesne woodland outside the site's east boundary. This is part of the entrance avenue to Howth Castle, and is included in the Howth Castle ACA. Although the trees are outside the site boundary, many of their canopies overhang the site. The proposed development would preserve this tree belt entirely. It is also proposed to reinforce the woodland belt with new planting inside the east boundary.

The landscape strategy is designed to facilitate passive and active recreation, where residents can interact, all underpinned by a recognition of the site's rich history and the need to promote biodiversity. As mentioned above, the vehicular access and movement is limited to the western edge of the site which ensure no interference with the landscape amenities. The public realm is conceived as a pedestrian priority environment.

A combination of hard and soft landscaping, semi-private courtyards, botanic garden and pocket park play area provide a high-quality open space. In general, the paved components of the proposed landscape sequence will be characterised by durable materials and bespoke detailing sprinkled throughout such as wooden benches situated in planted enclaves.

A significant emphasis has been placed on tree planting and substitution of the hedgerow proposed for removal. The following new tree planting is proposed:

- Mature Trees: 9 no.

[2] It is noted that permission for the Balscadden scheme no longer exists.

- Semi Mature: 12 no.
- Standards/multi stems: 44 no.
- Whips: (replanting to reoriented section of shelter belt to south, and fill in areas to west and east): 1960 no.

2.3.6.1 Communal Open Space

A generous quantity of communal open space (2,192 sq.m) is provided. This is over double the quantity required by the Design Standards for New Apartments (2018, as amended 2020). The communal open space is distributed in courtyards at ground level, at roof level in each of the 3 no. blocks as roof gardens.

The courtyards accommodate active and passive uses for all age groups and include space for exercise stations, play areas, slides, and seating. Passive enjoyment is facilitated by plentiful sheltered seating.

The courtyards integrate both hard and soft landscaping, see **Figure 2.8**.

Additionally, to the south of the application area, the land zoned 'HA' will be retained as amenity grassland and residents of the proposed development will have access to this area.

Figure 2.8 Residential Courtyards (Extract from Landscape Design Statement)

The provision of rooftop amenity space will further supplement the range of communal open space available for residents to build a sense of community, see **Figure 2.9.**

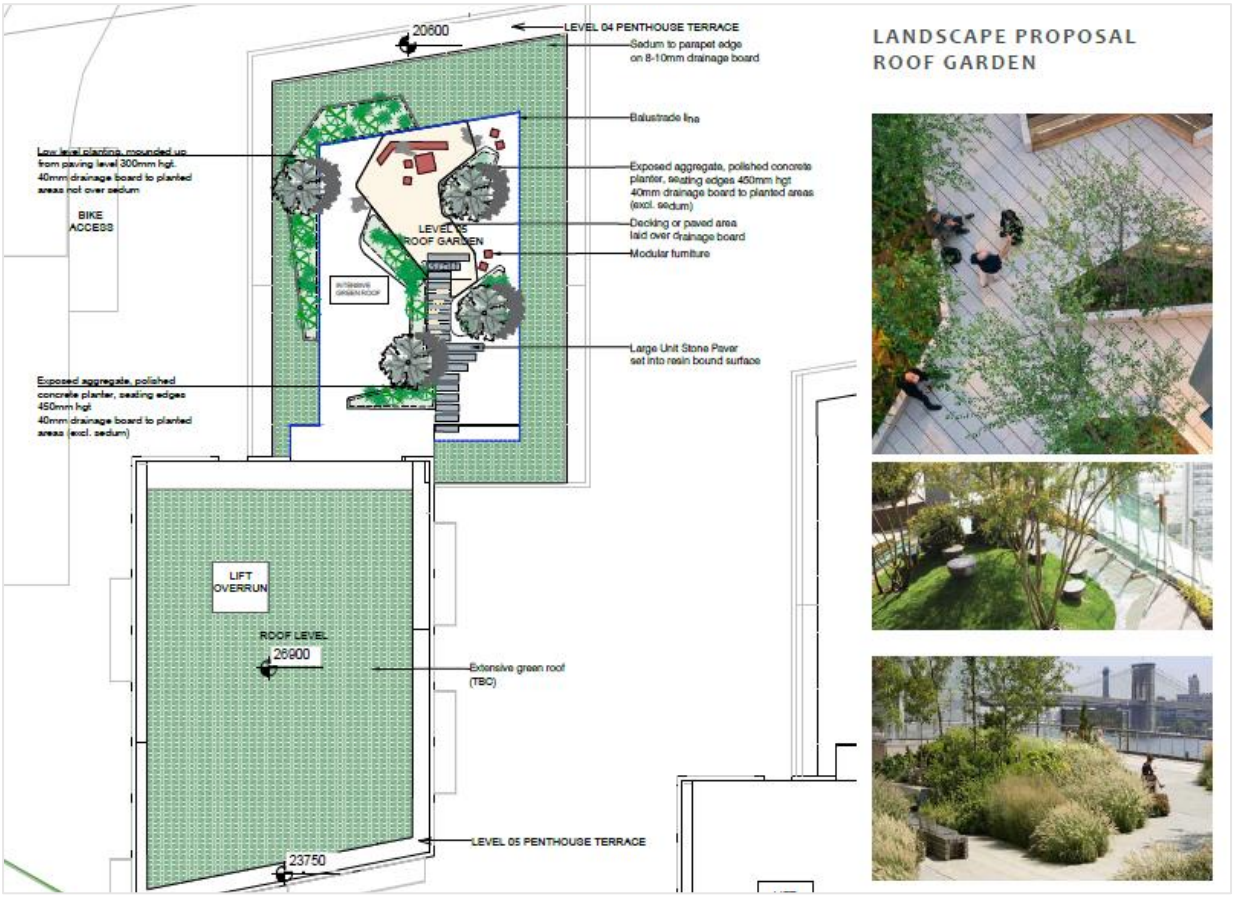

Figure 2.9 Roof Garden (Extract from Landscape Design Statement)

2.3.6.2 Public Open Space

The public open space (1,161 sq.m) is provided to the north of the proposed site, immediately behind the demesne wall (see **Figure 2.10)** and comprises a series of different spaces. It meets the Fingal Development Plan's quantitative requirement of 10% of the developable area.

The space is designed as a public garden without any hard boundaries to allow free movement throughout the space. Access to the public open space is from the entrances proposed to the east and west on Howth Road.

This area of Howth has an unusually favourable micro-climate, demonstrated by the existence of several private gardens noted for the planting of unusual species, including Howth Castle. With the advantage of the warm current from the Gulf of Mexico almost encircling Howth, it

seems that the peninsula can grow a wider range of plants than any other place of similar latitude.

The proposed public open space is sheltered to the north by the historic demesne wall and presents an immediate canvas to display unusual climbing species fronted by larger shrub species, a botanic garden which will thrive in the south facing aspect.

A pocket park **(Figure 2.11)**, incorporating a play area has a grass area for informal activities such as playing with a ball and more formal activities with the provision of play equipment. The equipment will be aimed at the 3-10 years age group and composed of timber to further assimilate the area into the surrounding garden landscape. Sheltered seating benches are dotted around the play area for those supervising children at play. Circulation through the space connects east to west bringing the user further through the garden for a variety of experiences.

The verdant atmosphere will provide a welcome refuge from the busier environment of the Howth road or a stopping point on a walk or cycle along the coast.

A Taking in Charge Plan is included in the architectural suite of drawings. It is noted that should Fingal County Council decide to not take the proposed public open space in charge, the Applicant would maintain this area and are satisfied to accept a condition requiring them to keep it accessible for public use.

Figure 2.10 Proposed Public Open Space (Extract from Landscape Design Statement)

Figure 2.11 CGI of Pocket Park Play Area & Botanic Garden

2.3.6.3 Private Amenity Space

Table 2.5 is a summary of the quantum of private amenity space provided within each level of the three apartment blocks. Balconies are not proposed on the northern elevations, instead they are to the east and west of each block. This is an intentional design measure

Private amenity space is predominately in the form of balconies with private terraces at ground floor screened by raised planting beds. The private amenity space achieve and/or exceed the prescribed minimum areas of the 2018 Design Standards for New Apartments as outlined in the **Housing Quality Audit**.

Level (all blocks)	Units	Private Amenity Area Required (sq.m)	Private Amenity Area Provided (sq.m)
Ground Level	31	206.0	562.8
Level 1	31	215.0	343.8
Level 2	31	215.0	347.0
Level 3	31	215.0	343.8
Level 4	25	197.0	537.2
Level 5	13	83.0	301.2
Total	162	1,131.0	**2,435.8**

Table 2.5 Private Amenity Space – Requirement & Provision

2.3.7 Hedgerows & Trees

The layout has been directly and indirectly influenced by the existing tree cover on site. The default position has been to avoid development within the canopy or root protection area of any retained tree.

There is an existing early mature boundary hedgerow belt traversing the zoned High Amenity area in an east-west alignment. It is proposed to largely remove this hedgerow belt as illustrated in the Figure below.

This boundary shelter belt provides visual screening and shelter to the golf course. The trees are partially visible from beyond the site due to their elevated position in the local landscape.

The hedgerow comprises a mix of predominately native species (Scots pine, Birch, Oak and occasional Beech) and is approx. 25 years old as evidenced on aerial photography from 1995 on www.heritagemaps.ie and reproduced below, **Plate 2-5**.

The **Arboricultural Impact Assessment & Method Statement** (submitted under separate cover), identifies that individually the species are of low arboricultural quality. The project ecologist (see **Biodiversity Chapter 11)** identifies that the band of trees provide a link with other woodland habitats in the immediate area and as such have local importance. The tree line was surveyed for bats and the project ecologist confirmed that it does not host potential roost features (PRF). It is stated in the Biodiversity Chapter that *"the trees in the hedgerow are mostly of small diameter at breast height and have not developed wounds/cavities which could accommodate roosting bats. For these reasons, the trees across the proposed development site are of negligible suitability for roosting bats."*

Plate 2-5 Aerial View of Subject Site, 1995

The project arborist, ecologist and landscape architect worked together to mitigate the loss of the hedgerow, and the resulting design approach includes;

a) compensation - application of measures to create new benefits, and,
b) enhancement - offset tree removal with appropriate replacements.

A new native woodland shelter belt will be planted along the western and southern boundaries of the application area. This native woodland feature will connect mature trees in the east with those that extend along the Deer Park Golf Course boundary in the west and south and will improve the long term arboricultural and ecological biodiversity and significantly increase future canopy within the local landscape.

Figure 2.12 Proposed Woodland Belt (Extract from BSLA Landscape Drawings)

2.3.8 Drainage

An **Infrastructure Report** (BMCE) accompanies this application and should be referenced for a comprehensive description of the proposed surface water, foul water and water supply strategies. Further details are also in EIAR **Chapter 7 Material Assets - Built Services**.

A Confirmation of Feasibility and Statement of Design Acceptance has been received from Irish Water and is included with this application.

2.3.8.1 Surface Water Drainage

There is no existing surface water infrastructure within the greenfield site. On Howth Road, to the north west of the site, there is an existing 450mm diameter surface water sewer that discharges north towards the coast.

Consistent with the requirements of the Greater Dublin Strategic Drainage Study (GDSDS) (2005) and the CIRIA 2015 Sustainable Drainage Systems Manual, the proposed surface water strategy (see **Figure 2.13**) incorporates the most effective suite of sustainable urban drainage (SuDS) measures that can be applied to the site in treating rainfall to GDSDS and CIRIA criteria. These measures include general and extensive green roofs, permeable paving, rain gardens, bioretention systems and tree pit interceptors, and attenuation tanks.

The implementation of the SuDS measures is linked in series, this is known as SuDS Management Train (SMT), ensuring that the most effective measures are utilised in the correct sequence throughout the site. This will significantly reduce run-off rates and improve storm water quality discharging to the public storm water system. Prior to discharging to the public surface water network, the SMT will ensure that rainwater falling on site is captured, conveyed, stored, intercepted, and removed of pollutants correctly.

The stormwater management for the site is as follows:

- Each individual block shall incorporate green roofs throughout and all hard landscaping at grade within the private space of each block shall be discharged to tree pits or filter strips with overflows which shall finally discharge to an attenuation tank located within the private land of the development and maintained by the developer. The attenuation tank, along with a proprietary flow control device, hydrobrake or similar, shall limit discharge from the site development to 7.91 litres per second before entering the public stormwater network.

- Communal amenity spaces between the residential blocks will comprise of permeable paving build ups over the concrete podium slab. From here, the stormwater that filters through the permeable hardcore build-up beneath the paved area will be collected in a drainage board and perforated pipes before overflowing and discharging to the attenuation tank.

Figure 2.13 Proposed Surface Water Drainage

2.3.8.2 Foul Water Drainage

There is no existing foul sewer infrastructure within the site boundary.

A new 225mm diameter foul sewer will connect into an existing 400mm diameter concrete foul sewer and manhole to the north of the site adjacent to Howth Road (see **Figure 2.14**). This connection will serve as the development's foul connection to the Irish Water wastewater network, which will then discharge to Ringsend wastewater treatment plant via a pump station located in Sutton.

Rainwater run-off from vehicles entering the basement will be collected via ACOs/gulleys and below slab sewer which be pumped to ground floor level and directed to a petrol interceptor before discharging into the foul network.

The foul sewer design has been carried out in accordance with the Irish Water Code of Practice for Wastewater. Foul wastewater discharge from the proposed development will be as follows; Average – 0.835 l/s. Peak – 5.012 l/s (see **Table 2.6).** A full breakdown of the calculations is appended to the **Infrastructure Report** (BMCE) that accompanies this application.

Blocks		Units / m2	Daily Flow (l/day)	Average Flows (l/s)	Peak (l/s)
A, B & C	Residential	162	72,171	0.835	5.012

Table 2.6 Foul Network Summary

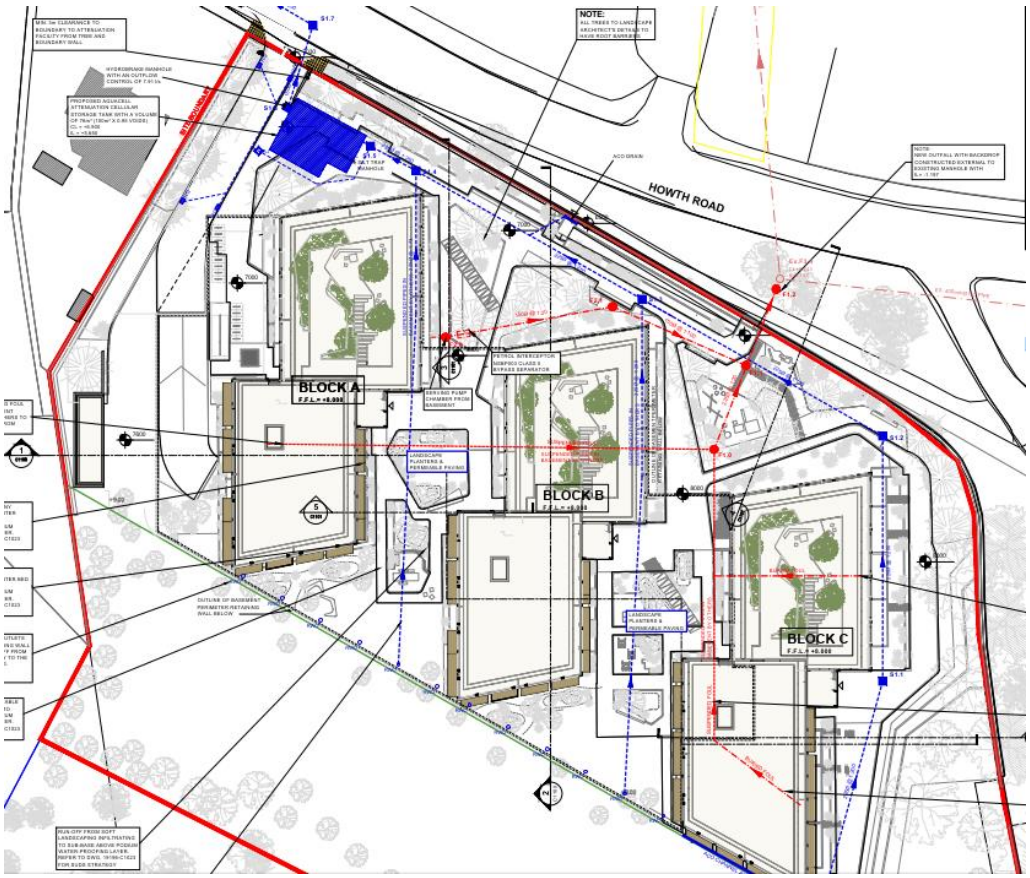

Figure 2.14 Proposed Waste Water Drainage

2.3.8.3 Water Supply

The pre-connection response received from Irish Water noted that, subject to a valid connection agreement being put in place, the proposed connection to the Irish Water network can be facilitated. Confirmation of feasibility and Design Acceptance is appended to the **Infrastructure Report** (BMCE) submitted with this application.

There is an existing 160mm diameter MOPVC watermain on Howth to north of the site; however, a new 150mm diameter HDPE water pipe will be installed on site connecting to the exiting water main system on Howth Road (see **Figure 2.15**).

The watermain connection will incorporate a bulk water meter and sluice valves. A summary of the water demand for the proposed development is in **Table 2.7**. A full breakdown of water demand calculations for the proposed developed is appended to the **Infrastructure Report** (BMCE) submitted with the planning application.

All connections, valves, hydrants, meters etc. have been designed and are to be installed in accordance with Irish Water's Code of Practice / Standard Details.

Figure 2.15 Proposed Potable Water Supply

Blocks		Units / m2	Daily Flow (l/day)	Average Flows (l/s)	Peak (l/s)
A, B & C	Residential	162	65,610	0.949	4.746

Table 2.7 Water Supply Summary

2.3.9 Site Services

2.3.9.1 Electricity Supply

A new underground cable shall connect into the existing network refer to **Figure 2.16** and route through the proposed development to serve 1 new double sub-station located on the western

site boundary. A utility metering switch room shall be located at the entrance to each block in which, each apartment will have its own ESB meter.

There are existing overhead lines traversing the site supplying an existing ESB service within the area which will be diverted around the site, underground, in accordance with ESB Standards. Discussions have taken place with ESB regarding the undergrounding of the existing overhead ESB line and the most likely alignment is illustrated in this application.

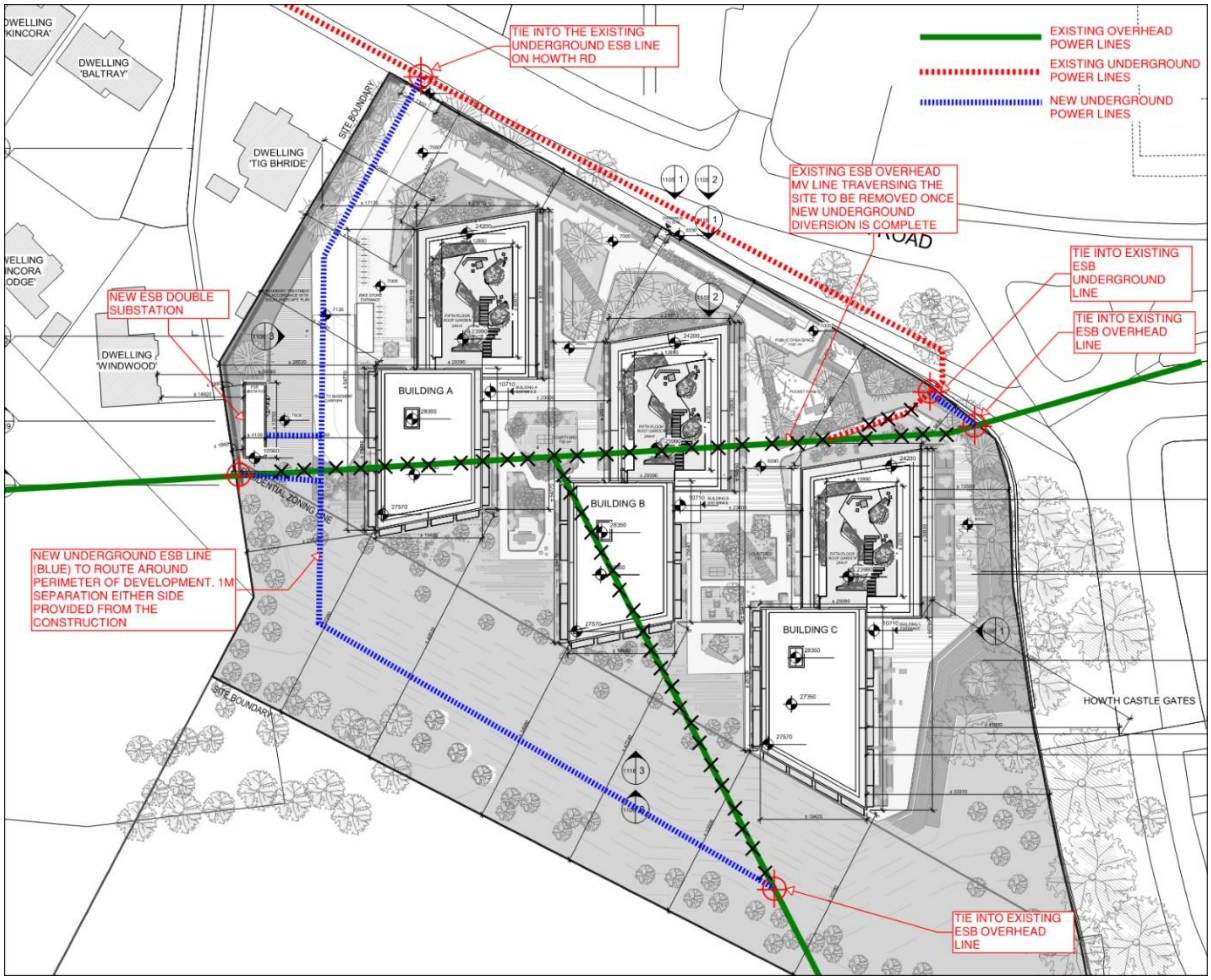

Figure 2.16 Proposed ESB Infrastructure

2.3.9.2 Gas Supply

There is a medium pressure 4Bar gas pipe traversing the site which will be re-routed as part of the enabling works for the project, see **Figure 2.17.** There are no natural gas requirements planned for the proposed development.

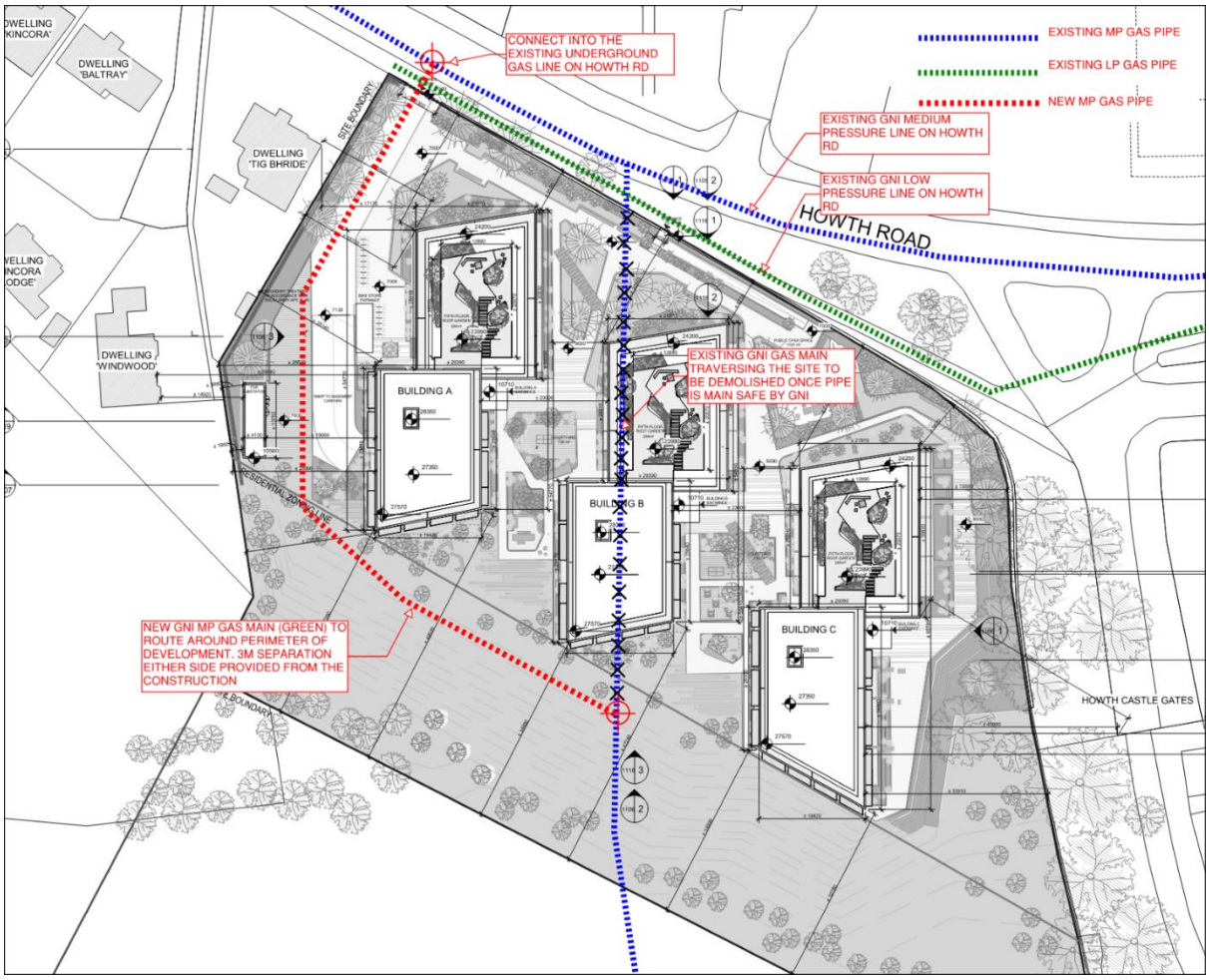

Figure 2.17 Proposed Gas Infrastructure

2.3.9.3 Telecommunication Network

The supply of telecommunications infrastructure to the proposed development site will be provided by way of a connection to a telecoms control room from the existing EIR telecommunication networks and new proposed Virgin Media Network on Howth Road. see **Figure 2.18.**

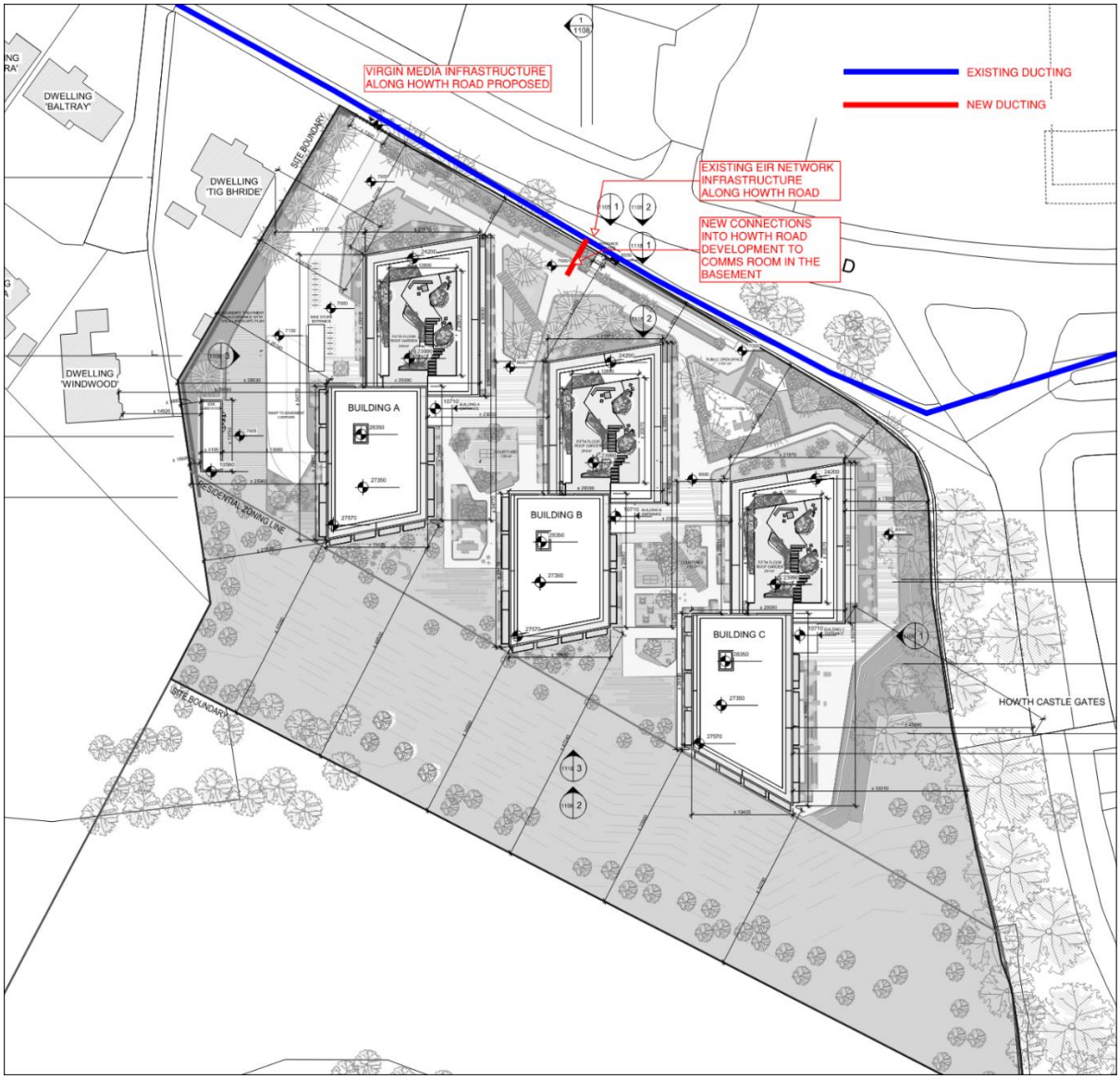

Figure 2.18 Proposed Telecoms Infrastructure

2.3.10 Building Energy Strategy

An **Energy Statement** prepared by Ethos accompanies this application under sperate cover. The design intent is to achieve at least an A3 Building Energy Rating.

The Energy Statement confirms that the proposed apartments will comply with Part L Regulations (NZEB). The strategies proposed are:

- U-values for floor and roof will exceed the building regulation backstops;
- Using a specified Glazing U-Value target;
- Better performance air permeability than the backstop, adding to building air tightness;
- High performance thermal bridging;
- Mechanical Extract Ventilation with Heat Recovery via heat pump; and,
- Exhaust Air Source Heat Pump to provide Space Heating (via radiators) and Domestic Hot Water.

2.3.11 Site Lighting

A **Site Lighting Report** prepared by Ethos accompanies the application under separate cover.

This external lighting design is based upon the following requirements;

- Provide adequate illumination to contribute towards the safe use of the site by both vehicles and pedestrians.
- Enhance site security.
- Provide a visually interesting environment.
- Contain the lighting within the site to lighting levels which will not impact on the neighbouring surroundings.
- Safe access to fire assembly points.
- Minimise light pollution, sky glow and visual glare for pedestrians and surrounding areas.

The proposed site lighting installation comprises of 4-metre high post top column lighting to car park roads/ main access route with decorative 4m high columns at the main entrance and 1000mm bollard lighting to pedestrian walkways.

The proposed 4m column with post top luminaires will illuminate the areas described above to achieve an average illumination level of 20 lux. The photometric curve, indicates how the light output is directed downwards with no risk of “sky glow”.

It is proposed to provide 1000mm bollard type light fittings to pedestrian walkways to achieve an average illumination level of 20 lux at ground level.

It is proposed to provide 4-meter-high column LED luminaires for the entrance courtyard to achieve the 20 lux requirement at ground level.

It is proposed to provide recessed mounted floorwash LED luminaires to the bench areas to achieve the required 20 lux at ground level.

It is proposed to provide LED strip lighting mounted inside handrail for the stairs to achieve the 100 lux requirement to comply with Part M requirements.

2.3.11.1 Bats

Cognisant that bats are light-sensitive species and tend to avoid roosting or foraging in areas subject to artificial illumination. The site lighting proposal was developed in close consultation with the project ecologist, Scott Cawley.

Comprehensive bat surveys were carried out to inform the Biodiversity Chapter of this EIAR and the key issues identified during the surveys and that informed the proposed lighting plan were;

Four species of bat: common pipistrelle, soprano pipistrelle Leisler's bat, and brown long-eared bats, were identified during surveys of the proposed development site and its vicinity, although only two of these species (Leisler's bat and common pipistrelle bat) were observed foraging within or passing over the proposed development site. The two species observed in the proposed development site are the most light-tolerant of the Irish bat species and tend to be associated with edge habitats.

Bat activity was more heavily concentrated in the area of mixed broadleaved woodland along the avenue in Deer Park, and in the vicinity of the old Abbey in Deer Park (both areas are outside of the proposed development site) on all survey dates.

Bats appear to avoid the northern boundary of the proposed development site, possibly due to the light spill from the adjacent public road, and from security lighting emitted from nearby residential dwellings.

The habitats in the adjacent Deer Park demesne, particularly woodland habitats, are of high suitability for foraging and commuting bats.

The proposed lighting design was developed in close consultation with the project ecologist, Scott Cawley Ltd. and is designed to be sensitive to the presence of commuting and foraging bats and adheres to the following guidance:

- Bats & Lighting: Guidance Notes for Planners, engineers, architects and developers (Bat Conservation Trust, 2010);
- Guidance Notes for the Reduction of Obtrusive Light GN01/20 (Institute of Lighting Professionals, 2020);
- Bats and Lighting in the UK – Bats and the Built Environment Series (Bat Conservation Trust UK, January 2008).

2.3.12 Waste

An **Operational Waste Management Plan (OWMP)** (Byrne Environmental) accompanies this application and should be referred to in conjunction with this section. The OWMP has been prepared with regard to British Standard BS 5906:2005 Waste Management in Buildings-Code of Practice which provides guidance on methods of storage, collection, segregation for recycling and recovery for residential building.

A scheme wide waste storage and management strategy has been developed for the control, management and monitoring of waste associated with the proposed residential development. The objective of the OWMP is to maximise the quantity of waste recycled by providing sufficient waste recycling infrastructure, waste reduction initiatives and waste collection and waste management information to the residents of the development.

Within the l scheme, communal waste storage areas are proposed at basement level.

Residents will be provided with waste recycling and waste disposal information by the site's Facility Management Company who will be responsible for providing clean, safe and mobility impaired accessible communal waste storage areas. It is expected that a single Waste Collection contractor shall be engaged to remove all mixed domestic waste and recyclable wastes from the waste storage areas and from individual houses on a weekly basis.

2.4 Construction Phase

A **Construction & Environmental Management Plan** (CEMP) has been prepared and is submitted with the application. The CEMP outlines the commitments and mitigation measures to be implemented during the construction phase of the proposed development and should be read in conjunction with this chapter.

All of the mitigation measures proposed within the EIAR and other supporting documents are deemed adopted for the purposed of the CEMP.

The appointed contractor will be provided with the CEMP and will be required to comply with the provisions contained in it.

2.4.1 Programme

The development will be constructed as one project, but with basic sub-phases such as bulk dig, basement construction and super-structure erection. An outline of the construction phases is shown in **Table 2.8**, this is subject to change based on the contractor's construction programme. Based on other developments of a similar scale and complexity, it is considered that the construction works will take approximately 22 months upon commencement.

Construction Phase	Description of works
1	Receipt of a Grant of Planning Permission
2	Progression through detailed design stage
3	Issue of tender documents to shortlisted Contractors followed by period for tender returns, assessment and award of contract
4	Mobilisation of contractor; preparation of Contractor's Construction Management Plan (CMP)
5	Site set-up, installation of perimeter hoarding to secure the site
6	Enabling works and services diversions within the site
7	Excavation works for proposed basement area
8	Commencement of foundation works
9	Completion of super-structures for each of the buildings
10	External facades and completion of internal fit-out works
11	Completion of site works including final services connections
12	Completion of all external landscaping works
13	Final handover and certification

Table 2.8 Construction programme - Phases

2.4.2 Phasing

The 3 no. proposed blocks together with all ancillary development works will be constructed over a singular programme. It is not intended to release the development in phases. Once the development is fully complete it will then be released.

2.4.3 Construction Hours

The proposed construction hours are;

- 07.00-19.00 Monday to Friday and
- 08.00-14.00 Saturdays

There will be no work on Sundays or bank holidays.

Deviation from these times will only be in exceptional circumstances where prior written approval has been received from the planning authority.

2.4.4 Construction Access

The site is not currently served by an existing access. The demesne wall encloses the site along the northern boundary with the Howth Road

The proposed construction access will be on the north western boundary i.e. the primary access (vehicular/cyclist/pedestrian) proposed to serve the development during the operational stage (**Figure 2.19**). Sightlines will be 70 metres from a 2 metre set-back within a 60 km/h speed zone.

All HGV's during the construction phase will travel to and from Sutton Cross using Howth Road (R105). This route was chosen as it is the shortest and minimises the effect the development has during the construction phase on Howth Village. Upon reaching Sutton Cross, traffic will take the most direct route to the nearest major roads infrastructure, i.e. the M50/M1.

2.4.5 Site Compound & Parking

A construction compound and car parking facility will be established for the construction phase and will be located to the north within the proposed development site. Further to this, the Contractor will provide and maintain an area within the site for construction and management personnel offices, operative's welfare facility, canteen, visitor parking and for the storage of construction materials. The preliminary location of these facilities has been outlined in **Figure 2.19.**

Whereas there will be certain provision for Site Operatives and Visitor Parking, the Contractor will encourage use of public transport where possible and will actively discourage parking on the surrounding residential estate roads, by construction operatives involved in the project. Parking for construction staff will be wholly contained within the proposed development site.

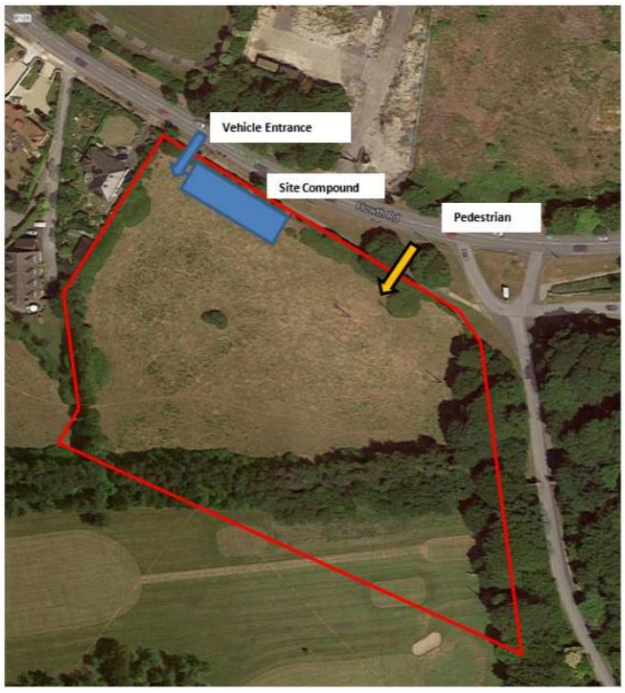

Figure 2.19 Proposed Site Compound (CEMP - BCME)

The development lands have existing boundaries that prevent access and egress; however, hoarding/temporary fencing will be erected to delineate all site works from public areas located adjacent to the development. At no given time during the project will materials or other items be placed outside the hoarding line.

The appointed contractor will be required to implement an efficient logistics programme for ordering and delivery of materials and in so far as is possible, the storage time of materials on site will be kept to a minimum.

It is estimated that at peak construction periods that there would be approximately 40 - 50 people employed on site.

2.4.6 Construction Traffic

Over the course of the construction programme the total number of large vehicle movements is estimated as follows (large vehicles are assumed to include spoil lorries, concrete trucks, large rigid delivery vehicles and HGV's):

- No of private vehicles per day from staff and site visitors – 20
- No. of light good vehicles per day from subcontract staff - 15
- No. of heavy goods vehicles per day during excavation process - 70
- No heavy goods vehicles per day outside of the excavation periods – 10

2.4.7 Construction Traffic, Vehicle Movement and Site Deliveries

Site access for all personnel and visitors will be strictly controlled and all visitors will report to the site offices prior to entering the construction area. Further to this, the main contractor will organise the construction site so that vehicles and pedestrians are kept separate at the access points.

Vehicle movements will be planned to ensure arrival and departure times are maintained inside the agreed working hours. All offloading operations will take place inside the site boundary.

Access routes to and from the site, delivery times and off-loading proposals will be formally agreed with Fingal County Council.

Over the course of the construction programme (which is estimated at circa 22 months as advised by GLL PRS HOLDCO LTD, starting on site in mid-2022 and completion by 2024 subject to a commercial review), the total number of large vehicle movements is estimated as follows (large vehicles are assumed to include spoil lorries, concrete trucks, large rigid delivery vehicles and HGV's)

- Bulk Excavation and Site Strip – As advised by GLL PRS HOLDCO LTD, 30,000m3 volume to be excavated, it is estimated at a 9 week dig with 70 no. truck movements per day.

It is noted in the Infrastructure Report that a **Traffic Management Plan** will be developed for the construction of the new entrance and service connections as part of Road Opening License applications to Fingal County Council.

2.4.8 Construction Waste

A **Construction Waste Management Plan (CWMP)** has been prepared by Byrne Environmental Consulting Ltd. A copy of the CWMP is included with the planning application documentation. The CWMP demonstrates how the Construction Phase complies with relevant legislation and Best Practice Guidelines, and waste management policies and objectives of the Fingal County Council Development Plan 2017 – 2023.

The CWMP will be implemented throughout the construction phase of the development to ensure that:

- 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 are segregated into different waste fractions and stored on-site in a managed and dedicated waste storage area.
- All waste materials generated by site activities 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 Act 1996 and all associated Waste Management Regulations.

The management of waste will incorporate the following key measures and all measures in the CWMP submitted with the application documentation.

- The Construction Waste Management Plan (CWMP) will be made available to all relevant personnel on site.
- The Construction Waste Officer will be responsible for the implementation of the CWMP.
- On-site segregation of inert, hazardous and non-hazardous waste materials into appropriate categories.
- On-site segregation of hazardous waste materials into appropriate categories. Hazardous waste will be separately stored in appropriate lockable containers prior to removal from site by an appropriate waste collection licence holder.
- The site will be maintained to prevent litter and regular picking will take place throughout the site.
- Left over materials (e.g. timber off-cuts) shall be re-used on site where possible.
- All waste leaving the site will be recycled, recovered or reused where possible.
- All waste leaving the site will be transported by suitable permitted contractors and taken to suitably registered, permitted or licensed facilities.
- All waste leaving the site will be recorded and copies of relevant documentation maintained.

2.4.8.1 Earthworks

The Project Engineers, Barret Mahony Consulting Engineers, have estimated that c. 30,000m^3 of soils will be excavated to facilitate the development and exported from the site.

Soils at the site have been classified following WAC testing by Ground Investigations Ireland and the completion of a Waste Classification Assessment. The **Waste Classification Report** is included as an Appendix to the CWMP.

The scope of the work undertaken to facilitate the waste classification exercise included the following:

- Excavation of twelve (12 No.) trial pits;
- Collection of subsoil samples for chemical analysis;
- Environmental laboratory testing;
- Waste classification; and
- By-product suitability assessment.

In order to assess materials, which may be excavated from site, in terms of waste classification, a selection of samples collected were analysed for a suite of parameters which allows for the assessment of the soils in terms of total pollutant content for classification of materials as hazardous or non-hazardous (RILTA Suite). The suite also allows for the assessment of the soils in terms of suitability for placement at various categories of landfill.

The suite was selected due to no evidence of specific contaminants of concern highlighted in the site history. The laboratory testing was competed by Element Materials Technology (EMT)

in the UK; EMT is a UKAS accredited laboratory. The full laboratory report is included in an Appendix to the Waste Classification Report & Subsoil Assessment appended to this report.

In total, thirty (30 No.) samples were assessed using the HazWasteOnLineTM Tool. The location of the trial pits is illustrated in the Figure below.

Figure 2.20 Location of Trial Pits

The assessment concluded that on-site soils are classified with LoW Code 17 05 04 may be classified as non-hazardous and are defined as a Category A Criteria as follows. Soil and Stone only which are free from anthropogenic materials such as concrete and timber. Soils must be free from “contamination” e.g. PAH’s, Hydrocarbons and Asbestos. Category A material can be disposed/recovered at unlined soil recovery facilities.

By-product Suitability (Article 27 Declarations)

Based on the analysis of the samples collected from the on-site excavations the material sampled is free of contamination. The material sampled was comprised of natural subsoils which were free of anthropogenic materials. Following an appraisal of the chemical analysis and the absence of anthropogenic materials the subsoils sampled are suitable for removal from site as a by-product which *will not lead to overall adverse environmental or human health impacts*.

Based on the WAC analysis, it is intended to declare the excavated soils a by-product to the EPA in accordance with Article 27 of the European Communities (Waste Directive) Regulations 2011 and the EPA publication “Guidance on Soil and Stone By-Products in the context of Article 27 of the European Communities (Waste Directive) Regulations – Version 3 June 2019.

The notification of a potential by-product gives industry an opportunity to demonstrate, with an appropriate level of rigour, that:

- the material can have a further use and no longer be defined as waste;
- the material can be used as a 'secondary' resource in place of, and fulfilling the same role as a non-waste derived or virgin 'primary' resource; and
- the material can be used without causing overall adverse impacts to the environment or human health.

The by-product test is made up of four conditions, which represent the requirements of Article 27. All four of the following 'conditions' must be met for an economic operator to decide that a production residue is a by-product:

1. further use of the material is certain;
2. the material can be used directly without any further processing other than normal industrial practice;
3. the material is produced as an integral part of a production process; and
4. further use is lawful in that the substance or object fulfils all relevant product, environmental and health protection requirements for the specific use and will not lead to overall adverse environmental or human health impacts.

Based on the type of material to be excavated i.e. virgin soils, the fact that it is being excavated to facilitate the proposed development and the results of the WAC analysis, conditions 2-4 above are met.

Regarding Condition 1, at this stage, it is too early to identify a specific site where the material would be used. This is because, it is necessary first to secure planning permission to have certainty regarding the availability of the by-product and only then can a further use be identified. However, having regard to the scale of development taking place in Dublin, it is reasonably expected that there will be projects seeking to avail of this by-product. The selected location will be identified in the notification to the EPA.

2.4.8.2 Basement Excavation - Groundwater

The Site Investigation Report, submitted with this application under separate cover, included 7 no. boreholes and soakaway tests. Perched groundwater was recorded in all of the boreholes ranging from 4.20mbgl to 4.70mbgl.

Excavation within the proposed site will be required as part of the basement construction. It is expected during the excavation works that localised dewatering of the subsoils will be required to address perched groundwater.

If groundwater is encountered during the proposed works and temporary pumping is required, mitigation will be established, including;

- An appropriate dewatering system and groundwater management system specific to the site conditions will be designed and maintained. These will include measures to minimise any surface water inflow into the excavation, where possible, and the prolonged exposure of groundwater to the atmosphere will be avoided.
- Qualitative and quantitative monitoring will be adopted to ensure that the water is of sufficient quality to discharge. The use of silt traps will be adopted if the monitoring indicates the requirement for same with no silt or contaminated water permitted to discharge to the receiving water environment.

2.4.9 Tree Protection

A Method Statement is included in the **Arboricultural Impact Assessment** report has been prepared that accompanies this planning application. The purpose of the statement is to provide a system of working to ensure retained trees are protected at all times during construction. It should be read in conjunction with the Tree Impact & Protection Plan (TIPP) prepared by the project arborist.

A protective fence will be erected around retained trees, prior to the commencement of materials or machinery being brought onto site, removal of soil or any form of construction. The area within this fencing will form the construction exclusion zone (CEZ) and it will be afforded protection at all times. No works will be undertaken within this zone that causes compaction to the soil, severance of tree roots or damage to tree canopies.

Where it is not feasible to erect fencing due to space restrictions, a hessian wrap surrounded by a cleft chestnut pale fence or plywood boards to a minimum thickness of 20mm, securely held in place by a scaffold framework or 4x2 timber frame that is set back a minimum of 500mm from the stem and to a height of 2.4m will provide the necessary protection.

2.5 Health & Safety

The appointed contractor and Project Supervisor Construction Stage (PSCS), will be responsible for managing all aspects of health and safety pertaining to the construction works in line with the requirements of the Safety, Health and Welfare at Work (Construction) Regulations 2013. This will include, inter alia, managing the risks from Covid-19.

2.6 Monitoring

A **Construction and Environmental Management Plan** (CEMP) is included with this application. The CEMP will be updated to address any changes required by planning conditions and will be agreed with the planning authority prior to the commencement of development.

The CEMP demonstrates the applicant's commitment to implement the proposed development in such a way as to avoid or minimise the potential environmental effects resulting from construction activities.

Aspects addressed within the CEMP include but are not limited to; noise and vibration; dust and air quality; traffic and vehicle management; pollution incident control; and protection of vegetation and fauna.

The appointed contractor will be required to implement this CEMP throughout the course of the construction phase. All personnel will be required to understand and implement the requirements of the plan.

2.6.1 Environmental

The monitoring measures for the protection of the environment and human health set out in this EIAR are deemed adopted for the purpose of the CEMP.

Further monitoring measures are set out in the following reports and they too will be implemented:

- Arboricultural Report
- Natura Impact Statement
- Construction Waste Management Plan & Operational Waste Management Plan
- Method Statement for works proposed to the demesne Wall

The appointed contractor shall implement all monitoring measures proposed.

2.6.2 Construction Noise and Dust

A **Construction Noise & Vibration Management Plan** will be put in place for the construction phase, a third-party consultant will be engaged to prepare this report and monitor activity and noise levels generated. The Noise Management Plan will address the following areas:

- Noise Sensitive Locations
- Assessment of noise and vibration effects
- Best Practice Guidelines for the control of construction noise
- The introduction of new noise sources onto the development lands
- Noise control audits

A **Construction Phase Dust Management Plan** will be put in place for the construction process, a third-party consultant will be engaged to prepare this report and monitor activity and noise levels generated. The Dust Management Plan will address the following areas:

- Site management
- Dust control – site roads

- Dust control – land clearing / earth moving
- Dust control – storage piles
- Dust control – public roads
- Dust management summary

2.6.3 Integrated Pest Management

The Main Contractor will take all necessary steps to ensure that pests -rodents, birds, insects and plants are controlled at all times.

Control measures will be undertaken prior to commencement of any works on the site. Poison where used, will comply with any relevant Health and Safety requirements and which eliminate any danger to children, household pets and other wildlife. Old and discussed service pipes and voids will be removed or filled to avoid the potential pest to infest the site.

2.7 Commissioning

The testing and commissioning of services (drainage, water supply, electricity, telecommunications etc.) will be completed in accordance with relevant codes of practice as set out in **Chapter 7** of the EIAR.

2.8 Decommissioning

The **Building Lifecycle Report (BLR)** that accompanies this application under separate cover confirms that the proposed design meets the requirements of the Building Regulations with particular reference to BS 7543:2015, '*Guide to Durability of Buildings and Building Elements, Products and Components'*, which provides guidance on the design life and predicted service life of buildings and their parts, ensuring that the long-term durability and maintenance of materials is an integral part of the specification of the proposed development.

The common areas are designed to incorporate the guidance, best practice principles and mitigations of Annexes of BS 7543: 2015 including: *Annex A Climatic agents affecting durability; Annex B Guidance on materials and durability; Annex C Examples of UK material or component failures; Annex D Design Life Data sheets.*

Materials chosen including brickwork, render systems, powder-coated aluminium framed double-glazed windows and doors, metal rainscreen cladding, powder-coated aluminium balustrades, steel frame deck and sedum roofing all require minimum on-going maintenance and reduce ongoing associated costs.

Appendix A to the BLR is a Building Investment Fund (BIF) table and it sets out the life expectancy of constituent parts of the proposed development and the approximate cost of replacement.

In line with the requirements of the Multi-Unit Developments (MUD) Act, the members of the Management Company will determine and agree each year at a General Meeting of the members, the contribution to be made to the Sinking Fund, having regard to the BIF report produced.

CHAPTER 3
ALTERNATIVES

MAY 2021

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3 Alternatives

3.1 Introduction

The requirement to consider alternatives within an Environmental Impact Assessment Report (EIAR) is set out in Annex IV (2) of the EIA Directive (2014/52/EU) and in Schedule 6 of Planning and Development Regulations 2001 (as inserted by article 97 of the European Union (Planning and Development) (Environmental Impact Assessment) Regulations 2018 which state (at paragraph 1(d));

"A description of the reasonable alternatives studied by the person or persons who prepared the EIAR, which are relevant to the proposed development and its specific characteristics, and an indication of the main reasons for the option chosen, taking into account the effects of the proposed development on the environment".

The requirement is elaborated at paragraph 2(b), which makes clear that reasonable alternatives may include project design proposals, location, size and scale, which are relevant to the proposed development and its specific characteristics. The Regulations require that an indication of the main reasons for selecting the preferred option, including a comparison of the environmental effects be presented in the EIAR.

The Environmental Protection Agency (2017) Guidelines on the Information to be Contained in Environmental Impact Assessment Reports - Draft states:

"The objective is for the developer to present a representative range of the practicable alternatives considered. The alternatives should be described with 'an indication of the main reasons for selecting the chosen option'. It is generally sufficient to provide a broad description of each main alternative and the key issues associated with each, showing how environmental considerations were taken into account in deciding on the selected option. A detailed assessment (or 'mini-EIA') of each alternative is not required."

The Guidelines also state that the range of alternatives considered may include the 'do-nothing' alternative.

Accordingly, this chapter of the EIAR provides an outline of the main alternatives examined during the design phase. It sets out the main reasons for choosing the development as proposed, taking into account and providing a comparison on the environmental effects. The assessment of alternatives is considered under the following headings;

i. Do Nothing Alternative
ii. Alternative Use
iii. Alternative Locations
iv. Alternative Design
v. Alternative Processes

Notwithstanding the above, pursuant to Section 3.4.1 of the Draft 2017 EPA Guidelines, the consideration of alternatives also needs to be cognisant of the fact that *"in some instances some of the alternatives described below will not be applicable – e.g. there may be no relevant 'alternative location'…"* The Draft 2017 Guidelines are also instructive in stating: *"Analysis of high-level or sectoral strategic alternatives cannot reasonably be expected within a project level*

EIAR… It should be borne in mind that the amended Directive refers to 'reasonable alternatives… which are relevant to the proposed project and its specific characteristics'".

Further, the 2017 European Commission publication "*Environmental Impact Assessment of Projects Guidance on the preparation of the Environmental Impact Assessment Report"* states

"some Alternatives are overarching and may be identified in plans and programmes (e.g. transport plans or regional development programmes)…".

This is particularly relevant to the subject site which is zoned and any development must comply with National, Regional and local planning policy

3.1.1 Author Details

This chapter was prepared by Paula Galvin of McCutcheon Halley Chartered Planning Consultants. Paula holds an MSc in Spatial Planning, a BA in Geography, a Diploma in Environmental Impact Assessment (EIA) Management and a Diploma in Planning and Environmental Law. She has practised as both a planning and environmental consultant for over 15 years and has directed the preparation of Environmental Impact Assessment Report (EIARs) for a range of development types including residential, commercial, renewable energy and waste. Directly relevant experience to this proposed development that Paula has been involved in is the direction of EIARs and Environmental Reports to accompany residential led applications that received permission for development including;

- Bailey Gibson (PL29S.307221) - Demolition of all structures, construction of 416 no. residential units (4 no. houses, 412 no. apartments) and associated site works.
- Player Wills (TA29S.308917) - Demolition of all buildings excluding the original fabric of the former Player Wills Factory, construction of 492 no. Build to Rent apartments, 240 no. Build to Rent shared accommodation along, creche and associated site works.
- Connolly Quarter (PL29N.305676) - Demolition of 4 no. structures, construction 741 no. build to rent apartments, retail space and associated site works.
- Chesterfield, Cross Avenue (PL06D.302921) - Demolition of the non-original fabric of Chesterfield House (a protected structure) and derelict sheds. Construction of 214 apartments and 7 no. houses, residents amenity facility and all associated works.
- Hansfield SDZ (FW18A/1061) permission for development of 247 no. apartments at Zone 7, Hansfield SDZ, Hansfield, Dublin 15.

3.2 Consideration of Alternatives

3.3.1 Do Nothing Alternative

The 'Do-nothing' alternative is a general description of the evolution of the key environmental factors of the site and environs if the proposed project did not proceed. Each Chapter of this EIAR includes a description of the 'Do Nothing' alternative and should be referenced in conjunction with this Chapter.

Under a 'Do-nothing' scenario, the proposed development site would remain in its current condition, impermeable, predominately greenfield and part active recreational (golf course) and it would not fulfil its residential zoning objective. Accordingly, there would be a negative/adverse effect on population, as this approach would fail to address the shortage of homes in Dublin City and Suburbs. This is critical in the context of the low volume of land available for development

in Howth owing to the high amount of land subject to environmental designations. Variation No. 2 of the Fingal Development Plan 2017-2023 identifies that there is 16 hectares of land available for development. Maximising the efficiency of zoned land is therefore of critical importance.

The demesne wall that encloses the site along its northern and eastern boundaries are in a state of decline due to (a) age and lack of maintenance and, (b) ivy growth. It is anticipated that without intervention, it would likely go into further decline and a significant heritage resource would be undermined. The effect would be negative and very significant.

The existing hedgerow that delineates the greenfield plot and the area of the golf course included in this application would be retained. The short-term effect (1-7 years) would likely be more advantageous under the do-nothing approach. However, given the residential zoning, it is likely that any future development proposal on the land would also include removal of this hedgerow which is no more than 25 years old as evidenced on aerial photography from 1995 reproduced in **Chapter 2** of this EIAR. The medium – long terms effect is therefore likely to be neutral.

There would be no increase in traffic under the do-nothing scenario, however, the site would fail to achieve the National Planning Framework, National Strategic Outcomes for compact growth and sustainable mobility, both of which have positive climate and human health benefits.

Should the site remain in its current condition, the area identified as 'other area' i.e. buffer zone to the SAAO would remain unaffected and the quality of the effect would be neutral. However, it is important to note, that the proposed residential development is confined to the lands zoned residential area and other than reprofiling of the high amenity zoned lands and planting a woodland belt they will remain in their current condition. In the medium-term, this new woodland belt would compensate for the loss of the existing hedgerow and the effect would be neutral.

Retaining the lands in their current condition would have no affect on the Howth Castle Architectural Conservation Area (ACA) that abuts the proposed development site's eastern boundary. However, the change introduced by the proposed development is demonstrated in this EIAR to be not significant and negative effects are not anticipated post application of mitigation measures. The wider demesne benefits from extensive mature tree cover that screens protected structures from the impact of the proposed development. Further the carrying capacity of the site to accommodate development is confirmed by the zoning designation of the Fingal Development Plan 2017-2023 which itself was subject to Strategic Environmental Assessment.

In the absence of development, the opportunity to complete the urban edge/ 'gateway' to Howth that has been set in train following the decision to permit development, Claremont, on the former Techrete site, would be lost in the short term.

The Table below summarises the effect of the 'Do Nothing' alternative described above. All of the predicted effects are determined to be likely to occur. It is noted that the duration of effects under this scenario are considered to be short-term (1-7 years), this reflects a reasonable timeframe for a further application for development to come forward on the site, in the absence of this subject application.

Aspect	Quality of Effect	Significance	Context	Duration
Population & Human Health	Negative	Significant	Local/City	Short-term
Landscape & Visual	Neutral	Imperceptible	Local	Short-term
Material Assets: Traffic & Transport	Neutral	Imperceptible	Local	Short-term
Material Assets: Utilities	Neutral	Imperceptible	Local/City	Short-term
Land & Soils	Neutral	Imperceptible	Local	Short-term
Water & Hydrology	Neutral	Significant	Local/City	Short-term
Biodiversity	Neutral	Imperceptible	Local	Short-term
Noise & Vibration	Neutral	Imperceptible	Local	Short-term
Air Quality & Climate	Neutral	Imperceptible	Local/National	Short-term
Cultural Heritage: Archaeology	Neutral	Imperceptible	Local	Short-term
Cultural Heritage: Built Heritage	Negative	Significant	Local/Regional	Short-term

Table 3.1 Do Nothing Description Of Effects

In conclusion, a 'Do-nothing' scenario is an inappropriate and unsustainable approach that would result in the inefficient use of a strategically located and easily serviced landbank of zoned residential lands. It would potentially result in a built heritage asset, the demesne wall being further compromised. With the mitigation measures proposed in this EIAR and having regard to the findings that no significant effects on the environment are expected with such measures in place, the comparative environmental effects are not considered sufficient to rule out the proposed development.

3.3.2 Alternative Locations

The suitability of the proposed development site for residential development is confirmed by the Residential Area zoning designation in the extant Fingal Development Plan 2017-2023, which was subject to Strategic Environment Assessment (SEA).

Article 5 of the SEA Directive requires the environmental report to consider *"reasonable alternatives taking into account the objectives and the geographical scope of the plan or programme"* and the significant effects of the alternatives selected. 3 no. strategic alternatives were considered for the Development Plan;

1. Alternative 1: Development concentrated around settlement hierarchy favouring high density expansion in areas nearest to existing and/or planned public transport corridors/nodes.
2. Alternative 2: Development promoted in accordance with the settlement hierarchy favouring expansion in areas nearest to available water services infrastructure capacity.
3. Alternative 3: Preservation of the greenbelt and natural heritage (including protection of horticulture/agricultural resource) through focusing development on existing settlements

The SEA assessed each of the 3 no. alternatives against environmental considerations and the conclusions were as follows;

3.3.2.1 Alternative 1 – High Density near exiting and/or planned transport

This alternative was deemed positive in relation to population, human health and material assets as it proposes consolidating urban areas and making the most efficient use of investment in infrastructure through integration of land use planning policy within the catchment areas of strategic transport infrastructure. This alternative provides a strong correlation between infrastructural investment and housing development.

The development of high density housing in proximity to public transport corridors was deemed to provide indirect positive impacts on air quality and climate change due to the potential to reduce emissions including greenhouse gases through provision of an alternative to use of private vehicles.

The focused concentration of development within settlement envelopes leading to a reduction in urban sprawl was considered a positive direct long term impact on biodiversity, flora and fauna, soils/ landuse, water, cultural heritage and landscape as the rural areas of Fingal would be protected.

However, the assessment identified that this alternative has potential for negative localised issues in relation to impacts on bats, hedgerow removal, discharges to water, uncovering of unknown archaeology and overshadowing from high density development.

3.3.2.2 Alternative 2 - Expansion in areas nearest to available water services infrastructure capacity

The assessment of Alternative 2 concluded that there will be a direct positive impact on biodiversity, flora and fauna, population, human health, water and material assets through the provision of development that has the necessary provision of water and wastewater services. There is a strong likelihood that there would be a reduction in the number of future septic tanks through focusing development to locations that have available water services infrastructural

capacity. This alternative would protect groundwater resources from the threat of pollution from inadequately serviced septic tanks.

This alternative requires that the development has to be in line with the settlement hierarchy but it does not state that there is focus on high density expansion and therefore there is likelihood that there could be increased impacts on greenfield lands. The assessment concluded that under this approach, there is a risk of long term negative impacts on biodiversity, flora and fauna, soils/ landuse, water, cultural heritage and landscape.

The alternative was deemed to have a neutral to negative impact in relation to air quality and climate change as future development would not be aligned with development of public transport corridors/ nodes and would not directly facilitate the utilisation of existing public transport. Therefore, there could be long term negative impacts if there is an increase in the use of private vehicle and relative increase in emissions.

3.3.2.3 Alternative 3 - Preservation of the Greenbelt and Natural Heritage

The provision of future development within existing settlements was assessed as positive on all of the environmental receptors with the exception of air quality and climate which were assessed as neutral, as under this alternative there would not be a direct contribution to the reduction in greenhouse gas emissions. While the greenbelt and natural heritage would be protected this alternative does not link with future development of public transport corridors/ nodes and therefore the potential to reduce private vehicle usage is reduced.

There is a diversity of sensitive habitats within Fingal from the designated European sites, high amenity areas, sensitive landscapes and Special Amenity Area Orders (SAAO) located along the coastline to the inland high amenity areas and sensitive landscapes located along the Liffey Valley and in proximity to the Bog of the Ring. The focus on development within existing settlements would lead to a reduction in urban sprawl having positive long term benefits but there is the potential for negative impacts on biodiversity, flora and fauna, water, cultural heritage and landscape depending on the location of the development.

Under this scenario, the assessment highlighted that there could be localised issues in relation to impacts on bats, hedgerow removal, discharges to water, uncovering of unknown archaeology and overshadowing from development within existing settlements.

There could be negative impacts on biodiversity, flora and fauna and water as development is not aligned with water and wastewater services and could occur in areas that have insufficient treatment capacities.

3.3.2.4 Summary of Environmental Evaluation of Alternatives 1-3

Table 3.2 provides a summary of the environmental evaluation of the 3 no. alternatives. It highlights that alternatives 1, 2 and 3 have for the majority a number of positive plan a combination of key elements of all three alternatives has been used for the preferred alternative.

Alternatives	BFF	P	HH	SL	W	A	CF	CH	MA	L
Alternative 1	+/-	+	+	+/-	+/-	+	+	+/-	+	+/-
Alternative 2	+/-	+	+	0/-	+	0/-	0/-	0/-	+	0
Alternative 3	+/-	+	+	+	+/-	0	0	+/-	+	+/-

Table 3.2 Summary of Environmental Evaluation
(Extract from SEA Statement for Fingal Development Plan 2017-2023)

3.3.2.5 Preferred Alternative - Fingal Development Plan 2017-2023

The Development Plan is underpinned by the principles of sustainable development, climate change adaptation, social inclusion and high quality design.

The objective of choosing a preferred alternative is to maximise the investment in existing and planned infrastructure within the limited land resources; by better integrating land-use, transportation and water services having regard to the core issues of climate change and proper planning and sustainable development.

The preferred alternative of the extant Development Plan is summarised in the SEA Statement follows:

Consolidation of development within existing settlements, to preserve the greenbelt, favouring high density expansion in areas nearest to existing and or planned public transport corridors/nodes and in areas nearest to available/planned improvements to water services infrastructure capacity.

3.3.2.6 Proposed Development Site

The spatial settlement pattern in Fingal is governed by the National Planning Framework and the Eastern and Midlands Regional Spatial Economic Strategy. These higher order plans mandate;

- the application of the principle of compact growth
- 40% of housing development to be within and close to the existing 'footprint' of built-up areas.
- A target of half (50%) of future population and employment growth will be focused in the existing five cities and their suburbs.

Howth is in the Dublin City and Suburbs area. Land supply is limited due to the extensive environmental designations that apply to the peninsula. 16 hectares is identified as suitable for development in the Fingal Development Plan.

In addition to the assessment of policies, objective and land use zoning in the SEA, there is a requirement under the EU Habitats to assess whether the Fingal Development Plan, individually or in combination with other plans or projects, is likely to have significant effect on a European Site, which includes Special Protection Areas (SPAs) and Special Areas of Conservation (SACs), in view of the site's conservation objectives.

The Natura Impact Report took a precautionary approach and assessed the impacts that would be anticipated from the plan providing the necessary inclusion of mitigation measures and guiding principles at the strategic level of the plan. The policies and objectives within the plan

were devised, as part of an iterative approach, to anticipate and avoid as appropriate measures that would likely have a significant adverse effect upon the integrity of the European Sites. Where such measures might be permitted, on foot of provisions of the plan, they shall be required to conform to the mitigation measures contained in the Natura Impact Report (as transposed into the Fingal Development Plan) and to the relevant regulatory provisions aimed at preventing pollution or other environmental effects likely to adversely affect the integrity of European Sites. Based on the Natura Impact Report, and with reference to the scope of the plan, Fingal County Council determined that the Fingal Development Plan 2017-2023 is compliant with the requirements of Article 6 of the EU Habitats Directive as transposed into Irish law.

The preferred alternative identified in the plan making process is as environmentally proofed as possible i.e. not in conflict with other environmental protection objectives such as those established under the Water Framework or Flood Risk Directives.

The proposed residential development is wholly confined to the area zoned 'RA' in the extant Fingal Development Plan and it satisfies the key positive environmental characteristics of the preferred alternative;

- Maximising the use of investment in existing and planned transport, water services and social infrastructure.
- Focussing high density development in an established settlement on a transport corridors
- Is confirmed by Irish Water as having available capacity in water services.
- Protects sensitive areas through infill development.
- Consolidates the urban area of Howth thereby reducing urban sprawl and the inefficiencies associated with dispersed settlement patterns.

An assessment of the Residential Area land-use zoning policy with respect to the subject site, against the range of environmental parameters considered in the SEA for the Fingal Development Plan has been undertaken and the results are summarised below.

Aspect	Quality of Effect	Notes
Population & Human Health	Positive	Delivery of homes at a location that is proximate to amenities & services.
Landscape & Visual	Positive	Subject to sensitive design response.
Biodiversity, Flora & Fauna	Neutral	The land zoned residential is of low ecological value.
Climate	Positive	Promotes a modal shift to public transport & active travel modes (cycling & walking)
Air (Air Quality)	Positive	Reduction in car usage brought about by proximity to public transport would have a positive effect on local air quality.
Land & Soils	Neutral	Change in landuse and loss of soils is limited in Howth owing to the extensive environmental designations of the peninsula that limit development in the area.
Water	Neutral	Capacity exists in the municipal drainage and water supply systems to accommodate development.
Material Assets (Transport)	Positive	Proximity to public transport, amenities and services would promotes a modal shift to public transport & active travel modes (cycling & walking)
Cultural Heritage: Archaeology	Likely Neutral	No known archaeological features present on the site.
Cultural Heritage: Built Heritage	Likely Neutral	Site is part of Howth Castle demesne and there are protected structures and an ACA proximate to the zoned area. Subject to sensitive design response.

Table 3.3 Summary of Impacts of Landuse Zoning

The development of the site has been determined to be acceptable in principle with regard to the environmental matters considered in the SEA. The site and proposed development present an opportunity to deliver a substantial quantum of housing in the form of the sustainable urban expansion and consolidation of Dublin City and Suburbs and thereby contribute in a sustainable manner to meeting strategic planning objectives at a local and regional level.

It is noted that prior to the acquisition, the site's ability to satisfy environmental criteria was considered by the Applicant and it was found to offer the following attributes;

- The application area offered the opportunity to bring a greenfield infill site in close proximity to Howth into productive use, thus promoting the principles of compact growth.
- The site's location within walking distance of public transport modes would promote a modal shift from the private car to more sustainable forms of transport. This in turn would assist with achieving overarching environmental objectives such as improved air quality (CO_2, NO_2 and particulate emissions).
- The site is not within a European Designated Site.

- The site is not located within an area identified as susceptible to flooding.
- The site does not contain Protected Structures

The Applicant recognised that development of the site would achieve the principle of a compact growth which is a sustainable urban form. It will allow people to live close to their daily living needs and contribute to reducing urban sprawl as well as enhancing quality of life. It will reduce the need for car based travel and in doing so contribute to a critical mass which is needed to realise the full potential of sustainable transport modes while reducing greenhouse gas emissions.

3.3.3 Alternative Uses -Residential Area

Howth is identified as a Consolidation Area within the Metropolitan Area. The policy approach is to gain maximum benefit from existing transport, social, and community infrastructure through the continued consolidation of the city and its suburbs. Future development should happen in a planned and efficient manner utilising opportunities to achieve increased densities where appropriate.

The Fingal Development Plan 2017-2023 establishes the overall guiding principles for development of the application area.

The proposed development site has dual zoning, Residential Area 'RA' and High Amenity 'HA'.

The bulk of the application area is RA and the zoning objective is to;
Provide for new residential communities subject to the provision of the necessary social and physical infrastructure.

This objective is supported by a vision to;
Ensure the provision of high quality new residential environments with good layout and design, with adequate public transport and cycle links and within walking distance of community facilities. Provide an appropriate mix of house sizes, types and tenures in order to meet household needs and to promote balanced communities.

The permissible in principle use classes for 'RA' zoned lands is as follows.

Permitted in Principle		
Amusement Arcade[9]	Bed and Breakfast	Betting Office[9]
Childcare Facilities	Community Facility	Education
Funeral Home/Mortuary[9]	Guest House	Health Centre
Health Practitioner	Hospital	Office Ancillary to Permitted Use
Office ≤ 100sqm[9]	Office > 100sqm and < 1,000sqm[11]	Open Space
Place of Worship	Public House[9]	Public Transport Station
Recreational Facility/Sports Club	Residential	Residential Care Home/ Retirement Home
Restaurant/Café[9]	Retail - Local < 150 sqm nfa	Retail - Convenience ≤ 500 sqm nfa[9]
Retail - Comparison ≤ 500 sqm nfa[9]	Retail - Supermarket ≤ 2,500 sqm nfa[9]	Retirement Village
Sheltered Accommodation	Sustainable Energy Installation	Taxi Office
Traveller Community Accommodation	Utility Installations	Veterinary Clinic

Figure 3.1 Residential Area - Permitted in Principle Uses

In principle, an application for any one or a combination of the uses listed above could be progressed on the site subject to compliance with other policies and objectives in the Development Plan.

Having regard to the site's Residential Area zoning designation the reasonable alternative scenarios for development of the proposed development site are;

i. A residential led mixed use scheme incorporating some permitted in principle uses ; or,
ii. A residential development.

3.3.3.1 Mixed Use Scheme

Consideration was given to developing a residential led mixed use scheme on the proposed development site. This approach would integrate a quantum of services and amenities to support daily living needs such as a local shop, floor space for health practitioners and offices, childcare, etc.

A **Social Infrastructure Audit** (included under separate cover) was undertaken at the early stage of the project to ascertain the amenities and services available locally. It concluded that Howth is well served by high quality public transport together with services and amenities. However, the wealth of amenities available means that vast areas of the peninsula are sterilised from development, in order to protect the environment. While there is an abundance of open space in Howth, a deficit in open space to support active play areas was identified.

The **Childcare Demand Report** (included under separate cover) established that there is adequate capacity available locally.

A review of other planned developments in Howth was also completed and it identified that the permitted mixed use Claremont scheme (TA06F.306102) includes 512 no. residential units, creche (236 sqm), 4 no. commercial units with 2,637 sqm gross floor area, including 1,705 sqm retail anchor unit, restaurant (243 sqm), café (86 sqm) and a retail unit of 603 sqm. The non-

residential uses are included to complement and enhance the existing mix of uses in the town centre. A civic space and parkland area with multi-age play facilities is also included.

The following Table outlines the anticipated environmental effects of progressing a mixed use scheme on the proposed development site.

Aspect	Quality & Significance of Effect	Notes
Population & Human Health	Positive and Significant	Delivery of homes at a location that is proximate to amenities & services.
	Positive and Slight	Increased employment opportunities.
	Neutral and Not Significant	Having regard to the existing provision of services and amenities locally, together with the permitted mixed use development, Claremont, opposite the proposed development site, the inclusion of a commercial floor space is not deemed essential at this location.
Biodiversity	Positive and Moderate	A mixed use development would necessitate the inclusion of open space and having regard to policies in the Development Plan biodiversity enhancement measures would be included.
	Neutral and Slight	Development of the site for mixed uses would require stripping the existing meadow area that is assessed as being of little floristic note and of local importance.
Climate	Positive and Very Significant	Introducing homes and commercial uses at this location would support a modal shift owing to the site's excellent accessibility to the town centre and public transport.
Air Quality	Positive and Significant	Reduction in car usage would have a positive effect on local air quality.
Water	Neutral and Not Significant	Irish Water have confirmed capacity for the preferred alternative, a residential scheme. It is anticipated that a similar response would have issued for a mixed use scheme.

Aspect	Quality & Significance of Effect	Notes
Land & Soils	Neutral and Not Significant	A mixed use development would require a change in land use. This change is deemed acceptable in principle having regard to the site's zoning designation 'RA' and the SEA prepared that assessed the environmental effects of the Development Plan. To facilitate a mixed use development, removal of soils would be required. Having regard to the extensive areas protected in the peninsula, the loss of soils and subsoils is not deemed significant.
Traffic & Transport	Positive and Significant	Capacity issues at Sutton Cross are existing and is beyond the scope of any individual application. Mixed use development at this location would promote a modal shift and the general impact on traffic would be positive.
Cultural Heritage - Archaeology	Indeterminable	The baseline archaeological environment does not appear to be significant. However, owing to the cultural heritage present in the immediate environs previously unidentified sub surface archaeology may be encountered at the construction phase. Appropriate mitigation would be applied.
Cultural Heritage – Built Heritage	Positive and Significant	The development site is enclosed along its norther boundary by the demesne wall. It is anticipated that a mixed use development would require access at this location. When carried out in a sensitive manner, this would afford the opportunity to rehabilitate the wall which is in decline.
	Neutral and Not Significant	In terms of the design of a mixed use scheme, to achieve the principles of compact growth while also achieving quantitative and qualitative development management criteria, it is anticipated that a mixed use scheme would incorporate increased height. There are extensive policies in the Development Plan that require a sensitive approach to design having regard to the built heritage environment and their setting.

Aspect	Quality & Significance of Effect	Notes
Landscape & Visual	Neutral/Positive and Moderate	The carrying capacity of the site to accommodate development is confirmed at a strategic level by its zoning designation. The Building Height Guidelines require development proposals to increase density at appropriate locations subject to meeting performance based critieria, including visual impact. Development of the site will introduce a change to the existing landscape and the degree of visual impact would be dependent on the quality of design. This is safeguarded through development management policies. Development of the site at a scale that complements the Claremont scheme would deliver a 'gateway' to Howth resulting in a unified landscape and built form

Table 3.4 Anticipated Environmental Effects of a Mixed Use Scheme

3.3.3.2 Residential Scheme

The population of the Howth Electoral Division (ED) in 2016 was 8,294. The intercensal population increase was 0.46%. This increase is negligible when compared with the population increase of Fingal between 2011 and 2016, which was 8%.

The total Residential Capacity provided under Fingal Development Plan 2017 – 2023, updated as of September 2019 is 14 hectares with a potential to deliver 426 units. In the period 2011 to 2017, the land supply for Howth was 16 hectares demonstrating that the conversion of zoned land to residential dwellings has been slow-moving.

Having regard to the above, a reasonable alternative is a residential scheme. The following Table outlines the anticipated environmental effects of progressing a residential scheme on the proposed development site.

Aspect	Quality & Significance of Effect	Notes
Population & Human Health	Positive and Very Significant	Delivery of a significant quantum homes at a location that is proximate to amenities & services.
Biodiversity	Positive and Moderate	A residential development would necessitate the inclusion of open space and having regard to policies in the Development Plan biodiversity enhancement measures would be included.
	Neutral and Slight	Development of the site new homes would require stripping the existing meadow area that is assessed as being of little floristic note and of local importance.
Climate	Positive and Very Significant	Introducing homes at this location would support a modal shift owing to the site's excellent accessibility to the town centre and public transport.
Air Quality	Positive and Very Significant	Reduction in car usage brought about by proximity to public transport would have a positive effect on local air quality.
Water	Neutral and Not Significant	Irish Water have confirmed that capacity exists for a residential scheme.
Land & Soils	Neutral and Not Significant	A residential development would require a change in land use. This change is deemed acceptable in principle having regard to the site's zoning designation 'RA' and the SEA prepared that assessed the environmental effects of the Development Plan. To facilitate a residential development, removal of soils would be required. Having regard to the extensive areas protected in the peninsula, the loss of soils and subsoils is not deemed significant.
Traffic & Transport	Positive and Significant	Capacity issues at Sutton Cross are existing and is beyond the scope of any individual application. Residential development at this location would promote a modal shift and the general impact on traffic would be positive.

Aspect	Quality & Significance of Effect	Notes
Cultural Heritage: Archaeology	Indeterminable	The baseline archaeological environment does not appear to be significant. However, owing to the cultural heritage present in the immediate environs previously unidentified sub surface archaeology may be encountered at the construction phase. Appropriate mitigation would be applied.
Cultural Heritage: Built Heritage	Positive and Significant	The development site is enclosed along its northern boundary by the demesne wall. residential development would require access at this location. When carried out in a sensitive manner, this would afford the opportunity to rehabilitate the wall which is in decline.
	Neutral and Not Significant	In terms of the design of a residential scheme, to achieve the principles of compact growth while also achieving quantitative and qualitative development management criteria, it is anticipated that a residential scheme would incorporate increased height. There are extensive policies in the Development Plan that require a sensitive approach to design having regard to the built heritage environment and their setting.
Landscape & Visual	Neutral/Positive and Moderate	The carrying capacity of the site to accommodate development is confirmed at a strategic level by its zoning designation. The Building Height Guidelines require development proposals to increase density at appropriate locations subject to meeting performance based critieria, including visual impact. Residential development of the site would introduce a change to the existing landscape and the degree of visual impact would be dependent on the quality of design. This is safeguarded through development management policies. Development of the site at a scale that complements the Claremont scheme would deliver a 'gateway' to Howth resulting in a unified landscape and built form

Table 3.5 Anticipated Environmental Effects of a Residential Scheme

3.3.3.3 Preferred Use of Residential Zoned Land

It is noted that the anticipated environmental effects of either alternative, mixed use or residential, would be similar and no likely significant adverse effects are anticipated subject to the implementation of standard proven construction measures, high quality design and adherence to development management standards. Thus, the environmental effects of delivering either of the 2 no. alternatives are largely similar and either scenario is justifiable.

However, the primary difference between the 2 no. scenarios is that a residential scheme would deliver a greater quantity of much needed homes. When this is compared with a mixed use development, with a lower residential yield, and in the context of the historically low conversion of zoned lands in Howth to residential development, the effect on population would be negative.

Accordingly, it was concluded that use of the site for residential development is the optimum use of the proposed development site having regard to the outcome for population i.e. delivery of housing.

3.3.4 Alternative Design - Density

As noted in the section above there is 14 hectares of zoned lands available in Howth with a potential to deliver 426 units. This equates to 31 units per hectare gross.

The 2009 Guidelines for Planning Authorities on Sustainable Residential Development in Urban Areas states that there is no upper limit on the number of dwellings that could be provided in town centres subject to other normal planning criteria. Section 5.8 states that densities of less than 50 dwelling per hectare net on public transport corridors should be discouraged. Section 5.11 of the guidance states that development at net densities of less than 30 dwellings per hectare is generally discouraged in the interests of land efficiency, particularly on sites in excess of 0.5 hectares.

The National Planning Framework published in 2018 includes the following Objectives that effect density alternatives;

- 3a - 40% of new homes would be within the existing built up areas of settlements, while
- 3b - 50% of new homes in cities would be within their existing footprints as defined in
- 10a - sets a minimum population target for Dublin of 1,408,000 in 2040 compared to the figure of 1,173,000 recorded in 2016.
- 11 - favours development that can encourage more people to live or work in existing settlements.
- 35 supports increased residential density in settlements by various means including infill development.

The 2018 (updated 2020) Guidelines for Planning Authorities on Urban Development and Building Heights includes SPPR 1, which favours increased density in locations with good public transport accessibility.

Locally, the Claremont scheme, to the north of Howth Road, opposite the proposed development site, received permission for a net density of 191 dwellings per hectare.

Having regard to the information presented above, there are 2 no. reasonable alternatives with respect to density;

i. Low density development as advocated by the Fingal Development Plan
ii. High density development as advocated by National Planning Policy and Guidelines and supported in the recent pattern of development locally i.e. Claremont.

3.3.4.1 Low Density Alternative

The proposed development site includes 1.16 hectares of land zoned residential, applying the Fingal Development Plan 31 units per hectare gross, the residential yield from this site would be 36 dwellings.

The environmental effect of this approach to density at the proposed development site would be a slight positive for population in terms of the provision of new homes in Howth. However, the application of this low density would have an indirect effect of contributing to a sprawled development pattern which induces higher car dependency and longer commuting distances with associated higher greenhouse gas emissions and more air pollution. The effect of urban sprawl is negative and very significant in terms of air quality and climate.

Applying a low density approach to this site would likely deliver low-medium scaled buildings and the effect on the landscape would be consistent with the existing pattern of development locally. The effect would thus be likely neutral and not significant on the historical context, landscape and visual amenity of the wider area.

However, in the context of the emerging pattern of development i.e. the permitted Claremont scheme opposite the proposed development site, the opportunity to create a defined edge at this location, a gateway to the town centre, would be undermined and the effect would be negative with a slight-moderate significance.

3.3.4.2 High Density Alternative

The proposed development is for 162 no. dwellings on a net developable area of 1.16 hectares. The density is 139 units per hectare. This is consistent with the density (191 uph) permitted on the former Techrete site, to the north of the proposed development site.

The environmental effects of this approach to density is that it would deliver 126 no. additional new homes when compared to the low density alternative. This is a very significant positive for the population of Howth and the wider Dublin City and Suburbs.

Clustering new homes close to the town centre that offers all the services and amenities necessary for daily living needs would reduce dependence on private vehicle usage with a consequent significant positive effect on human health, air quality and climate. This positive effect is further enhanced due to the site's proximity to public transport offering commuters a viable alternative to the car.

To achieve high density development on this site, it would be necessary to provide increased building height. Having regard to the scale of the Claremont development which incorporates buildings of up to 8 storeys, an increase in building height at this location is consistent with the emerging pattern of development. High quality design is a mandatory requirement of the development management process and this would safeguard the landscape and local visual amenity from adverse effects. Increased height at this location would contribute to the delivery of a defined urban edge to Howth and this would be a significant positive effect in terms of urban design.

3.3.4.3 Density Preferred Alternative

A low density approach to development of this site would be unsustainable and contrary to national policy to develop infill sites with excellent access to high quality and high frequency public transport at a low density. This alternative would have very significant negative environmental effects.

In contrast, a high density approach offers the opportunity to realise significant environmental benefits and accordingly this alternative was selected for the proposed development site.

3.3.5 Alternative Design - Height

The National Planning Framework includes Objective 13, where in urban areas, planning and related standards including those on building height will be based on performance criteria.

The 2018 Guidelines for Planning Authorities on Urban Development and Building Heights supports increased building height and density in locations with good public transport accessibility (SPPR1). The proposed development site is close to a town centre and public transport facilities and meets the criteria for increased building height.

Section 2.3 of the Guidelines states that higher density does not necessarily require taller buildings, but increased height is a significant component in making optimal use of the capacity of sites in urban locations. Section 3.2 sets out development management criteria at the scale of the city/town, district/neighbourhood/street and the site/building. SPPR 4 requires planning authorities in planning the future development of greenfield or edge of city/town locations for housing purposes, to secure a greater mix of building heights and typologies in planning for the future development of suburban locations.

The Guidelines acknowledge that historic environments can be sensitive to increased building height. In such cases it is necessary to consider the carrying capacity of the proposed development site having regard to the existing historic character and setting.

The reasonable alternatives with respect to the approach to height are;

i. Low rise – consistent with existing dwellings to the west of the site
ii. Medium Rise – consistent with national planning policy and guidelines and the permitted Claremont scheme, up to 8-storeys.

3.3.5.1 Low Rise

Reduced height of 2-4 storeys on the proposed development site would be consistent with the existing ribbon development that stretches west toward Sutton. Under this alternative, a reduced quantity of new homes would be delivered and the effect on population would be significantly negative.

To increase the number of homes at this lower scale of development would necessitate a higher site coverage. This would in turn erode the area available for the delivery of open space and the effect on the health of future occupants of the scheme would be compromised and the effect would be significant and negative.

Lower building heights would likely safeguard the amenities of dwellings that adjoin the site to the west and the effect on occupants would be neutral and not significant.

The magnitude of change to the landscape and visual amenity would be neutral and slight to moderate.

3.3.5.2 Medium Rise

By applying increased building height, a high number of new homes could be delivered and the effect is very significantly positive. The site coverage is reduced and a high quality and diverse landscape can be achieved resulting in positive effects for the health and well being of the future population.

Setting aside national policy for compact growth, the ability of the receiving environment to accommodate increased height was considered. The baseline environment is characterised by variety in building typology and scale, including:

- Two storey detached and semi-detached houses west of the site along the Howth Road;
- Historic buildings/protected structures of large scale (i.t.o. massing, e.g. the castle, and height, e.g. St Mary's steeple), together covered by ACA designation along with the surrounding woodland;
- Late 20th and early 21st century apartment buildings of up to four storeys west of the site, e.g. Howth Lodge, Corr Castle, Offington Manor, and east of the site in the town centre, e.g. the Findlater apartments;
- Large footprint industrial/ warehouse-type buildings, on the Techrete site (to be demolished) and along the west pier of the harbour;
- High density residential buildings of contemporary, urban architecture, up to 8 storeys on the Techrete/Claremont site opposite the proposed development site.

While the site's immediate context is currently characterised by low density residential and industrial typologies, this will change with the construction of Claremont. The proximity of the Protected Structures, Howth Castle and St. Mary's Church (although buffered from the site by broad belts of woodland) adds sensitivity. Given this mix of building typologies, scale, built heritage and architecture, the landscape/townscape character is considered to be of medium sensitivity to increased height.

Introducing urban scale height would contribute (together with Claremont) to the ongoing shift in character at the western edge of the town centre, (a) forming a corridor of contemporary urban buildings as the Howth Road enters/exists the town centre, and (b) through its contrast with the houses to the west, strengthening the urban edge, improving the coherence and legibility of the landscape/townscape and bringing about a positive effect.

Considered in isolation, increased height may be deemed to negatively affect the nearest houses to the west. However, considered at the wider scale, in the context of the Howth urban area, the introduction of modest height is not inappropriate, being located on the final approach to the town centre, being complementary to the Claremont development, and subject to buildings being of high design and material quality, and – due to the contrast with the houses – establishing a strong urban edge in compliance with the principles of good urban design.

The two protected structures, Howth Castle and St Mary's Church, form the core of an ACA that also includes their surrounding woodlands, which buffer the proposed development site and their immediate setting from the site. There is no direct visual relationship between the site and the core features of the ACA, despite the two areas being adjacent. However, visitors to the historic buildings and the wider area arrival and departure. Development on the site thus has potential to indirectly affect the setting of the buildings. Owing to the dense mature woodland that surrounds these features, the zone of visual influence is limited to the castle/demesne

entrance, and from the edge of the ACA along the golf course to the south. Height would be prominent when approaching or departing the castle grounds or the church along the Howth Road. These indirect changes to the wider setting would amount to a low magnitude of change on the castle and St Mary's, with no reduction in the landscape and visual amenity experienced when visiting the historic buildings. The significance of the effect would be slight and neutral.

The upper slopes of Howth Head, to the south of the proposed development site, are a highly valued recreation and tourism resource and form part of the Howth SAAO. The elevation of this area affords panoramic views of Howth and Sutton urban areas, the wider city (including the city centre, the airport, etc.) and the seascape. The potentially most affected view is from Muck Rock 1km directly to the south of the site.

Plate 3-1 Effect of Increased Height when viewed from upper slopes to the south

When seen from this location and in combination with the permitted Claremont development, increased height would amount to a low magnitude of change. The buildings would take their place in the existing built up strip along the coastline leading into the town centre, well removed from Howth Castle. In the vast and diverse panorama, the effect of increased height (on Muck Rock and the other Howth Head Peaks and the wider SAAO) would be slight and neutral.

Overall, the effect of increasing height at this location on the local landscape character and visual amenity and setting of Howth Castle would be appropriate for the following reasons;

a) in the context of the significant screening afforded to the site when viewed from within the ACA - this natural attribute mitigates the effect of increased height and the effect would be neutral and not significant.

b) the emerging pattern of development locally, specifically Claremont, which introduces height of up to 8-storeys that will change the landscape and visual context of this location.
c) The existing low rise residential development to the west of the proposed development site along the Howth Road (as well as sporadically located apartment developments of four storeys within this area), is not an area of valued character. The site context is equally characterised/defined by the Techrete/Claremont development and increased height would act in concert with Claremont to define a new, unique and identifiable corridor of contemporary urban character on the final approach/entry into the town centre.

The introduction of modest height, ranging from 5-6 storeys, would complement the evolving pattern of land use in the area, filling a gap in the otherwise continuous strip of development along the Howth Road, and contributing (in combination with the Claremont scheme) to the establishment of an appreciable edge between the town centre and the suburban area to the west. The significance of the effect would be slight and having regard to the trend of change in the area, the effect of increased height at this location on landscape/townscape character would be positive.

The effect of the building heights (5-6 storeys) on the amenities of the adjacent dwellings to the west of the proposed development site has been assessed by 3D Design Bureau and their report is included under separate cover with the application. The analysis included an assessment of the;

- Effect on daylight (Vertical Sky Component (VSC)) to surrounding properties;
- Effect on sunlight (Annual Probable Sunlight Hours (APSH)) to surrounding properties; and,
- Effect on sunlight to surrounding external amenity spaces

The surrounding context was carefully considered to ensure all properties and amenity spaces that may potentially experience a level of effect were included in the study. The assessment also included the permitted Claremont scheme to identify any cumulative effects. The results demonstrate that all windows that were assessed would experience an imperceptible level of effect to their VSC, Annual APSH and Winter ASPH. The proposed development would also have an Imperceptible effect on the level of daylight and sunlight received by the gardens of the neighbouring properties. The assessed windows and gardens comply with the recommendation outlined in the BRE Guidelines. Therefore, it can be concluded that the effect of the proposed increased height on the amenities of neighbouring properties is neutral and imperceptible.

3.3.6 Alternative Layout

3.3.6.1 Block Layout

Following the initial concept design, a layout was developed and the locations of Block A-C are illustrated by the dashed red line in the Figure below. The impact of Block A (most easterly building) was identified as potentially giving rise to a significant negative effect on the entrance to Howth Castle, which is included in the ACA.

An alternative design of Block A was proposed and the amended footprint is illustrated in the Figure below. This layout increased the distance between Block A and the entrance to Howth Castle, approx. 16m set back, and to the castle gates, approx. 45m set back. This alternative design avoids any sense of excessive enclosure, or crowding of the historic setting (the boundary wall, the gate or the woodland). To further mitigate any likely significant effect, tree planting inside the eastern boundary was introduced to contribute further to the softening of the development's presence, despite its urban character and scale.

Figure 3.2 Alternative Block Locations

Figure 3.3 Alternative Block A Design

3.3.6.2 Block A - Height and Scale

A key environmental consideration with respect to considering the height and scale for Block A relates to its location to the west of the proposed development site adjacent to existing low rise development and likely effects on existing residential amenities.

During the design development, 2 no. alternative approaches were considered;

i. A 4 storey building stepping up to 5 storeys to the rear (south) of the site
ii. A 5 storey building stepping up to 6 storeys to the rear (south) of the site

To understand the impact of the above alternatives on the residential amenities of properties to the west of Block A, an assessment to compare the Vertical Sky Component (VSC) and Annual Probable Sunlight Hours (APSH) was undertaken. The report prepared is included in **Appendix 3.1**, see Volume III of this EIAR.

The following is a summary of this comparative study:

Tig Bhríde & Windwood VSC

Whilst a 4-5 storey Block A would decrease the level of impact to the daylight received by assessed windows, this reduction would not be significant when compared to a 5-6 storey building. Alternative II meets the BRE guidelines for impact to VSC on these windows, and the insignificant improvement that the reduction in height of Block A would bring, would be imperceptible. It may thus be concluded that the reduction to Block A is not necessary from a daylight point of view.

Kincora Lodge & Baltray VSC

Whilst a 4-5 storey Block A would decrease the level of impact to the daylight received by assessed windows, this reduction would not be significant when compared to a 5-6 storey building. Alternative II meets the BRE guidelines for impact to VSC on these windows, and the insignificant improvement that the reduction in height of Block A would bring, would be imperceptible. It may thus be concluded that the reduction to Block A is not necessary from a daylight point of view.

Tig Bhríde APSH

Whilst a 4-5 storey Block A would decrease the level of impact to the sunlight received by the assessed windows, this reduction would not be significant when compared to a 5-6 storey building. Alternative II meets the BRE guidelines for impact to APSH on these windows, and the insignificant improvement that the reduction of Block A would bring, would be imperceptible. It may thus be concluded that the reduction to Block A is not necessary from a sunlight point of view.

Baltray APSH

Whilst a 4-5 storey Block A would decrease the level of impact to the sunlight received by the assessed windows, this reduction would not be significant when compared to a 5-6 storey building. Alternative II meets the BRE guidelines for impact to APSH on these windows, and the insignificant improvement that the reduction of Block A would bring, would be imperceptible. It may thus be concluded that the reduction to Block A is not necessary from a sunlight point of view.

With respect to sunlight to garden spaces associated with the adjacent dwellings, the **Daylight and Sunlight Assessment Report** prepared by 3D Design Bureau and submitted under separate cover demonstrates that with a 5-6 storey approach to Block A, all gardens would meet and significantly exceed the BRE Guideline which recommends that for a garden to appear adequately sunlit throughout the year, at least half of it should receive at least two hours of sunlight on March 21st.

Address	% of Area to Receive Above 2 Hours Sunlight on March 21st (Target >50%)				Level of Compliance with BRE Guidelines	Effect of Proposed Development**
	Baseline	Proposed	Ratio of Proposed to Baseline	Recommended minimum		
Tig Bhride	98.5%	98.0%	1.00	50.0%	BRE Compliant	Imperceptible
Windwood	98.6%	96.8%	0.98	50.0%	BRE Compliant	Imperceptible
Kincora Lodge	98.1%	97.0%	0.99	50.0%	BRE Compliant	Imperceptible
Baltray	95.9%	95.2%	0.99	50.0%	BRE Compliant	Imperceptible

Table 3.6 Sunlight to Gardens of Existing Dwellings to the West (Extract from 3DDB Report)

Overall, the assessments undertaken demonstrate that the effect on the amenities of dwellings to the east with a 5-6 storey building at this location is neutral and imperceptible. This alternative would result in an increased number of new homes being delivered on the proposed development site with a consequent positive effect for population. Accordingly, having regard to the significant positive benefit that could be achieved and the fact that the amenities of existing dwellings would be safeguarded, a 5-6 storey building at this location was deemed appropriate.

With respect to visual impact, 2 no. alternatives were considered;

i. A stepping down of building height in response to the low rise existing dwellings to the west
ii. Maintaining uniformity in building height across the proposed blocks.

Development of the site under either alternative would have a moderate effect i.e. locally there will be a noticeable visual change. It is considered that reducing the height of Block A to 4-storeys would when compared with a 5-6 storey building at this location be neutral in terms of the quality of effect.

In contrast, maintaining uniformity in building height has a positive visual effect bringing a new character to the area that complements the permitted Claremont development to the north.

Having regard to the positive visual and urban design effect that would emerge through creating a balanced urban edge (i.e. north and south of Howth Road) and gateway to Howth, maintaining uniformity in the building height across the proposed blocks was deemed appropriate and reasonable.

3.3.6.3 Vehicular Access

The proposed development site is enclosed on its northern boundary with Howth Road by the existing demesne wall.

The alternatives available to facilitate access to the site are;

i. Use the existing entrance to Howth Castle and Deer Park Golf Course
ii. Create a new entrance

The existing entrance to the demesne is off the Howth Road It is considered that intensifying the use of this entrance would have a significant negative effect on particularly on the protected gates that are set back from the public road in the avenue.

The alternative, to create a new entrance along the northern boundary would have a moderate effect on the demesne wall. There is precedence for interventions in the northern boundary wall to facilitate access as evidenced by the access to Tig Bhride, immediately west of the proposed development site. The wall is not protected and is not within the Howth Castle ACA, therefore direct impacts on protected built heritage do not arise. The wall was visually assessed by the project conservation architect and it was concluded that its integrity is undermined due to lack of maintenance and ivy growth. The works proposed to the wall offer an opportunity to restore the remainder of the wall and safeguard it into the future. This is a direct significant and positive effect for cultural heritage.

Having regard to the identified negative effect of using the existing demesne entrance for the proposed development and the very significant positive effect that could be achieved for the wider wall as part of the work to create an entrance on the northern boundary, creating a new entrance is the preferred alternative.

3.3.7 Alternative Processes

Within each design solution there can be several different options as to how the processes or activities of the project can be carried out. For this proposed development, alternative processes for energy supply were examined. 8 no. low and zero carbon renewable energy technologies were analysed and the assessment is set out in the Table below.

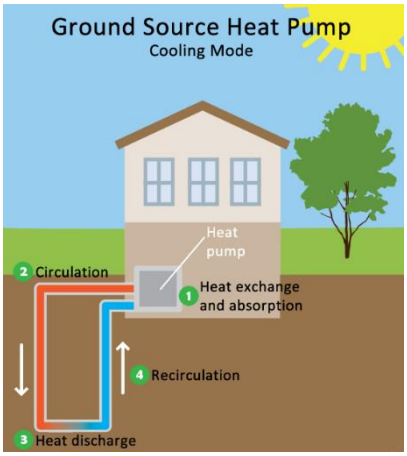
i. Wind Power
ii. Photovoltaic Cells (PV)
iii. Solar Thermal Collectors
iv. Biomass Heating
v. Ground Source Heat Pumps (GSHPs)
vi. Air Source Heat Pumps (ASHPs)
vii. Exhaust Air Heat Pumps (EAHPs)
viii. Combined Heat & Power (CHP)

Each of the renewable energy technologies examined is more advantageous than burning conventional fossil fuels to satisfy the scheme's energy demand.

The preferred technology for the proposed development, having regard to the site's characteristics, the need to balance other environmental criteria with the production of renewable energy and the profile of energy use associated with residential developments is heat pump technology.

Technology	Feasibility			Comments
	High	Medium	Low	
Micro Wind 			√	**Technology Description:** Micro wind turbines can be fitted to the roof of a building but would contribute a negligible amount of energy to the development. **Applicability to this Development:** Due to limited outputs and more viable solutions, this renewable energy technology was discounted. Vertical axis wind turbines may be suitable, but there would be visual and potential noise issues.
Wind Power 			√	**Technology Description:** Mast-mounted wind turbines can be located in an open area away from obstructions such as buildings and tall trees. **Applicability to this Development:** Due to the size of Applicant's overall landholding, the area required to facilitate these turbines, the proximity of existing residential buildings to the west of the site, the topographical profile of the land (rising to the south) and the extensive tree coverage it is deemed that a large wind turbine installation is not feasible and would give rise to visual impacts, potential noise issues and shadow flicker.
Solar Photovoltaic (roof mounted) 		√		**Technology Description:** Photovoltaic (PV) Cell technology involves the conversion of the sun's energy into electricity. PV panels can be discrete roof-mounted units or embedded in conventional windows, skylights, atrium glazing, façade cladding etc. **Applicability to this Development:** Residential developments can be suitable locations for the installation of PV depending on orientation roof pitch and over-shading while also being virtually maintenance free. PV would be positive net environmental impact. The reduced emissions from using solar PV versus any fossil fuel make the technology extremely beneficial. There is potential for glint and glare arising from PV. Further, solar PV may be perceived to cause negative visual effects particularly in areas of high landscape sensitivity such as the proposed development site. Solar PV is not included in the proposed development as the renewable energy objectives are being achieved with other technologies.

Technology	Feasibility			Comments
	High	Medium	Low	
Solar hot water systems 			√	**Technology Description:** Active solar hot water technology uses the sun's thermal radiation energy to heat fluid through a collector in an active process. **Applicability to this Development:** Due to energy losses within solar thermal systems, only a small proportion – around 35% – of the solar energy collected is utilised. Solar hot water systems require a back-up heating system, typically a gas boiler. For this reason as well as poor efficiency, the potential of solar thermal systems to contribute to a more sustainable domestic energy supply in the proposed development is limited.
Biomass Heating 			√	**Technology Description:** Biomass boilers work on the principle that the combustion of wood chip or pellets can create heat for space heating and hot water loads. They have an efficiency of around 80-90%, significantly higher than many conventional fossil fuel boilers. **Applicability to this Development:** Bioenergy can play an important part in a future energy system, but it must be done sustainably. To be sustainable, a biomass fuel should: 1. Save large amounts of greenhouse gas emissions when compared alongside fossil fuel alternatives. 2. Avoid negatively affecting land use, food security, water resources, biodiversity and livelihoods. Ireland has a limited availability of local biomass and this means that wood-fuels are being imported from international sources. The indirect environmental effect is increased risk of land use changes such as deforestation, thereby increasing GHG emissions. Concerns exist over the level of NOx and particulate emissions from biomass boiler installations and the effect on human health particularly in urban areas. This technology requires substantial floor space allowance for the unit and fuel storage. This conflicts with other design objectives such as retaining as much spaces as possible at ground level free of development for high quality landscaping and associated biodiversity enhancements.

Technology	Feasibility			Comments
	High	Medium	Low	
Ground source heat pump (GSHP) 			√	**Technology Description:** GSHP technologies exploit seasonal temperature differences between ground and air temperatures to provide heating in the winter and cooling in the summer. GSHP systems use some electricity to run the heat pump, but as most of the energy is taken from the ground, they produce less greenhouse gas than conventional heating systems. Heat pumps rely on electricity to operate, implying that it is difficult for them to be entirely carbon neutral. However, heat pumps in general have a high Coefficient of Performance (COP), which means they are more efficient as the outside air gets cooler. **Applicability to this Development:** Site restrictions would require the use of vertical boreholes as opposed to horizontal ground loops. GSHP is not being proposed for this site as the renewable energy objectives are being achieved with other technologies
Air source heat pump (ASHP) 	√			**Technology Description:** ASHP technologies exploit seasonal temperature differences between external air and refrigerant temperatures to provide heating in the winter and cooling in the summer. ASHP systems use more electricity to run the heat pump when compared to GSHP, but as most of the energy is taken from the air, they produce less greenhouse gas than conventional heating systems over the heating season. **Applicability to this Development:** Heat pumps are generally safer than the combustible based heating systems and have a relatively low carbon footprint. Heat pumps can deliver heat at low outside temperatures suitable to the Irish climate. **For this reason ASHP has been deemed suitable for the proposed development for the provision of space heating.**

Technology	Feasibility			Comments
	High	Medium	Low	
Exhaust Air source heat pump (EAHP) 	√			**Technology Description:** The exhaust air heat pump uses otherwise wasted heat in the warm air areas of your home (bathrooms, kitchen, utility..) and transfers that heat to hot water using the same principles as air source and ground source heat pumps. An Exhaust Air Heat Pump (EAHP) extracts heat from the exhaust air and transfers the heat to domestic hot water and/or hydronic heating system (underfloor heating or radiators).This type of heat pump requires a certain air exchange rate to maintain its output power. Since the inside air is approximately 20-22 degrees Celsius all year round, the maximum output power of the heat pump is not varying with the seasons and outdoor temperature **Applicability to this Development:** Exhaust Air Heat Pumps are best suited to apartments which will have low fabric heat losses such as these. The latest units with inverter controlled compressor also have a ducted outside air supply which means the unit can draw on outside air when extract rates are low but without the need for an external condenser unit. EAHP are proposed for the apartments in this development.
Combined Heat and Power (CHP) 	√			**Technology Description:** Combined heat and power (CHP), also known as co-generation, is the simultaneous generation of both useable heat and electrical power from the same source. A CHP unit comprises of an engine (referred to as the prime mover) in which fuel is combusted. The mechanical power produced by the engine is used to generate electricity using an integral electrical generator. The heat emitted from the engine (waste heat) is used to provide space heating and domestic hot water **Applicability to this Development:** CHP systems can be used in applications where there is a significant year-round demand for heating in addition to the electricity generated. However as there is limited heating demand during summer outside of the apartments, CHP is not proposed as the renewable energy objectives are being achieved with other technologies

Table 3.7 Alternative Processes for Energy Supply

3.3 Difficulties Encountered

There were no difficulties encountered in the preparation of this Chapter for the proposed development.

3.4 Conclusion

The multidisciplinary design and EIAR team placed respecting the existing environment and achieving environmental enhancements at the centre of the design development process, while remaining compliant with National Planning Policy specifically SPPR 4 of the *Urban Development and Building Heights Guidelines for Planning Authorities*

It is a specific planning policy requirement that in planning the future development of greenfield or edge of city/town locations for housing purposes, planning authorities must secure:

1. the minimum densities for such locations set out in the Guidelines issued by the Minister under Section 28 of the Planning and Development Act 2000 (as amended), titled "Sustainable Residential Development in Urban Areas (2007)" or any amending or replacement Guidelines;
2. a greater mix of building heights and typologies in planning for the future development of suburban locations; and
3. avoid mono-type building typologies (e.g. two storey or own-door houses only), particularly, but not exclusively so in any one development of 100 units or more

This approach is consistent with the requirements of the EIA Directive.

This chapter demonstrates that the proposed preferred alternative performs better than other alternatives considered during the design development process. Specifically in terms of the delivery of housing, whereby 162 no. new homes would be delivered, in comparison with 36 no. if the density of the Fingal Development Plan was applied. The effect of this increased density has been tested against the relevant environmental performance based criteria, that safeguard environmental factors. This EIAR together with other supporting reports included with the application demonstrate that the scheme provides a high degree of environmental protection.

The intensification of development under the preferred scenario ensures that maximum use is made of exiting infrastructure, public transport and municipal services and this is an inherently sustainable approach to development.

The height strategy is to increase height above the existing surrounding context. However, the permitted Claremont development will introduce a significant change to the local landscape and visual character. This is consistent with the principles of compact growth and subject to high quality design the effect can be positive.

CHAPTER 4
POPULATION AND HUMAN HEALTH

MAY 2021

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4 Population and Human Health

4.1 Introduction

This chapter was prepared by Paula Galvin of McCutcheon Halley Chartered Planning Consultants. Paula holds an MSc in Spatial Planning, a BA in Geography, a Diploma in Environmental Impact Assessment (EIA) Management and a Diploma in Planning and Environmental Law. She has practised as both a planning and environmental consultant for over 15 years and has directed the preparation of Environmental Impact Assessment Reports (EIARs) for a range of development types including residential, commercial, renewable energy and waste. Directly relevant experience to this proposed development that Paula has been involved in is the direction of EIARs and Environmental Reports to accompany residential led applications that received permission for development including:

- Bailey Gibson (PL29S.307221) - Demolition of all structures, construction of 416 no. residential units (4 no. houses, 412 no. apartments) and associated site works.
- Player Wills (TA29S.308917) - Demolition of all buildings excluding the original fabric of the former Player Wills Factory, construction of 492 no. Build to Rent apartments, 240 no. Build to Rent shared accommodation along, creche and associated site works.
- Connolly Quarter (PL29N.305676) - Demolition of 4 no. structures, construction 741 no. build to rent apartments, retail space and associated site works.
- Chesterfield, Cross Avenue (PL06D.302921) - Demolition of the non-original fabric of Chesterfield House (a protected structure) and derelict sheds. Construction of 214 apartments and 7 no. houses, residents amenity facility and all associated works.
- Hansfield SDZ (FW18A/1061) permission for development of 247 no. apartments at Zone 7, Hansfield SDZ, Hansfield, Dublin 15.

This chapter addresses potential impacts of the proposed development on population and human health. The likely impacts from the proposed development will be from traffic & transportation, air quality & climate, noise & vibration, landscape (or townscape) & visual, material assets: utilities and the risk of major accidents and/or disasters. These aspects are dealt with in detail in the specific chapters in this EIAR dedicated to those topics.

According to European Commission's *Environmental Impact Assessment of Projects: Guidance on the Preparation of the Environmental Impact Assessment Report* (2017), human health is;

"a very broad factor that would be highly project dependent. The notion of human health should be considered in the context of the other factors in Article 3(1) of the EIA Directive and thus environmentally related health issues (such as health effects caused by the release of toxic substances to the environment, health risks arising from major hazards associated with the Project, effects caused by changes in disease vectors caused by the Project, changes in living conditions, effects on vulnerable groups, exposure to traffic noise or air pollutants) are obvious aspects to study. In addition, these would concern the commissioning, operation, and decommissioning of a Project in relation to workers on the Project and surrounding population."

The Environmental Protection Agency (EPA) *Guidelines on the Information to be Contained in Environmental Impact Assessment Reports* - Draft (2017) advises that "*in an EIAR, the assessment of impacts on population and human health should refer to the assessments of those factors under which human health effects might occur, as addressed elsewhere in this EIAR e.g. under the environmental factors of air, water, soil etc.*"

4.2 Proposed Development

The full description of the proposed development is outlined in **Chapter 2 – Development Description**, of this Environmental Impact Assessment Report.

The design rationale is to create and deliver a high quality, sustainable, strategic housing development which respects its setting and maximises the site's natural attributes while achieving maximum efficiency of existing infrastructure. The Proposed Site Layout is illustrated on **Drawing No. 1101** contained within the architectural suite of drawings.

The development will consist of;

i. 162 no. residential units distributed across 3 no. blocks (A, B & C) ranging in height from 5-6 storeys, with a cumulative gross floor area (GFA) of 13,337.10 sq.m comprising;
    a. 29 no. 1-bedroom units, - 17.9%
    b. 104 no. 2-bedroom units and – 64.2%
    c. 29 no. 3-bedroom units – 17.9%
ii. 3 no. resident services and amenity rooms (1 no. in each block A-C) to accommodate co-working space, a community room and a meeting room (combined GFA 108 sq.m)
iii. 132 no. car parking spaces at basement level (underlying Blocks A & B) including 6 no. accessible spaces, 13 no. electric vehicle spaces and 4 no. car sharing spaces;
iv. 325 no. residents bicycle parking spaces (long-stay) at basement level, and 30 no. visitor bicycle parking spaces (short-stay) at surface level;
v. communal amenity space in the form of courtyards and roof gardens (combined 2,192 sq.m)
vi. public open space of 1,161 sq.m including a botanic garden and pocket park;
vii. a single storey ESB sub-station and switch room (45.5 sq.m);
viii. demolition of 2 no. sections of the existing demesne northern boundary wall to provide, a primary access (vehicular/pedestrian/cyclist) to the northwest and a separate pedestrian/cyclist access at the centre;
ix. restoration and refurbishment of the remaining extant northern and eastern demesne boundary wall;
x. change of use and regrading of part of the Deer Park Golf Course from active recreation use to passive amenity parkland and planting of a woodland belt on the southern boundary;
xi. undergrounding of existing ESB overhead lines, and, relocation of the existing gas main; and,

xii. all ancillary site development works including waste storage and plant rooms at basement level, drainage, landscaping/boundary treatment and lighting.

A full description of the proposed development is provided in **Chapter 2** of this EIAR.

4.3 Methodology

The application area and surrounds was visited in September 2020. The purpose of the site walkover and survey was to identify characteristics of the subject lands and surrounding area. Local consented planning applications, Ordnance Survey of Ireland (OSi) maps and aerial photography were also examined to assist in this process.

Publications and other data sources consulted included:

- National Planning Framework: Ireland 2040 – Our Plan (Government of Ireland, 2018)
- Implementation Roadmap for the National Planning Framework (2018)
- Eastern and Midlands Regional Spatial and Economic Strategy (2019-2031)
- Fingal County Development Plan 2017-2023
- Central Statistics Office (CSO) website www.cso.ie
- Department of Education and Sciences (DES) website www.education.ie
- GeoDirectory-GeoFindIT App
- Dublin Housing Observatory Mapping Viewer https://airomaps.geohive.ie/dho/
- Pobal website https://maps.pobal.ie/
- Health and Safety Authority website https://hsa.ie

Additionally, reports prepared by McCutcheon Halley Planning Consultants and included in this application under separate cover were consulted, these are detailed as follows:

- Planning Statement
- Childcare Demand Report
- Social Infrastructure Audit
- School Demand Assessment Report

Information was gathered with respect to the demographic and employment characteristics of the resident population within the relevant catchment area, sourced from the 2011 and 2016 Census data. The data collected included information on population, structure, age profile and household size, number of persons at work and the unemployment profile, and school provision.

This chapter has been prepared having regard to the following EIA guidelines.

- Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment (Department of Housing, Planning & Local Government, 2018)
- European Commission (2017) Environmental Impact Assessment of Projects: Guidance on the preparation of the Environmental Impact Assessment Report.

- Environmental Protection Agency (2017) Draft Guidelines on the Information to be Contained in Environmental Impact Assessment Reports.
- Environmental Protection Agency (2002) Guidelines on the Information to be Contained in Environmental Impact Statements.
- Environmental Protection Agency (2003) Advice Notes on Current Practice in the Preparation of Environmental Impact Statements.

The impact assessment section of this chapter follows the terminology (where applicable) used in the EPA Draft Guidelines (2017) as set out in **Chapter 1** of this EIAR.

4.4 Baseline Scenario

4.4.1 Application Area

The subject site lies within the Fingal County Council administrative area, see **Figure 4.1**. The site is located within Electoral District (ED) of Howth which comprises the entire Howth Peninsula area. The ED is an area measure for which census data is published and provides a detailed analysis of population and demographic statistics and trends.

Figure 4.1 Site Location & Context

The site is well screened by mature trees that line the avenue leading to the wider Demesne. A demesne wall associated with the Howth Castle Demesne encloses the site on its northern and eastern boundary. Protected Structures in proximity to the site are the Howth Castle gates and St. Mary's church to the east of the gates. The site is outside the Howth Castle Architectural Conservation Area (ACA).

The site is bounded by the Deer Park golf course to the south and the Howth Road (R108) to the north. To the east, the site is bounded by the entrance and internal access road that

provides access to Howth Castle, the golf course and St. Mary's Church, and to the west by existing low-rise detached houses.

4.4.2 Land Use

There are two zonings attached to the site, the northern and larger part (1.16 ha) of the site is zoned 'RS' – Residential with an objective to "provide for residential development and protect and improve residential amenity".

The southern portion (0.58 ha) of the site is zoned HA – High amenity. The purpose of the HA Zoning Objective is to "protect and enhance high amenity areas".

The area zoned HA is included in the Howth Special Amenity Area Order (SAAO) buffer zone. It is an objective of the Development Plan (Objective HOWTH4) to "*Protect and manage the Special Amenity Area, having regard to the associated management plan and objectives for the buffer zone".*

Figure 4.2 Land Use Zoning (Fingal County Development Plan 2017-2023)

Residential development is a permissible in principle on the RS zoned lands. The proposed 3 no. apartment blocks together with all ancillary development are wholly located within the RS (residential) zoning designation.

Within the area zoned HA, the land will be reprofiled and a new woodland belt will be established along the southern boundary of the application area. The use of the HA land will change from active recreational (golf course) to passive amenity.

The land uses immediately adjacent to the site comprise a mix of residential and open space recreational lands. **Figure 4.2** illustrates land uses and zoning status in the context of the site.

Howth is identified as being in 'Dublin City and Suburbs Consolidation Area' in the Fingal settlement strategy. Fingal County Council has commenced the review process of its current development plan and the preparing of a new development plan (2023-2029). A Strategic Issues Paper[1] on issues facing the county has been published. The Paper notes that Fingal is the third most populous Local Authority in Ireland and it has the youngest population in the State.

Howth is identified as being within Dublin City and Suburbs boundary, in the Regional Economic and Spatial Strategy 2019-2031 (RSES) for the Midlands and Eastern Region, see **Figure 4.3**.

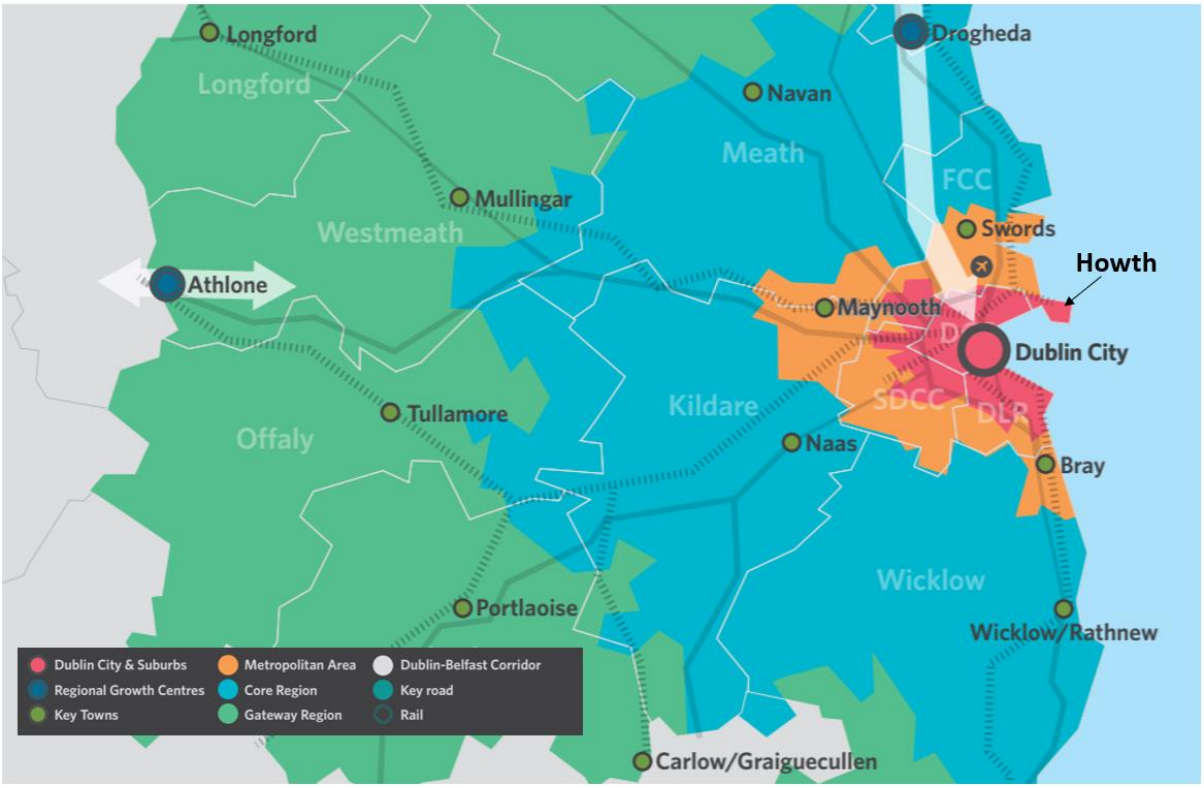

Figure 4.3 Dublin City & Suburbs' Boundary (RSES)

Research conducted for the preparation of a **Social Infrastructure Audit, a Childcare Demand Report** and **School Demand Assessment Report** (included under separate cover) has determined that a significant number of educational, social, community and sport facilities exist within the immediate context of the development site, see **Section 4.4.9.**

There are a range of public transport options located in close proximity to the site which include;

- High-frequency DART services connecting the area with surrounding suburbs, Dublin City Centre and south along the DART line to Greystones. Howth DART Station is

[1] *Accessible via: https://consult.fingal.ie/en/consultation/fingal-county-development-plan-2023-2029-strategic-issues-paper*

within walking distance of the site. The National Development Plan includes the DART expansion programme with a completion date of 2027. The plan includes buying additional fleet and measures such as re-signalling, junction and station changes to provide expanded services.

- The Route 31 and Route 31a Dublin Bus service offers high frequency access to and from Howth with buses running at 15–20-minute intervals at peak times. The bus departs from Talbot Street in Dublin City Centre with routes passing via Shielmartin Road, Howth DART Station and Howth Summit.
- A number of bus stops are located close to the subject lands on the R105 Howth Road, with 2 no. stops located c. 150 m from the site.

4.4.3 Sensitive Receptors

For the purpose of this chapter, the primary sensitive receptors identified are;

i. residential dwellings in the vicinity of the site, in particular, existing low-rise suburban residential dwellings to the west of the site;

ii. users of the public road network, specifically the Howth Road, the golf club and the wider demesne lands;

iii. future occupants of the former Techrete lands (Claremont) for which permission has been granted (Reg. Ref. 306102) for the construction of a mixed-use development of residential, retail/café/café uses, creche, civic plaza and landscaped park.

4.4.4 Demographic Profile

This section reviews the demographic characteristics, population, and age structure, of the Howth area. For the purpose of the assessment, the extent of the study area has been established with regard to the Electoral Division (ED) of Howth (see **Figure 4.4**). The rationale for the selection of this study area is based on the need to understand the capacity of the existing housing and employment profile which will inform the identification of accommodation needs and other existing social infrastructure available in the immediate context of the development site.

Figure 4.4 Howth Electoral Division Showing Site Location

The CSO data shows that the population of the study area was 8,294 in 2016 (**Table 4.1**). This represents an increase of 38 (or 0.5%) from the 2011 Census. This increase is below the Fingal (LA) and Dublin City (LA) growth which was 8.0% and 5.1% respectively for the same period. Population growth within Howth has varied over time and decreased by 812 persons (approx. 10%) between 1996 and 2006 **Table 4.2.** Since then, there has been a very modest increase of 98 persons. This review demonstrates that the Howth ED is capable of accommodating a significant increase in population.

	Census 2011	Census 2016	5 year increase
Ireland	4,588,252	4,761,865	3.8%
Dublin City	527,612	554,554	5.11%
Fingal	273,991	296,020	8.0%
Howth	8,256	8,294	0.5%

Table 4.1 Howth & Wider Area Population, Census 2016 (CSO)

	Census 1996	Census 2002	Census 2006	Census2011	Census 2016
Howth ED Population	9,008	8,706	8,196	8,256	8,294
Percentage %		-3.4%	-5.9%	0.7%	0.5%

Table 4.2 Study Area Population, Census 2016 (CSO)

An important indicator to consider for future development requirements is the population trend within Dublin City & Suburbs existing urban footprint, in which Howth is located. The overall population trend for Dublin City is expected to continue with an increase in population and urbanisation within and close to the existing footprint of Dublin City & Suburbs' and its direct area of influence, putting pressure on the need for more homes in areas like Howth.

In relation to the age profile of the area, the Census 2016 data shows that Howth ED has a rapidly ageing profile. The study area had a large proportion of older adults (aged +65-year-olds) at 2,043 or 24% of the total population. In comparison, Fingal had 9%, and the same age group comprises up to 13% of Dublin City area. The largest cohort is within the 50-54 years category, 610 persons but with very similar numbers for the 40-44 years category, 593 persons and the 45-49 years category, 589 persons.

The average age of those residing in Howth ED was 44.2 in 2016, which represents an increase from an average of 43.0 in 2011.

There were 401 (4.8%) children aged 0-4 years, pre-school going age, in 2016. Overall, the Census 2016 shows that the primary and post primary school age category (5-19 years old) accounted for c. 23% of the population in the study area (see **Table 4.3**).

Age Cohort	Dublin City	%	Fingal	%	Study Area	%
0 - 4 years	30,683	5.5%	24,899	8.4%	401	4.8%
5 - 9 years	27,937	5.0%	26,260	8.9%	516	6.2%
10 - 14 years	24,593	4.4%	21,454	7.2%	490	5.9%
15 - 19 years	28,781	5.2%	17,750	6.0%	509	6.1%
20 - 24 years	44,484	8.0%	15,757	5.3%	431	5.2%
25 - 29 years	60,867	11.0%	18,840	6.4%	321	3.9%
30 - 34 years	58,889	10.6%	25,525	8.6%	333	4.0%
35 - 39 years	49,561	8.9%	28,983	9.8%	429	5.2%
40 - 44 years	38,021	6.9%	26,029	8.8%	593	7.1%
45 - 49 years	34,093	6.1%	20,428	6.9%	589	7.1%
50 - 54 years	31,743	5.7%	16,743	5.7%	610	7.4%

Age Cohort	Dublin City	%	Fingal	%	Study Area	%
55 - 59 years	28,792	5.2%	14,321	4.8%	506	6.1%
60 - 64 years	23,755	4.3%	11,996	4.1%	523	6.3%
65 - 69 years	20,984	3.8%	10,133	3.4%	554	6.7%
70 - 74 years	17,027	3.1%	7,395	2.5%	552	6.7%
75 - 79 years	14,161	2.6%	4,538	1.5%	441	5.3%
80 - 84 years	10,857	2.0%	2,810	0.9%	295	3.6%
85 years and over	9,326	1.7%	2,159	0.7%	201	2.4%
	554,554	100%	296,020	100%	8,294	100%

Table 4.3 Age Profile & Age Groups, Census 2016 (CSO)

4.4.5 Deprivation Index

The Pobal Deprivation Index is Ireland's most widely used social gradient metric, which scores areas in terms of affluence or disadvantage. The index uses information from Ireland's census, such as employment, age profile and educational attainment, to calculate this score. **Figure 4.5** shows the level of affluence and deprivation at ED level, according to the Pobal Haase Relative Deprivation Index. Scores range from -35 (Extremely Disadvantaged) to +35 (Extremely Affluent). The overall score for Dublin City following the 2016 Census was 4.12 and Howth ED was 8.82 , 'Marginally above average'.

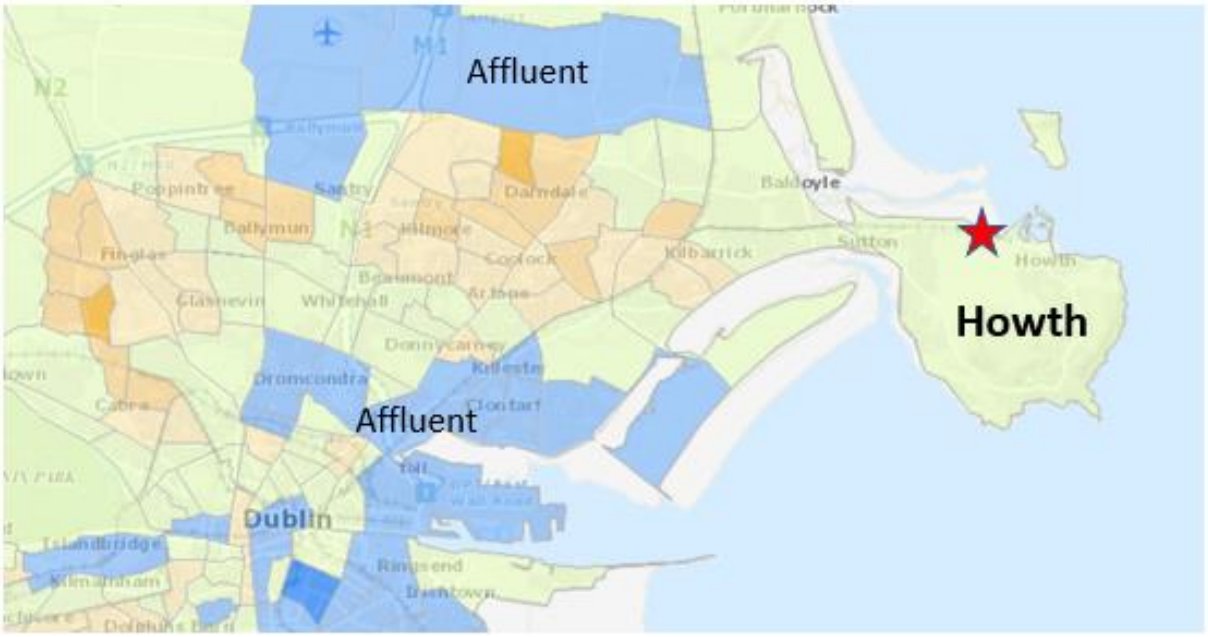

Figure 4.5 Howth ED - Deprivation (Pobal Deprivation Index)[2]

[2] *Accessible via: https://airomaps.geohive.ie/dho/*

4.4.6 Households

The total population and total households[3] for Howth ED and Fingal administrative area for 2016 is given in **Table 4.4**. There are 3,067 households in the study area in 2016. Census 2016 also identified that 1-2 person households (2,884 persons) made up a substantial number of households, 57% of the total of the households in the study area. This is higher than the proportion for Fingal (29%); however, it is still consistent with demographic trends which indicate that two-thirds of households added to those in Ireland since 1996 comprise 1-2 person households.

Despite the substantial rise in 1-2 person households, of all completions in 2020, 56.7% are scheme dwellings, 23.9% are single dwellings and 19.4% apartments, according to CSO statistics[4] (New Dwelling Completion, 2021) about new dwellings completion.

Study Area	Total Population	Total Household	% 1-2 Person Household
Howth ED	8,294	3,067	57%
Fingal	296,020	96,812	29%

Table 4.4 Total Household & 1-2 Person Households, Census 2016 (CSO)

According to the Department of Housing, Planning and Local Government, Homelessness Report (April, 2021), there were 4,087 homeless adults accessing emergency accommodation recorded in Dublin. A further 699 families were accessing local authority managed accommodation in Dublin county in the same period.

4.4.7 Housing Delivery

The National Planning Framework - Ireland 2040 requires delivery of a baseline of 25,000 homes annually to 2020, followed by a likely level of 30,000 to 35,000 units annually up to 2027. Within this output, 112,000 households are expected to have their housing needs met by social housing over the next decade. To achieve the objective of compact growth, 40% of future housing delivery is to be delivered within and close to the existing footprint of built-up areas.

The Governments Rebuilding Ireland - Action Plan for Housing and Homelessness (2016) set a target to construct 25,000 homes annually to 2021. According to the CSO Q4 2020 New Dwelling Completions Report[5], 20,676 new dwellings have been completed in 2020. This is approximately 18% below Rebuilding Ireland's annual target. The level of new dwellings completions in Q2 and Q3 was particularly affected due to the impact of the COVID-19 pandemic and associated restrictions. In Q4 2020, new dwelling completions figures show a late surge in completions which brings 2020 close to 2019 figures but still behind Rebuilding Ireland's set targets. A recent research[6] by the Economic & Social Institute (ESRI) and funded

[3] *Accessible via https://census.cso.ie/sapmap2016/Results.aspx?Geog_Type=ED3409&Geog_Code=2AE196291DAF13A3E055000000000001#SAPMAP_T1_110*
[4] *Accessible via: https://www.cso.ie/en/releasesandpublications/er/ndc/newdwellingcompletionsq42020/*
[5] *Accessible via https://www.cso.ie/en/statistics/construction/newdwellingcompletions/*
[6] *Accessible via: https://www.esri.ie/news/around-28000-new-houses-needed-per-year-over-the-long-term-to-keep-up-with-population-growth*

by the Department of Housing, Local Heritage and Government which estimates the amount of housing needed based on project projected population growth to 2040, states that *'Around 28,000 new houses needed per year over the long-term to keep up with population growth'.*

Further to this, recent data from Construction Federation Industry (CIF) has reported[7] that housing delivery will fall by up to 800 homes per week as consequence of the COVID-19 related restrictions on construction past March 5th 2021 timeline, which will have a significant impact on achieving the required annual target sets on housing construction.

There are 3,527 residential units in the study area, which includes occupied and unoccupied dwellings. This represents a minor increase (+54) when compared to 2011 Census housing stock data (See **Table 4.2**). Within this category 87% are listed as houses /bungalows and 12.5% are apartments/flats.

Across the study area, 83% of the housing stock is owner occupied and 13% is rented either through private landlord or from a public body, as shown in **Table 4.5.** The percentage of rented occupancy in the small area (267095005) within which the proposal's site is located is 12.20%. **Figure 4.6** illustrates the percentage and distribution of households that are private rented, within the context of the site. These are concentrated within the core of Howth village. An examination of the household types (**Figure 4.8**) identifies that flat and apartments are the most common type of accommodation among those areas in which renting from a private landlord dominates.

The percentage of owner occupied (83%) increases outside the core of Howth village **(Figure 4.7**). In contrast, areas around the centre of Howth village retains the highest percentage of private rented accommodation.

Type of occupancy	Households	%	Persons	%
Owner occupied with mortgage	964	31%	3,381	41%
Owner occupied no mortgage	1,589	52%	3,594	44%
Rented from Private Landlord	355	12%	939	11%
Rented from Local Authority	41	1%	83	1%
Rented from Voluntary Body	3	0%	5	0%
Occupied free of rent	48	2%	92	1%
Not stated	67	2%	151	2%
Total	**3,067**	**100%**	**8,245**	**100%**

Table 4.5 Private Households by Type of Occupancy, Census 2016 (CSO)

[7] *Accessible via: https://cif.ie/2021/03/15/cif-construction-industry-shutdown-is-unnecessary-and-has-huge-economic-consequences/*

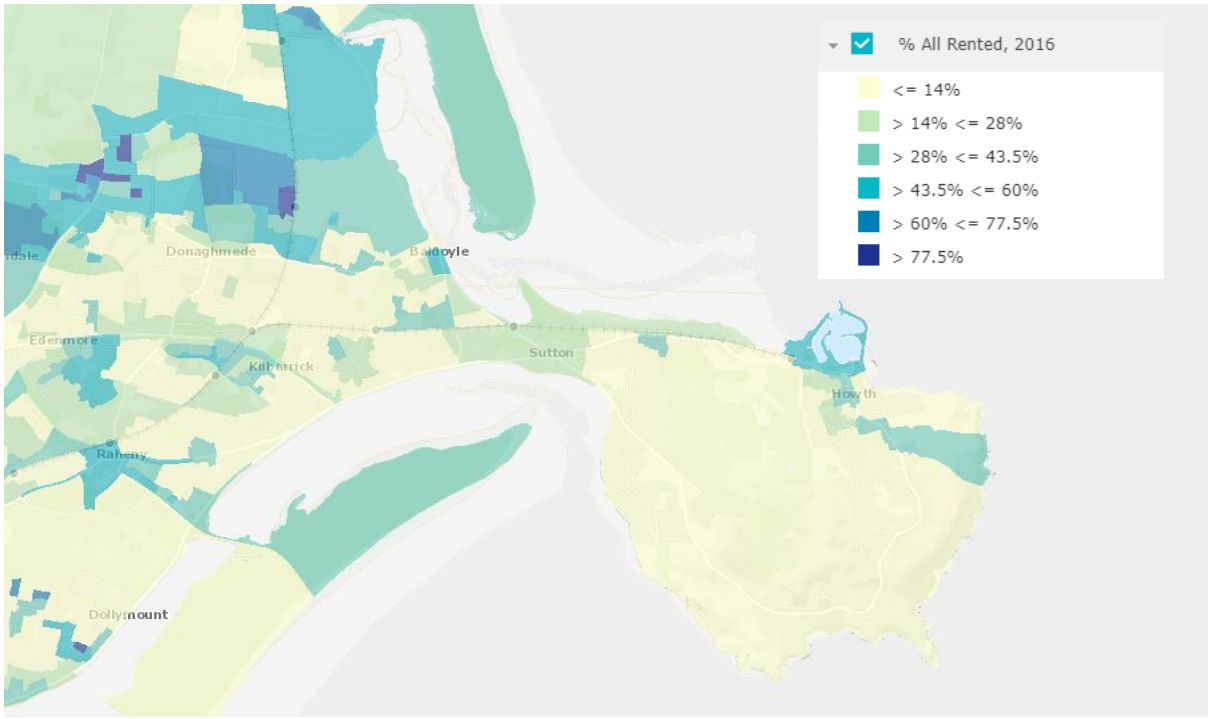

Figure 4.6 Household Tenure - Percentage Housing rented, 2016 (Dublin Housing Observatory)[8]

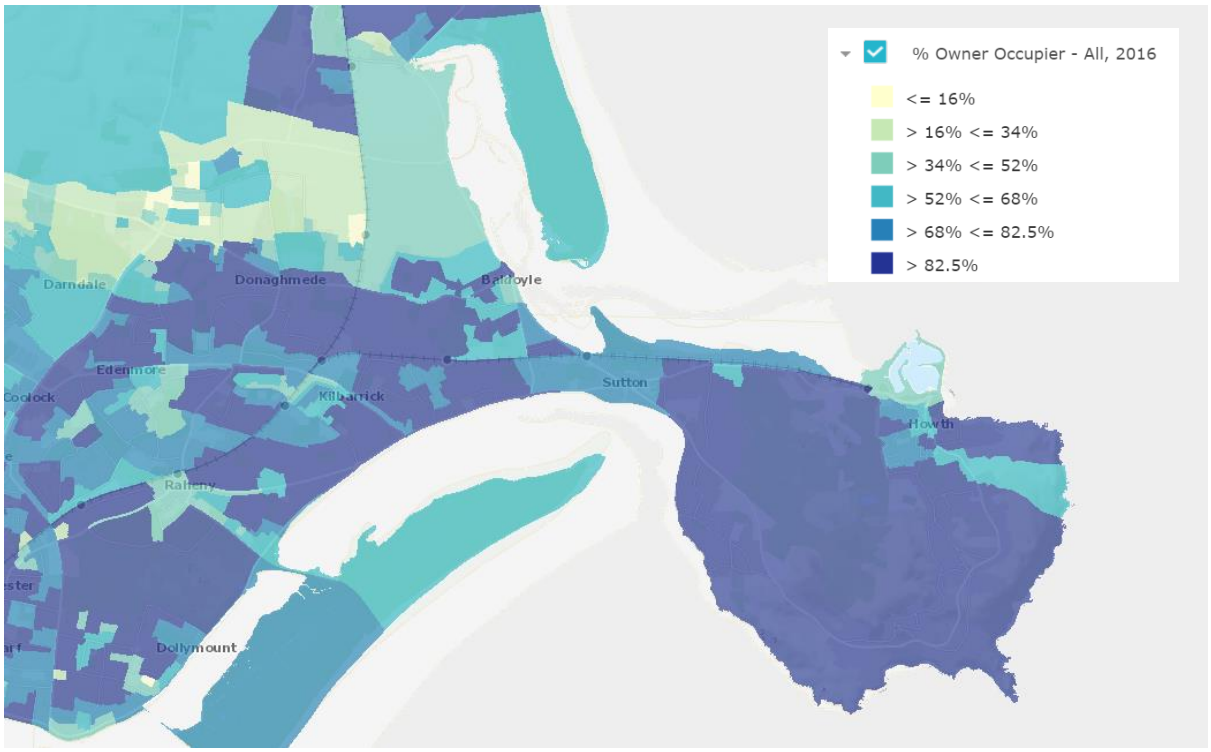

Figure 4.7 Household Tenure - Percentage Housing Owner Occupied, 2016 (Dublin Housing Observatory)[9]

[8] *Accessible via: https://airomaps.geohive.ie/dho/*
[9] *Accessible via: https://airomaps.geohive.ie/dho/*

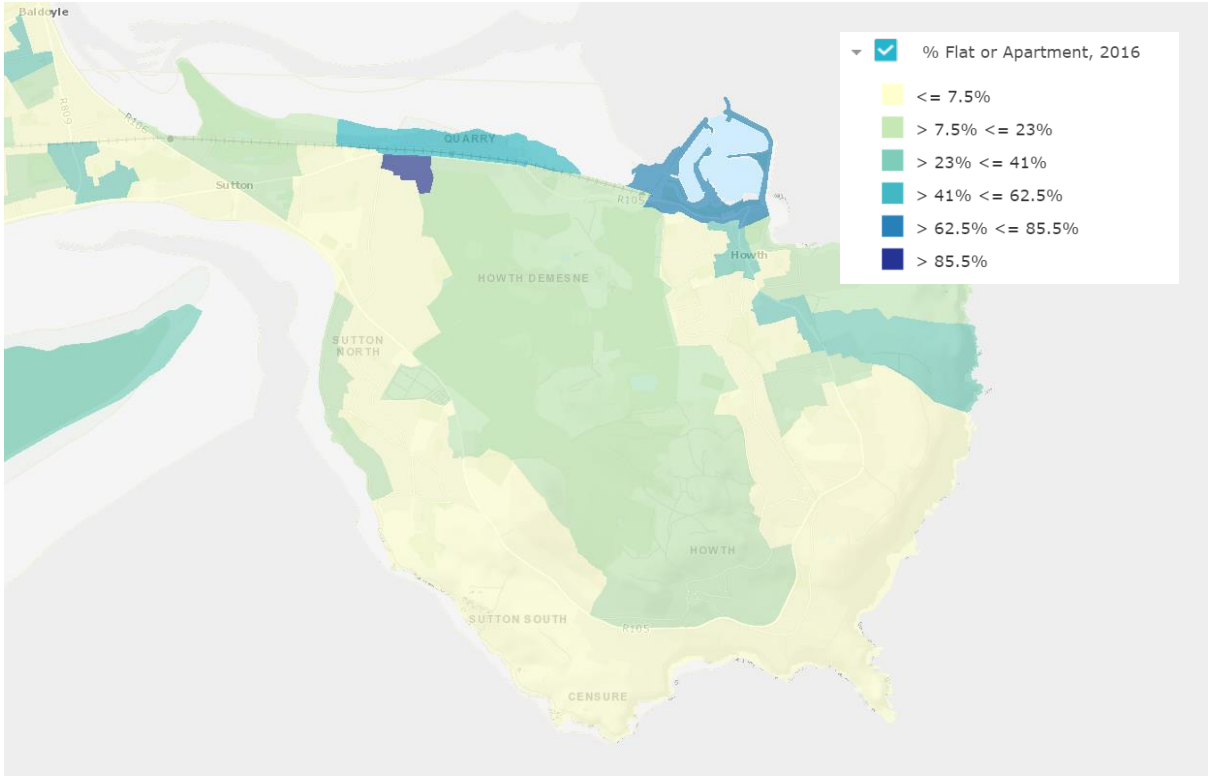

Figure 4.8 Household Type - % Flat/Apartment, 2016 (Dublin Housing Observatory)[10]

4.4.8 Employment

The Covid-19 Pandemic and the subsequent public health measures have had a significant impact on the labour market since February 2020. The standard measure of Monthly Unemployment was 5.8% in January 2021 (see **Figure 4.9**). The seasonally adjusted unemployment rate for February 2020 was 5.0%, down from 5.1% in January 2020 and equivalent to the 5.0% observed in February 2019.

At present, the CSO produces a supplementary measure of unemployment in parallel with the routine Monthly Unemployment Estimate. The Adjusted Measure of Unemployment incorporate those in receipt of the Pandemic Unemployment Payments (PUP and EWSS) into the calculation to produce a COVID-19 adjusted monthly unemployment rate. The CSOs statistical release[11] on monthly unemployment figures issued on the March 2021 in respect of February 2021 states;

"While the standard measure of Monthly Unemployment was 5.8% in February 2021, the COVID-19 Adjusted Measure of Unemployment could indicate a rate as high as 24.8% if all claimants of the Pandemic Unemployment Payment (PUP) were classified as unemployed."

The alternative COVID-19 Adjusted Measure of Unemployment indicates an unemployment rate of 56.8% for persons under 25 years old, of which it is estimated that at least 33.1% were attending full-time education. In this regard, the report clarifies that '*If the PUP scheme did not exist, those persons, being in full-time education, would not be eligible to receive*

[10] *Accessible via: https://airomaps.geohive.ie/dho/*
[11] *Accessible via: https://www.cso.ie/en/releasesandpublications/er/mue/monthlyunemploymentfebruary2021/*

Unemployment Assistance or Unemployment Benefit and so would not be included in the methodology to estimate the traditional measure of monthly unemployment.".

Figure 4.9 (Left) Live Register Seasonally Adjusted ;(right) Standard Measurement of Monthly Unemployment Rate – February 2018 to February 2021 (CSO)

The latest CSOs' Live Register statistical release[12] (March 2021) shows that 468,847 persons were in receipt of the PUP for the last week of February 2021, down 12,316 persons from previous month. Overall, the total number of persons on the Live Register or PUP decreased by 0.4% over the month to February 2021, see **Figure 4.9.**

The CSOs monthly unemployment and live register data sets are not available at Local Authority level but nationally, this inhibits accurate analysis of unemployment rate in the study area. As stressed in this section, the COVID-19 crisis continues to have a significant impact on the labour market in Ireland. The COVID-19 income supports including PUP and the EWSS are both currently expected to cease at the end of June 2021; however, it is worth noting that they have been extended several times.

The industries that people are engaged in work within the Howth ED are illustrated in **Table 4.6**. Commerce & Trading (34%) is the largest sector, followed by Professional Services (22%) and Other (16%) with Transport & Communications (13%), Manufacturing Industries (6%), and Public Administration (3%) the next in line.

[12] *Accessible via: https://www.cso.ie/en/releasesandpublications/er/lr/liveregisterfebruary2021/*

Industry	Total (People)	Total (percentage)
Agriculture, forestry and fishing	22	1%
Building and construction	106	3%
Manufacturing industries	208	6%
Commerce and trade	1,109	34%
Transport and communications	416	13%
Public administration	136	4%
Professional services	714	22%
Other	511	16%
Total	**3,222**	**100.00%**

Table 4.6 Persons at work by industry within Howth ED - Census 2016 (CSO)

4.4.9 Social Infrastructure

Social infrastructure includes a wide range of services and facilities including health, education, community, cultural, play, faith, recreation, and sports facilities that contribute to the quality of life. This application is accompanied by a **Social Infrastructure Audit**, **Childcare Demand Report** and **School Demand Assessment Report** which should all be read in conjunction with this section.

4.4.9.1 Education & Childcare

Seven childcare facilities were identified within the Howth ED, of which five were located within 15-min walking (or less) and two are c. 500 metres distance from the proposed site. **Figure 4.10** shows the location and names of the childcare facilities. There are at least 332 no. places provided by existing and permitted facilities, meaning the future demand arising from the proposed development can be comfortably accommodated.

The **Childcare Demand Report**, which accompanies this application under separate cover, establishes that combined there is an estimated demand for 302 no. childcare spaces in the Howth ED (existing + Claremont & Santa Sabina) and there are at least 332 no. places provided by the existing and permitted facilities within the Howth ED, meaning the future demand arising from the proposed development (18 no. childcare spaces) can be comfortably accommodated. There is no requirement for the provision of a childcare facility as part of this development proposal having regard to the existing geographical distribution and capacity of childcare facilities existing and permitted in the catchment.

In relation to primary and post-primary school facilities, there are eight primary and five post-primary schools within the 4.5 km catchment (see **Figure 4.11**) of the subject site, equivalent to 15-minute cycling time and 10-minute drive time.

Figure 4.10 Childcare Facilities Within the Study Area – Childcare Demand Report (MH Planning)

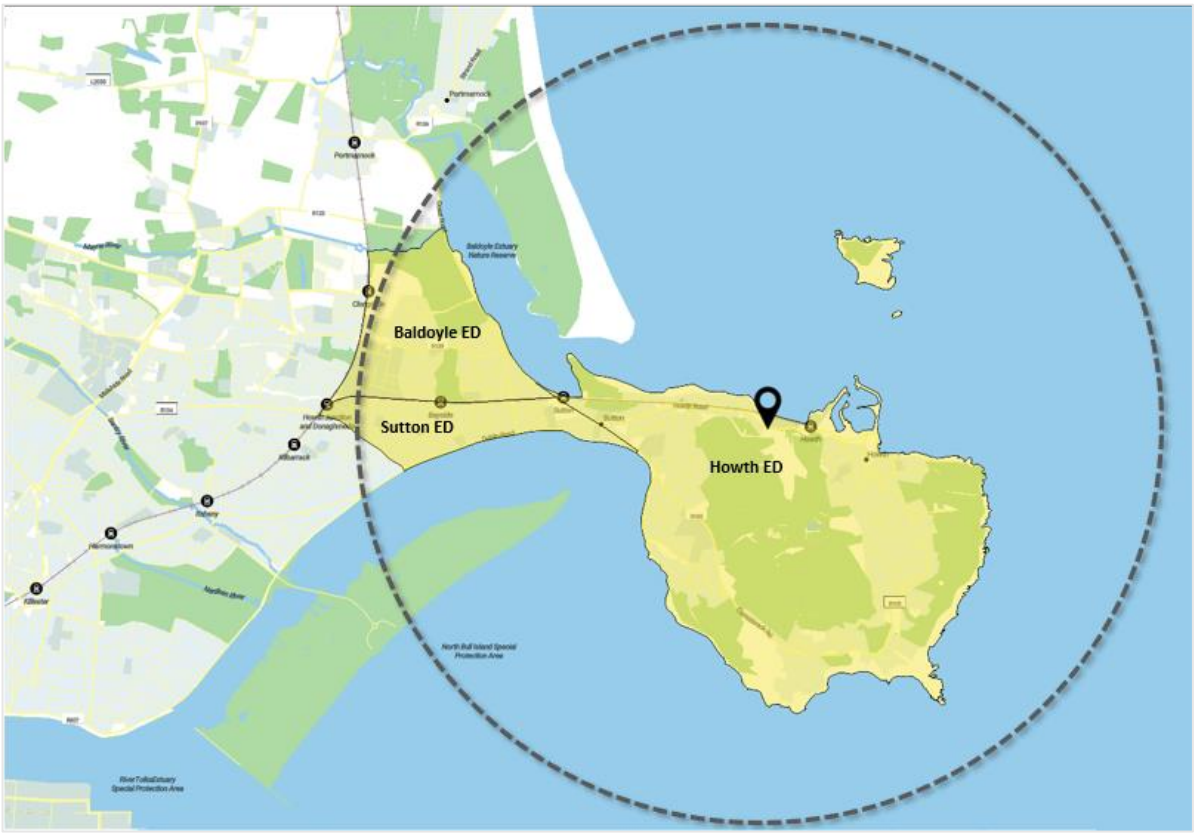

Figure 4.11 Catchment Area – School Demand Assessment Report (MH Planning)

Figure 4.12 illustrates the total no. of primary and post-primary facilities identified within the audit undertaken as part of the **School Demand Assessment Report**.

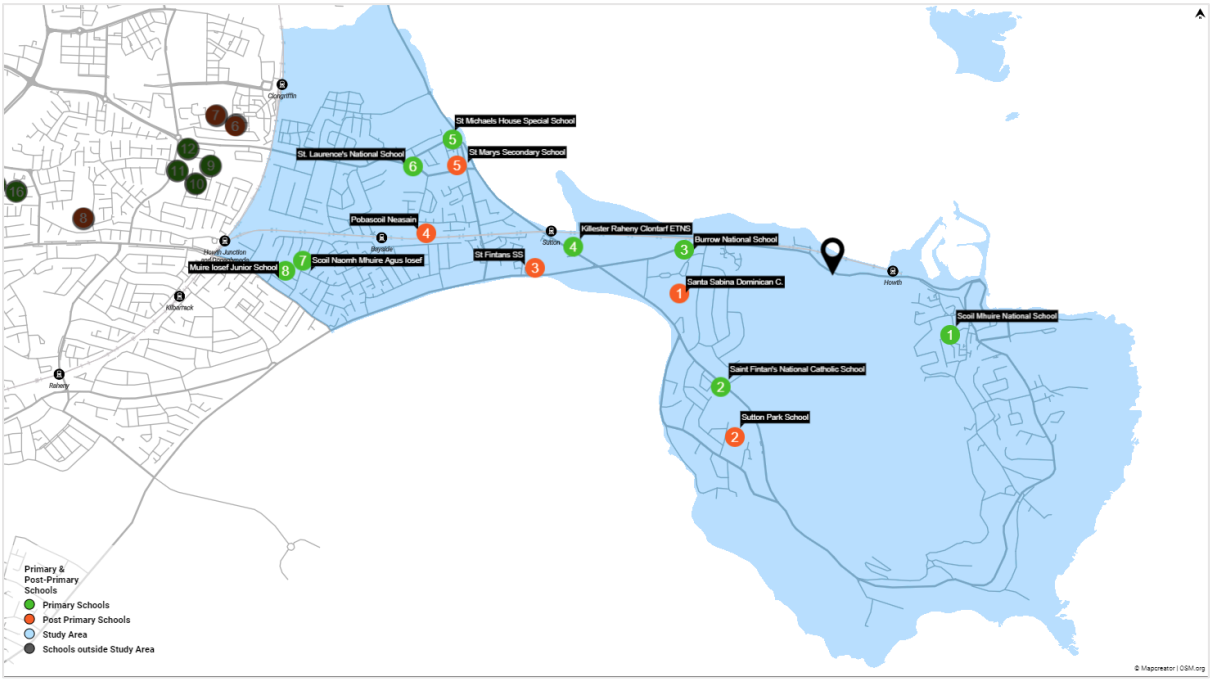

Figure 4.12 Primary and Post-Primary Schools - School Demand Assessment Report (MH Planning)

There are two primary schools, one to the east and one to the west, and two post-primary schools to the south-west, close proximity to the site. There are more educational facilities located on the Howth Peninsula and in the Sutton and Baldoyle Electoral Divisions to the west of the site.

According to the DoES records (2019/2020 Enrolment), the eight primary schools served c. 2,489 pupils, while c. 2,792 post-primary students attended to the existing five post-primary schools within the study area.

ID	School Name – Primary Schools	Distance km Approx.	Drive Time – Approx.		Cycling time – Approx.	
1	Scoil Mhuire NS Mixed	1	Less than 10-min drive	4 min	9 min	Up to 15 min cycle
2	St Fintan's NS	1.3		5 min	9 min	
3	Burrows NS	1.2		3 min	4 min	
4	Killester Raheny Educate Together	2.1		5 min	7 min	
5	St Michaels House Special School	3.2		8 min	14 min	
6	St Laurence's NS	3.5		8 min	15 min	
7	Scoil Naomh Mhuire Agus Iosef	4.3		8 min	15 min	
8	Mhuire Iosef Junior School	4.4		8 min	15 min	

Table 4.7 Primary Schools Near to Subject Site - School Demand Assessment Report (MH Planning)

ID	School Name – Post Primary Schools	Distance km Approx.		Drive Time – Approx.		Cycling time – Approx.	
1	**Santa Sabina Dominican College**	1.2		Less than 10-min drive	5 min	7 min	Up to 15 min cycle
2	**Sutton Park School**	1.5			7 min	12 min	
3	**St. Fintan's High School**	2.4			5 min	9 min	
4	**Pobalscoil Neasáin**	3.3			7 min	13 min	
5	**St Marys SS**	3.3			7 min	12 min	

Table 4.8 Post-Primary Schools Near to Subject Site - School Demand Assessment Report (MH Planning)

Table 4.7 and **Table 4.8** includes the full list of primary and post-primary schools located within 4.5 km of the subject site, it gives details of the estimated average driving and cycling time and distance from the subject site.

The **School Demand Assessment Report** that accompanies the proposed development, demonstrates that that there is latent capacity within the catchment to cater for the school aged population generated by the proposed development which will be further supplemented by delivery of the planned new primary school and post-primary school in 2021 and 2022 respectively.

4.4.9.2 Health and Wellbeing

There is a wide range of Health and Wellbeing facilities located in the Howth ED area, including GPs, dental surgeries, physiotherapy, and pharmacies. **Table 4.9** outlines the type of healthcare facilities identified in the study area.

Facility	Service	Address	Distance from Subject Lands
Sutton Cross Physiotherapy	Physiotherapy	1 Sutton Cross, Burrow, D13	1.9 km
Sutton Cross Surgery	GP Service	Suite 1, Superquinn Centre, Cross Sutton, Dublin	1.8 km
Sutton Surgery	GP Service	1 Greenfield Road, Sutton, Dublin	1.8 km
Sutton Clinic	GP Service	31 Howth Road, Burrow, Dublin	1.5 km
Howth Dental Clinic	Dentist	Harbour Road, Howth	980 m
Redmond Dental Clinic	Dentist	10 Sutton Cross, Burrow, Dublin	1.8 km
McDermott's Pharmacy	Pharmacy	5 Main Street, Howth	1.2 km
Sutton Cross Pharmacy	Pharmacy	182 Howth Road, Burrow, Dublin	1.8 km
Dr. Joseph P. Cramley	GP	Main Street, Howth	1.1 km

Table 4.9 healthcare facilities – Social Infrastructure Audit (MH Planning)

4.4.9.3 Community & Sport Facilities

A large number of social and community facilities are located within the Howth ED catering for all age groups and interests. These are shown in **Table 4.10.**

Name	Address	Distance from Subject Lands
Howth Sea Scouts	The Quarterdeck, Harbour Road, Howth	600 m
22nd Dublin Mafikeng Scout Group	St. Mary's Church	200 m
28th Dublin 7th Port Head Scout Group	Howth Village	600 m
Howth Girl Guides	St. Lawrence Road	1.2 km
Howth Brownie Guides	Thormanby Road, Howth	2 km
Older Persons		
Beann Eadair Bridge Club	Carrickbrack Road	2 km
Sutton Bridge Club	Sutton, D 13	1.8 km
Howth/Sutton Lions Club	Sutton, D 13	2 km
General		
Howth Library	Main Street, Howth	1km
Howth/Sutton Community Council	The Old Courthouse, Harbour Road, Howth	750 m
Howth Peninsula Heritage Council	The Old Courthouse, Harbour Road, Howth	750 m
ICA Howth Guild		
Howth Sutton Horticultural Society	Thormanby Lanes, Howth	1.8 km
Howth Community Drama Group	Tuckett's Lane, Howth	1.7 km
Howth Photographic Club	Thormanby Road, Howth	1.9 km
Howth/Sutton and District Community Centre	Thormanby Road, Howth	2 km
Poetry and Music Howth	St. Columbanus Hall, Main street, Howth	1.2 km
Howth Music School	14 Abbey Street, Howth, Dublin	1.1 km

Table 4.10 Social & Community Facilities within the Study Area – Social Infrastructure Audit (MH Planning)

In terms of sports and recreation facilities, **Table 4.11** illustrates the wide range of sport facilities as well as other smaller sporting clubs and venues in close proximity of the subject lands.

Facility	Address	Distance from Subject Lands
Sports		
Beann Eadair GAA Club	Ballkill Road, Howth Dublin	1.5 km
Howth Celtic Football Club	Carrickbrack road, Northside, Dublin	1.2 km
Sutton Lawn Tennis Club	176 Howth Road, Burrow, D13	1.6 km
Summit Snooker Club	6 Bailey Green Road, Howth, Co. Dublin	2.4 km
Howth Golf Club	Carrickbrack Road, Northside, D13	1.6 km
Deer Park Golf Park	Howth, Dublin	950 m
Baily Badminton Club	St. Fintan's Road, D13	1.5 km
Suttonians Hockey Club	Sutton Park School, St. Fintan's Road, D13	1.6 km
Baltray Tennis Courts	62 Howth Road, Northside, Howth	200 m
Recreation		
Howth Cliff Walk	Howth, Co. Dublin	N/A
Bog of Frogs Loop Walk	Howth, Co. Dublin	1.3 km
Howth Castle & Grounds	Howth Castle, Northside, D13	300 m
Howth Yacht Club	Middle Pier, Howth harbour, Howth, D13	930 m
Claremont Beach	Howth, Co. Dublin	480 m
Howth Playground	4 Harbour Road, Howth	990 m
Water Activities		
Feelgood Scuba	W. Pier, Howth, Co. Dublin	950 m
Howth Sea Angling Club	15 W Pier, Howth, Dublin	690 m
Howth Angling Centre	W Pier, Howth, Dublin	790 m
Howth Sailing and Boating Club	Ireland's Eye, Dublin	1.2 km
Sutton Dingy Club	Strand Road, Sutton, Dublin	1.9 km
Fitness		
Kiwifit	Seagrove House, Unit 11, Sutton Cross, D13	1.8 km
Health Pro	Deer Park Golf and Footgolf, Howth castle	940 m
Toned Fit Gym	50 Church Street, Howth, Co. Dublin	900 m
The Gym Howth	1a, St. Lawrence Road, Howth, D13	1.1 km
Howth Yoga	Sattvic House, 3 Grey's Lane, Howth, D13	1.9 km
Howth Yoga Centre	Studdwalls, Howth, D13	2.2 km

Table 4.11 Sports & recreation Facilities within the Study Area – Social Infrastructure Audit (MH Planning)

Based on the information compiled for the **Social Infrastructure Audit**, which accompanies the application for the proposed development under separated cover, it was identified that there is a deficit locally in terms of children's play provision. However, since undertaking the baseline study, Claremont scheme was approved and it includes a range of play areas for different age groups.

4.5 Do Nothing Scenario

If the proposed development is not realised, it is anticipated that the subject site would remain in its current condition in the short to medium term.

In the absence of this proposal and having regard to the location of the site within the existing built-up area of Dublin City, it is likely that another residential proposal would be progressed. This is in accordance with national strategic outcomes - NSO 1 – (NPF) to deliver a greater proportion of residential development within existing footprint of built-up areas and to make better use of under-utilised land serviced by existing facilities and public transport.

The effect of the construction of another residential scheme at this location would likely be similar to the effects of the proposed development as outlined in this chapter. The key variable during the operation phase would relate to the form of any future development proposal. Should a lower scale scheme be progressed, then the likely visual impact may theoretically be reduced, however, in the absence of scheme specifics it is not possible to rate the effect with any degree of confidence.

In the absence of development of the site the impact is determined to be negative with significant effects for the delivery of much needed homes within the existing footprint of Dublin & City suburbs. Without developments such as this proposal, the existing unsustainable pattern of urban sprawl that extends the physical footprint of urban areas and continued affordability issues are likely to continue.

In terms of Population and Human Health, a 'do nothing' scenario, which is to say not developing these lands, would represent a lost opportunity to develop lands for residential use in close proximity to the centre of the Howth village. Thus, the site would remain under-utilised and it would not contribute to increasing the provision of housing in this area.

4.6 Difficulties encountered

The NPF (2018) has explicit ambitions to achieve more consistent and transparent methodologies to deal with housing need forecasting. In relation to housing need forecasting it states that projecting housing requirements more accurately into the future will be enabled by the preparation of a 'Housing Need Demand Assessment' for each local authority area. To date, this is not available for the Fingal County Council administrative area.

The CSOs New Dwelling Completions is reported quarterly, and data sets are not available at Local Authority level, this inhibits accurate analysis of new dwelling completions in the study area.

4.7 Consultation

2 no. meetings (June 2019 and January 2020) were held with representatives of Fingal County Council in advance of making a pre-application consultation request to An Bord Pleanála. Section 5 Pre-application meeting, involving the Applicant and design team, planning authority and An Board Pleanála representatives, took place on 13th January 2021. Following the pre-application meeting, An Bord Pleanála issued an Opinion in which stated, *'that the documents submitted with the request to enter into consultations constitute a reasonable basis for an application for strategic housing development.'.* Further to this, the Opinion's document required 18 no. items in respect of specific information to be submitted with the application. The proposed development has been designed having full regard to the specific requirements and the application is accompanied by the additional reports as highlighted.

4.8 Impact Assessment

This section describes and assesses identified likely significant environmental effects that are likely to arise in the absence of mitigation. Section 4.9 of this report sets out the mitigation measures required to alleviate such effects and the assessment of impacts post mitigation is presented in the Residual Impact Section (4.10).

Potential Impacts are considered under the following headings in line with the Guidelines set out in **Section 4.3** of this chapter:

- Land use
- Population & Human Health
- Employment & Economic Activity
- Residential Amenity
- Local Amenity Impacts

Specific effects with respect to matters such as air quality, noise, traffic, visual impact etc. are dealt with in the respective assessments in separate chapters of this EIAR.

4.8.1 Construction Phase

The potential impacts of the proposal during the construction phase of the development are outlined below.

4.8.1.1 Land use

The proposed development complies with the statutory land use zoning. The construction works will include clearing, excavation, earthworks, etc. There will be no severance of land, loss of rights of way or amenities as a result of the proposed development.

Development of the subject site is aligned with the objective to achieve compact growth contained within the NPF's Implementation Roadmap and will realise the efficient use of residential zoned lands with higher housing density that is well served by public transport. The overall predicted impact of the construction phase on land use is **likely** and will have a **permanent significant positive effect** that will achieve **local and wider** county, regional and national objectives.

The redevelopment of this zoned greenfield site to provide much needed new homes have a **likely significant permanent positive effect locally.**

4.8.1.2 Population

It is estimated that during peak construction there will be 40-50 people employed on site. It is not anticipated that this will generate a temporary increase in population locally as employees will travel to the site from their existing place of residence. The likely impact on population is thus **neutral**.

4.8.1.3 Employment & Economic Activity

A key characteristic of the proposed development in terms of its potential economic impact relates to its capital value, of which a significant portion will be for the purchase of Irish sourced goods and services. The construction phase will provide a boost for the local construction sector in terms of employment generation (40-50 people employed on site at peak construction period), capital spend on materials and construction labour costs, and it will generate additional spending on the local economy (retail and local shops).

The staff will comprise of managerial, technical, skilled and unskilled workers and as far as practicable local labour will be employed. It is unlikely that the proposed development will increase the population of the area as a result of the construction phase.

In addition to direct employment, there will be substantial off-site employment and economic activity associated with the supply of construction materials, provision of services such as professional firms supplying financial, architectural, engineering, legal and a range of other professional services to the project, and additional spending in local shops and other local retail services and as consequence of the presence of construction staff during the construction phase.

The overall predicted impacts associated with the construction phase on the working population and local economy are **likely** and will have a **positive**, **temporary/short-term**, **not significant** effect.

4.8.1.4 Health

Construction sites pose potential risks to the health and safety of the public. However, access by the public would be considered trespassing on private property. In the absence of mitigation, the effect would be **likely, negative** with an effect that might range from **slight** to **profound** depending on the magnitude of the incident.

In the absence of standard construction mitigation measures, likely significant impacts would arise from construction traffic, noise, dust, and visual effects. It is noted that the potential for effects on population and human health during the construction phase are dealt with in this EIAR under the more specific topics of the environmental media by which they might be caused including landscape and visual, air, traffic and noise.

4.8.1.5 Residential Amenity

The anticipated likely significant effects in the absence of mitigation on residential amenity relate to disruption due to increased construction traffic movements on the local road network, noise, dust and visual impact arising from plant (e.g. cranes) necessary to deliver the development.

In the absence of mitigation, the anticipated impact on residential amenity would be **local** and of **temporary** to **short-term** duration with a **moderate** significance.

Specific potential for effects on residential amenities during the construction phase are dealt with in this EIAR under the more specific topics of the environmental media by which they might be caused including air, traffic and noise.

4.8.2 Operational Phase

4.8.2.1 Land use

The proposed development complies with the statutory land use zoning, residential is permissible in principle.

The National Planning Framework (NPF) 2040 indicates that an increased housing output will be required between 2018 and 2040 to deal with a deficit that has built up since 2010. To meet projected population and economic growth as well as increased household formation, the NPF states that an annual housing output of 30,000 to 35,000 homes per annum in the years to 2027 will be needed. The long-term target is for 25,000 homes to be constructed annually to 2040. Rebuilding Ireland, Action Plan for Housing and Homelessness (2016) targets the delivery of 47,000 social housing units to 2021. To achieve the objective of compact growth, 40% of future housing delivery is to be delivered within and close to the existing footprint of built-up areas. The subject development will deliver 162 no. residential units to the market of which 10% will be Part V on a greenfield site proximate to Dublin city centre and thus will contribute to the targets above.

The predicted effect of a high-density residential development at this location is **positive**, **significant** and of **permanent** duration as it would realise the objectives of urban consolidation through the efficient use of a zoned and serviced landbank to provide much needed housing together with high-quality amenities for future occupants.

4.8.2.2 Population

Regarding population, the proposed residential scheme will result in a generally positive alteration to the existing greenfield site which will serve to the growing population of the area. It is anticipated that the proposed development will accommodate a projected full-time population of approximately 424 persons[13]. Overall, the likely impact of the proposed development of the operational phase on population is determined to be a **significant-moderate, positive** and **long-term**.

The **Childcare Demand Report** that accompanies this application notes that the scheme would generate a demand for 18 no. spaces in conjunction with the provision of 133 no. units capable of accommodating families on the subject site. The cumulative demand for childcare in Howth ED is established to be 302 no. spaces. There are at least 332 no. places provided by existing and permitted facilities, meaning the future demand arising from the proposed development can be comfortably accommodated. The impact of the proposed development on childcare facilities is determined to be **locally neutral** with an **imperceptible** significance.

As outlined in the **School Demand Assessment Report** which accompanies the application under separate cover, it is estimated that the proposed development will generate 36 no. primary school children and a requirement for 25 no. post-primary school places. It is noted that there are eight primary schools and five post-primary schools with the study area (4.5km catchment, equivalent to 15-minute cycling time or 10-minute drive time). In addition, a newly Gaelscoil primary school (September 2021) and new post-primary school (2022) are proposed to be located in the Donaghmede/Howth area by according to the Department of Education and Skills. 1 no. primary school (Killester Raheny Educate Together), which opened in 2019, records a low intake students' number, which may indicate the school is operating below capacity and that this facility may increase the educational provision of the wider area when operating at full capacity. Overall, the impact of the proposed development on primary and post primary schools is determined to be **locally neutral** with a **not significant** effect.

There is a wealth of existing amenities in the wider area including sports and recreational facilities. The increase in population will place additional demands on existing amenities but will also provide a critical mass to support the delivery of social infrastructure. Within the proposed development a series of public and communal open spaces are planned that will ensure future occupants benefit from access to a range of recreational opportunities within the site. The proposed public open space incorporates a play area that will further enhance the provision locally and the effect is deemed **positive**.

To support sustainable travel, it is necessary for future population growth to predominantly take place in sustainable compact urban areas, which discourage dispersed development and long commuting. Development of the site at Howth would deliver a critical mass of growth in population that would ensure the long-term viability of public transport infrastructure presented in the area. The effect is thus determined to be **moderate-significant, positive**, and **permanent**.

[13] *Estimated future population based on applying a future occupancy of 1 per studio, 2 per 1-bed and the national household average of 2.75 to the remainder of the units.*

4.8.2.3 Employment & Economic Activity

In terms of the operational phase, the potential employment opportunities will be limited given that residential is the predominant land use proposed. Notwithstanding this, there will be some employment created in the servicing and maintenance of the apartment buildings and for the upkeep of the landscaped areas.

The economic impact of the operational phase on the immediate area would therefore **positive** be **permanent**, and given the modest nature of employment opportunities, of **imperceptible** significance.

The new residential population will generate additional spending within the Howth area which will likely have a **permanent, slight, and positive** impact on local economic activity generated through the multiplier effect.

4.8.2.4 Local Services & Amenities

The proposed development provides high quality communal and public open space. The communal amenity space is laid out with a hierarchy of uses including passive recreational areas and play space for children. The public open space is conveniently located to the north of the site where it will be most accessible. It will incorporate a botanical garden with a dedicated play area. The inclusion of high-quality landscaping proposals and dedicated play areas is determined to be **locally positive** with a **permanent duration.**

The **Social Infrastructure Audit**, submitted with the application, demonstrates that there is a deficit regarding children's play provision within the study area. As mentioned above, the proposed development incorporates dedicated play areas within the communal and public open space.

As outlined above (section 4.8.2.5 Population), there is a latent capacity to cater for the proposed development and support the needs of the likely childcare, primary and post-primary school population generated by the scheme. Please refer to the **Childcare Demand Report** and **School Demand Assessment Report** included with this application under separate cover. Accordingly, the impact is deemed **locally neutral** with a significance that at worst would have a **moderate effect.**

4.8.2.5 Health & Residential Amenity

Insufficient physical activity has been identified by the World Health Organisation as the fourth leading risk factor for global mortality. Urban air pollution and traffic injuries are also responsible for a further 2.6 million deaths annually. The health benefits of active transport (walking and cycling combined with public transport) can prevent many of these deaths from physical inactivity.

The proposed scheme minimises carparking and prioritises both pedestrian and cyclists. 355 cycling spaces with 325 no. at basement level for long stay and 30 no. at ground floor level for short stay visitors, which equates to 2.19 no. cycle parking spaces per unit. The layout provides for the segregation of pedestrians and traffic and incorporates the principles of universal access and the requirements of Part M of the Building Regulations so that the development will be readily accessible to all, regardless of age, ability or disability. The

predicted effect of these combined measures on the health and wellbeing of future occupants is **significantly positive**.

The integration of energy efficient measures into the design will provide for healthier living standards for future occupants and less dependence on fossil fuels for energy generation. This coupled with the low level of carparking (132 no. car park spaces which equates to 0.81 no. space per unit) which will result in significant CO_2 savings will contribute to improved air quality and the impact is likely to be **locally significantly positive** and of **permanent duration**.

Achieving a high quality living environment requires an integrated and balanced approach when designing a scheme. In this regard, the proposed new home benefit proportions and layouts that meet modern living expectations. The configuration of the proposed development in 3 no. buildings of modest height (max. 6 storeys), 54% of the application area is retained as open space and this is a **positive** effect. High quality and sufficient quantum of open space is critical to health and well-being and is an important design consideration where higher density development to achieve compact growth is an overarching objective.

There are significant benefits for population and human health in pursuing this approach, bringing people closer to where they can access daily living needs, improving air quality and reducing greenhouse gas emissions.

The design of the proposed apartments includes a combined Living, Kitchen, Dining (LKD) format. This results in a layout with generously proportioned deep floor plans that exceed minimum requirements, see Housing Quality Audit.

Dual-aspect dwellings greatly enhances the likelihood that the internal environment of a dwelling will perform well and have a positive effect on the well-being of the occupants. The design maximises the number of dual-aspect apartments to achieve the many inherent benefits of this approach. These include better daylight, a greater chance of direct sunlight for longer periods, natural cross-ventilation, a greater capacity to address overheating, a choice of views, greater flexibility in the use of rooms, and more potential for future adaptability by altering the use of rooms. The site is central and accessible, so under SPPR 4 of the Design Standards for New Apartments 33% of the apartments should have dual aspect. Within the proposed development 99 units or 61% are dual aspect. This is determined to be a **Very Significant Positive.**

To provide private amenity space, each apartment benefits from access to balconies and a ground floor terraces. The position of balconies is carefully considered to avoid overlooking thereby providing quality private amenity space. The effect of these measures is **positive**.

This application is accompanied by a **Daylight & Sunlight Report** prepared by 3D Design Bureau and should be referenced in conjunction with this chapter. In terms of amenity areas (public and communal amenity area) (see **Figure 4.13**) the report demonstrates that communal amenity areas, located on the ground floor of each block and dedicated roof garden, and public open space will have excellent levels of daylight and will receive a level of

sunlight well in excess of the recommended levels[14] as per the BRE Guidelines, see **Table 4.12.** The analysis demonstrates that the design of the amenity space is **positive** in this regard**.**

Assessed Area	Area Capable of Receiving 2 Hours of Sunlight on March 21st	Recommended minimum	Level of Compliance with BRE Guidelines
Amenity Area 1	89.6%	50.0%	BRE Compliant
Amenity Area 2	92.1%	50.0%	BRE Compliant
Roof Garden A	100.0%	50.0%	BRE Compliant
Roof Garden B	100.0%	50.0%	BRE Compliant
Roof Garden C	100.0%	50.0%	BRE Compliant
Public Amenity Area	81.6%	50.0%	BRE Compliant
* The BRE Guidelines recommend that for a garden or amenity appear adequately sunlit throughout the year, at least half of a garden or amenity area should receive at least two hours of sunlight on March 21st.			

Table 4.12 Sunlight to Proposed Public & Communal Amenity Areas

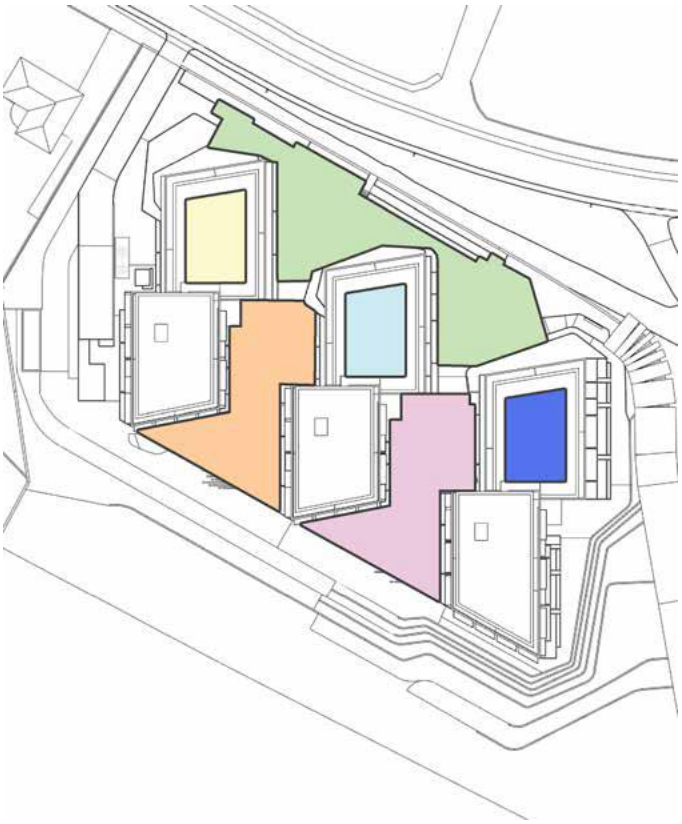

Figure 4.13 Location of Amenity Areas Assessed

The recommended minimum for Average Daylight Factor (ADF) is based on the function of the room being assessed. The recommendations as per the BS 8206-2:2008 are as follows:

- 2% for kitchens;
- 1.5% for living rooms; and,
- 1% for bedrooms.

[14] Sunlight BRE Guidelines 'at least half of a garden or amenity area should receive at least two hours of sunlight on 21 March'

BS 8206-2:2008 also recommends that where a room serves more than one purpose e.g. living/kitchen/dining (LKD) space, the minimum average daylight factor should be taken for the room with the highest value.

Achieving the high quality design e.g. generous room sizes and private amenity space results in a deep floor plan for LKDs and this can affect daylight penetration. The design incorporates extensive glazing to mitigate this.

Having regard for the need to achieve a balance between all the elements that contribute to a high quality living environment, it is considered appropriate that an ADF target value of 1.5% is satisfactory for the proposed LKDs. Should full compliance for the higher target value of 2% be sought, design changes that would **negatively** affect individual homes would result, such as the removal of balconies or a reduction of unit sizes. Such mitigation measures could reduce the quality of living within the proposed units to a greater degree than the improvements that would be gained with increased ADF values.

The **Daylight & Sunlight Report** demonstrates that when measured against a 1.5% target, the scheme achieves an approx. compliance rate of 96%. When measured against the 2% criteria the approx. overall compliance rate is 93%.

The report details that the primary reason for the low level of daylight in the lower performing rooms is due to the recessed balconies, which are an integral part of the proposed design, providing privacy for future residents. These balconies, whilst they affect the level of daylight in the units, they also provide a valuable amenity of private external space.

Another design feature of the proposed development is the proportionately large windows which will ensure that even the rooms that do not achieve the minimum recommended ADF values will appear adequate well daylit in the areas of the room that are within close proximity to the windows, with the rear of the rooms likely to require supplementary electric lighting for longer parts of the day.

In instances where the LKD has recorded an ADF less than 1.5%, an additional study has been carried out where the living area has been assessed as a standalone space with the kitchen area omitted from the assessment. This study demonstrates that while the kitchen area of some units may require supplementary electric lighting for periods of the day, all corresponding living spaces would be in receipt of adequate levels of daylight.

Overall and having regard to the wider design criteria, it is determined that the design would provide future residents with a high quality and comfortable living environments and the effect is **positive**.

he **Daylight & Sunlight Report** presents the results of an assessment of the effect the proposed development would have on the level of daylight and sunlight received by existing neighbouring residential properties. The analysis demonstrates that the proposed development would not result in a perceptible level of reduction to the daylight or sunlight received by the existing properties. All windows that were assessed would experience an imperceptible level of effect to their Vertical Sky Component (VSC), Annual Probable Sunshine

Hours (APSH) and Winter ASPH. The proposed development would also have an Imperceptible effect on the level of sunlight received by the gardens of the neighbouring properties. Therefore, it is concluded that the design of the proposed scheme is favourable in terms of impact as no existing properties will experience any noticeable drop in levels of daylight or sunlight and the effect is **neutral** and **imperceptible**.

Below is a list of the assessed properties (see **Figure 4.14**):

- Tig Bhríde (green)
- Windwood (orange)
- Kincora Lodge (blue)
- Baltray (yellow)

Figure 4.14 Location of Neighbouring Residential Properties assessed - Daylighting, Sunlight

4.8.3 Cumulative Impacts

The approved Claremont scheme at the former Techrete site (reg. ref. ABP 306102) together with this proposed development will provide 674 no. new homes in Howth. Having regard to the historical low delivery of homes in the area and the housing crisis that exists across Dublin City and Suburbs, this is a **Very Significant Positive** effect.

The Claremont scheme includes play areas dedicated to different age groups. The Department of Agriculture, Food and the Marine has recently launched a public consultation on the plans to develop a new 100-metre-wide infill area on the outside of the Howth West Pier, c. 700 m from the development site, which will create a new public amenity area including a new coastal linear park. Together with the proposed development the realisation of new amenities, particularly play areas is deemed **Very Significant** and **Positive**.

The proposed development together with the Claremont scheme will increase demand on local infrastructure and services. This will include increased demand on potable water supply, foul water treatment capacity, gas supply, electricity supply, and telecommunication (fibre / broadband) capacity. There will be an increased demand on creche, primary and secondary

schools in the locality. The supporting reports included with this application demonstrates together with Confirmation of Feasibility from Irish Water confirm that the cumulative effect will be **neutral** with a significance ranging from **slight** to **moderate**.

Allowing people to live in close proximity to reliable public transport infrastructure (DART Howth Station) will contribute toward reducing dependence on car-based travel and this will be **positive** in the context of greenhouse gas emission reductions. Furthermore, these developments will generate additional population locally and the consequent effect will be increased demand for local services. The effect is **locally moderate** with a **permanent** effect.

4.9 Mitigation Measures

4.9.1 Incorporated Design

The proposed development complies with the Building Regulations which provide for the safety and welfare of people in and about buildings. The Building Regulations cover matters such as structure, fire safety, sound, ventilation, conservation of fuel and energy, and access, all of which safeguard users of the buildings and the health of occupants.

The proposed design provides for the segregation of pedestrians and bicycle traffic from motorised traffic. The design also incorporates the principles of universal design and the requirements of Part M of the Building Regulations so that the development will be readily accessible to all, regardless of age, ability or disability.

The integration of energy efficient measures into the design will provide for healthier living standards for future occupants, less dependence on fossil fuels and associated improved air quality. The availability of on the doorstep public open space, amenity spaces, and a highly accessible layout across the scheme including segregated pedestrians entrance which is strategically located proximate to the village of Howth will encourage sustainable modes of outdoor access for a wide age group.

4.9.2 Construction Phase

A **Construction and Environmental Management Plan (CEMP)** (BCME), and **Construction Waste Management Plan (CWMP)** (Byrne Environmental) for the proposed development are included in the application documentation. The CEMP & CWMP will be further updated by the contractor, agreed with Fingal County Council prior commencement, and implemented by the selected contractor after any consent is received. .

All construction personnel will be required to understand and implement the requirements of the CEMP and CWMP and shall be required to comply with all legal requirements and best practice guidance for construction sites.

The CEMP provides for a construction phase management structure to ensure that environmental protection and mitigation measures are put in place. The CEMP requires that these measures will be checked, maintained to ensure adequate environmental protection. The CEMP also requires that records will be kept and reviewed as required to by the project team and that the records will be available on site for review by the planning authority.

All construction personnel will attend induction and training classes as required to ensure that the CEMP is effectively implemented. The CEMP will comply with all appropriate legal and best practice guidance for construction sites.

Project supervisors for the construction phase will be appointed in accordance with the Health, Safety and Welfare at Work (Construction Regulations) 2013, and a Preliminary Health and Safety Plan will be formulated during the detailed design stage which will address health and safety issues from the design stages, through to the completion of the construction phases.

Adherence to the construction phase mitigation measures presented in this EIAR will ensure that the construction of the proposed development will have an **imperceptible** and **neutral** impact in terms of health and safety during the **short-term** duration of the works.

4.9.3 Operational Phase

The proposed development is of a high quality design that incorporates generously sized dwellings with integrated energy efficiency measures and an abundance of open space. The impact assessment section did not identify likely significant negative environmental impacts on population and human health arising from the operational phase of the proposed development. Accordingly, mitigation measures are not proposed.

4.10 Residual Impact Assessment

The residual effect of the proposed development for population and human health is determined to be **significantly positive** having regard to the delivery of much needed new homes in a location that has the carrying capacity in terms of both services and amenities to support the population generated by the scheme.

Allowing people to live in close proximity to their daily living needs and with access to high quality public transport to access employment locations is a **significant positive** effect for population and human health.

4.11 Interactions

Interactions are dealt with in **Chapter 16** of this EIAR.

4.12 Monitoring

Measures to avoid negative impacts on Population and Human Health are largely integrated into the design and layout of the proposed development. Compliance with the design and layout will be a condition of any permitted development.

No specific monitoring is proposed in relation to this section. Monitoring of standard construction mitigation measures as outlined in this EIAR will be undertaken by the appointed contractor.

4.13 Worst Case Scenario

The worst-case scenario on population and human health is considered to be the risk of an accident during the construction phase. According to the Health and Safety Authority[15], in 2019 one in four fatal accidents occurred in construction (12). In terms of non-fatal injuries, there were 867 no. construction related notifications to the HAS, this accounts for 9.3% of the total of reported non-fatal injuries reported by the different economic sectors. In 2020, the total number of fatal accidents in construction increased to 14[16], according to the provisional figures published by the HAS.

The HSA has undertaken a range of activities in regulation, education, accreditation and enforcement to reduce incidents on construction sites. The appointed contractor is required to comply with all relevant Health and Safety legislation and the risk of a fatality is deemed unlikely.

This worst-case scenario is considered **unlikely** and the significance of the effect is **indeterminable**.

[15] *Accessible via: https://www.hsa.ie/eng/publications_and_forms/publications/corporate/annual_review_of_workplace_injury_illness_and_fatality_statistics_2018-2019.pdf*
[16] *Accessible via: https://www.hsa.ie/eng/Topics/Statistics/Fatal_Injury/*

4.14 References

- National Planning Framework, Ireland 2040 – Our Plan (Government of Ireland, 2018);
- Sustainable Urban Housing: Design Standards for New Apartments (Guidelines for Planning Authorities) (Department of Housing, Planning and Local Government) (March 2018);
- Childcare Facilities (Guidelines for Planning Authorities) (June 2001);
- Eastern and Midlands Regional Spatial and Economic Strategy 2019-2031;
- Fingal County Council Development Plan 2017-2023;
- Environmental Impact Assessment of Projects: Guidance on the preparation of the Environmental Impact Assessment Report (European Commission, 2017);
- Guidelines on the Information to be Contained in Environmental Impact Assessment Reports – Draft (EPA, 2017);
- Guidelines on the Information to be Contained in Environmental Impact Statements (EPA, 2002);
- Advice Notes on Current Practice in the Preparation of Environmental Impact Statements (EPA, 2003);
- Social Infrastructure Audit, MH Planning, 2021;
- School Demand Assessment Report, MH Planning, 2021;
- Childcare Demand Report, MH Planning, 2021;
- Daylight and Sunlight Report, 3D Design Bureau, 2021;
- Central Statistics Office (CSO) website www.cso.ie; and
- Department of Education and Sciences (DES) website www.education.ie.

CHAPTER 5
LANDSCAPE AND VISUAL

MAY 2021

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5 Landscape and Visual

5.1 Introduction

This chapter assesses the potential effects of the proposed development on the landscape and views/visual amenity of the receiving environment. It should be read in conjunction with the verified photomontages prepared by 3D Design Bureau, presented under separate cover.

The chapter was prepared by Richard Butler (BL Arch, MSc Sp Planning, MILI, MIPI) of Model Works Ltd. Richard has degrees in Landscape Architecture and Spatial Planning and is a member of the Irish Landscape Institute and Irish Planning Institute. He has over 20 years' experience in development and environmental planning, specialising in Landscape/ Townscape and Visual Impact Assessment (LVIA/TVIA). In recent years Richard carried out LVIA/ TVIA for the following projects among others:

- Mount St. Mary's SHD, Dundrum Road (10 storeys, suburban);
- Newtownpark Avenue SHD, Blackrock (5 storeys, suburban);
- Augustine Hill, Galway S.34 application for new mixed use urban quarter including high rise cluster;
- Concorde SHD, Naas Road, Dublin (8 storeys, suburban);
- Connolly Quarter SHD, Dublin (up to 23 storeys);
- Connolly Quarter commercial buildings (up to 13 storeys);
- E3 Learning Foundry, Trinity College Dublin (new building within highly sensitive historic campus context, involving the removal of existing buildings);
- Griffith Demesne SHD, Dublin (8 storeys, suburban);
- Hampton Wood SHD, Dublin (9 storeys, suburban);
- Monastery Lands SHD, Dublin (6 storeys, suburban);

5.2 Proposed Development

The full description of the proposed development is outlined in **Chapter 2 – Development Description**, of this Environmental Impact Assessment Report.

The design rationale is to create and deliver a high quality, sustainable, strategic housing development which respects its setting and maximises the site's natural attributes while achieving maximum efficiency of existing infrastructure. The Proposed Site Layout is illustrated on **Drawing No. 1101** contained within the architectural suite of drawings.

The development will consist of;

i. 162 no. residential units distributed across 3 no. blocks (A, B & C) ranging in height from 5-6 storeys, with a cumulative gross floor area (GFA) of 13,337.10 sq.m comprising;
    a. 29 no. 1-bedroom units, - 17.9%
    b. 104 no. 2-bedroom units and – 64.2%
    c. 29 no. 3-bedroom units – 17.9%

ii. 3 no. resident services and amenity rooms (1 no. in each block A-C) to accommodate co-working space, a community room and a meeting room (combined GFA 108 sq.m)
iii. 132 no. car parking spaces at basement level (underlying Blocks A & B) including 6 no. accessible spaces, 13 no. electric vehicle spaces and 4 no. car sharing spaces;
iv. 325 no. residents bicycle parking spaces (long-stay) at basement level, and 30 no. visitor bicycle parking spaces (short-stay) at surface level;
v. communal amenity space in the form of courtyards and roof gardens (combined 2,192 sq.m)
vi. public open space of 1,161 sq.m including a botanic garden and pocket park;
vii. a single storey ESB sub-station and switch room (45.5 sq.m);
viii. demolition of 2 no. sections of the existing demesne northern boundary wall to provide, a primary access (vehicular/pedestrian/cyclist) to the northwest and a separate pedestrian/cyclist access at the centre;
ix. restoration and refurbishment of the remaining extant northern and eastern demesne boundary wall;
x. change of use and regrading of part of the Deer Park Golf Course from active recreation use to passive amenity parkland and planting of a woodland belt on the southern boundary;
xi. undergrounding of existing ESB overhead lines, and, relocation of the existing gas main; and,
xii. all ancillary site development works including waste storage and plant rooms at basement level, drainage, landscaping/boundary treatment and lighting.

5.2.1 Aspects Relevant to this Chapter

The proposal seeks to deliver a high quality, high density residential development to make sustainable use of a strategically located infill development site, which (a) is within walking distance of a town centre in the Dublin Metropolitan Consolidation Area, (b) is served by Dublin Bus and DART services, with the DART station only 500m from the site, and (c) has access to unrivalled open space amenities on Howth Head and along the coastline.

The site, which is zoned for residential development, was once part of the Howth Castle demesne. It is close to the castle (c. 110m) and to St Mary's Church (c. 100m), both protected structures and designated – along with a large area of historic demesne woodland which surrounds the buildings – an Architectural Conservation Area (ACA). A large part of Howth Head is covered by Special Amenity Area Order (SAAO) in recognition of the landscape's recreation and amenity value. These cultural and natural heritage assets are both sensitivities and opportunities for development lands in their vicinity, including the subject site.

With regard to its potential landscape/ townscape and visual effects, the key characteristics of the proposed development are:

- Layout, height and massing;

- Façade design and materials;
- Landscape proposals.

5.2.1.1 Layout, Height and Massing

The development is comprised of three buildings of linear form, arranged side-by-side, aligned north-south, roughly perpendicular to the Howth Road (see **Figure 5.1** below). Each building is divided into a front and rear volume, with the two volumes offset so that the floorplan is staggered, providing the apartments in the rear volumes with views north towards the sea. The layout would create a strong built frontage to the road, on the road's approach to the town centre, while retaining a visual connection between the buildings to the woodlands and upland to the south. The north-south aligned spaces between the buildings would also allow for sunlight penetration to the scheme.

The three buildings are not positioned at the front of the site, i.e. they are not road-front buildings typical of an urban location. They would rather be set back behind the existing roadside green verge, the historic demesne boundary wall which remains on the site, and a proposed corridor of public open space inside the wall. The angling of the road-facing facades creates three triangular spaces inside the wall, in front of the buildings. It is proposed to plant large specimen trees in these spaces, to provide further softening of the built frontage while still generating a degree of street enclosure in recognition of the site's urban gateway position.

The front volumes of the proposed buildings are five storeys, with the top floor set back behind a shallow terrace. The rear volumes step up to six storeys, so that the buildings would reflect the topography of the site, which rises towards the south, away from the road and the coastline.

A key aspect of the proposal is the provision of all car parking at basement level. This allows the ground surface (apart from the access road to the basement) to be dedicated to open space.

Figure 5.1 Proposed layout and landscape plan

5.2.1.2 Façade Design and Materials

The front and rear volumes of the proposed buildings have different primary materials. The rear volumes are clad in grey brick, the material selected to blend in with the woodlands on the lower slopes of the headland to the rear of the site. The front volumes are of buff brick, the colour intended to provide a lighter presence in the road corridor. The top floors (front and rear volumes) are clad in bronze coloured metal, matching the window frames throughout the buildings.

The front volumes have recessed balconies so that the buildings present simple, clean forms to the Howth Road corridor. The rear volumes have projecting balconies, improving the visibility of the surrounding landscape and seascape from the apartments.

A feature of the proposed buildings is their large windows, intended to take maximum advantage of the visual amenities of the site environs. The façade design is informed by this objective, with the elevations all variations of simple grid patterns of glazing framed by brick

or metal cladding. As a result of the large windows, recessed balconies and the variations in material, the facades are highly articulated and the perception of massing/scale would be reduced.

Figure 5.2 CGI view of the proposed development as seen from the Howth Road

5.2.1.3 Landscape Proposals

A key element of the landscape is the demesne wall which runs around the site's north and east boundaries. It is proposed to retain this wall as a feature of the development, opening two gateways – one for vehicular, cycle and pedestrian access and one for pedestrian and cycle access only.

Another key feature of the site environs is a belt of historic demesne woodland outside the site's east boundary. This is part of the entrance avenue to Howth Castle, and is included in the Howth Castle ACA. Although the trees are outside the site boundary, many of their canopies overhang the site. The proposed development would preserve this tree belt entirely. It is also proposed to reinforce the woodland belt with new planting inside the east boundary.

It is proposed to remove a substantial portion of the golf course shelter belt which crosses the southern part of the site. This would be replaced with a realigned woodland belt along the southern site boundary, so that the east-west woodland connection across the site would be retained. In total, the development would include the planting of 9 no. mature trees, 12 no. semi-mature trees, 44 no. standard/multi-stem trees, and 1,960 whips (in the new/relocated woodland belt).

Most of the proposed new mature trees are located inside the site's north, north west and north east boundaries in front of the buildings. These would supplement the street trees in the

green verge in front of the site, providing screening and softening of the built frontage in views from the Howth Road.

The spaces between the buildings (see Fig 5-1 above) would be laid out as semi-private open spaces incorporating hard and soft surfacing, small trees and ornamental planting, seating and other features for the residents' leisure.

The existing zoned High Amenity area to the south of the buildings will be reprofiled and reinstated. It will continue to act as a buffer area for the special area amenity order post development .

In summary, the proposed development combines distinctly urban characteristics (e.g. the building typology and scale) with the retention of key landscape features such as the demesne wall and woodland/trees that lend the site and the area its particular character. This is a considered response to the urban edge/gateway location (which has been reinforced by the permission for the Claremont development) and a receiving environment rich in cultural and natural heritage.

5.3 Methodology

This chapter has been prepared having regard to the following guidelines:

- Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment (Department of Housing, Planning & Local Government, 2018);
- Environmental Impact Assessment of Projects: Guidance on the preparation of the Environmental Impact Assessment Report (European Commission, 2017);
- Guidelines on the Information to be Contained in Environmental Impact Assessment Reports – Draft (EPA, 2017);
- Guidelines for Landscape and Visual Impact Assessment, 3rd edition (GLVIA) (Landscape Institute, 2013);
- Technical Information Note on Townscape Character Assessment (Landscape Institute, 2016).

The draft EPA guidelines provide a general methodology and impact ratings for the full range of EIA topics. The GLVIA provides specific guidelines for landscape and visual impact assessments. Therefore, a combination of the draft EPA guidelines, the Landscape Institute guidelines and professional experience has informed the methodology for this assessment.

5.3.1 Key Principles of the GLVIA

5.3.1.1 Use of the Term 'Effect' vs 'Impact'

The GLVIA requires that the terms 'impact' and 'effect' be clearly distinguished and consistently used. 'Impact' is defined as the action being taken, e.g. the introduction to the landscape of buildings, infrastructure or landscaping. 'Effect' is defined as the change resulting from those actions, e.g. change in townscape character or in the composition of a view.

5.3.1.2 Assessment of Both 'Landscape' and 'Visual' Effects

The GLVIA requires that effects on views and visual amenity be assessed separately from the effects on townscape, although the two topics are linked.

'Landscape' results from the interplay between the physical, natural and cultural components of our surroundings. Different combinations and spatial distribution of these elements create variations in townscape character. Landscape impact assessment identifies the changes to this character which would result from the proposed development, and assesses the significance of those effects on the landscape as a resource.

Visual impact assessment is concerned with changes that arise in the composition of available views, the response of people to these changes and the overall effects on the area's visual amenity.

5.3.2 Methodology for Landscape Impact Assessment

Assessment of potential landscape effects involves (a) classifying the sensitivity of the landscape resource, and (b) describing and classifying the magnitude of landscape change which would result from the development. These factors are then combined to arrive at a classification of significance of the effects.

5.3.2.1 Landscape Sensitivity

The sensitivity of the landscape is a function of its land use, patterns and scale, visual enclosure and the distribution of visual receptors, and the value placed on the landscape. The nature and scale of the development in question is also taken into account, as are any trends of change, and relevant policy. Five categories are used to classify sensitivity (see **Table 5.1** below).

Sensitivity	Description
Very High	Areas where the landscape exhibits very strong, positive character with valued elements, features and characteristics that combine to give an experience of unity, richness and harmony. The landscape character is such that its capacity to accommodate change is very low. These attributes are recognised in policy or designations as being of national or international value and the principal management objective for the area is protection of the existing character from change.
High	Areas where the landscape exhibits strong, positive character with valued elements, features and characteristics. The landscape character is such that it has limited/low capacity to accommodate change. These attributes are recognised in policy or designations as being of national, regional or county value and the principal management objective for the area is the conservation of existing character.
Medium	Areas where the landscape has certain valued elements, features or characteristics but where the character is mixed or not particularly strong, or has evidence of alteration, degradation or erosion of elements and characteristics. The landscape character is such that there is some capacity for change. These areas may be recognised in policy at local or county level and the principal management objective may be to consolidate landscape character or facilitate appropriate, necessary change.
Low	Areas where the landscape has few valued elements, features or characteristics and the character is weak and has capacity for change; where development would make no significant change or would make a positive change. Such landscapes are generally unrecognised in policy and the principal management objective may be to facilitate change through development, repair, restoration or enhancement.
Negligible	Areas where the landscape exhibits negative character, with no valued elements, features or characteristics. The character is such that its capacity to accommodate change is high; where development would make no significant change or would make a positive change. Such landscapes include derelict industrial lands, as well as sites or areas that are designated for a particular type of development. The principal management objective for the area is to facilitate change in the landscape through development, repair or restoration.

Table 5.1 Categories of Landscape Sensitivity

5.3.2.2 Magnitude of Landscape Change

Magnitude of change refers to the extent of change imposed on the landscape by a development, with reference to its key elements, features and characteristics (also known as 'landscape receptors'). Landscape receptors include individual aspects of the landscape, e.g. the topography, urban grain or mix of building typologies, which may be directly changed by the development. The surrounding landscape character areas are also receptors whose character may be altered by these changes. Five categories are used to classify magnitude of change (**Table 5.2**).

Magnitude of Change	Description
Very High	Change that is large in extent, resulting in the loss of or major alteration to key elements, features or characteristics of the landscape, and/or introduction of large elements considered totally uncharacteristic in the context. Such development results in fundamental change in the character of the land scape.
High	Change that is moderate to large in extent, resulting in major alteration to key elements, features or characteristics of the landscape, and/or introduction of large elements considered uncharacteristic in the context. Such development results in change to the character of the landscape.
Medium	Change that is moderate in extent, resulting in partial loss or alteration to key elements, features or characteristics of the landscape, and/or introduction of elements that may be prominent but not necessarily substantially uncharacteristic in the context. Such development results in change to the character of the landscape.
Low	Change that is moderate or limited in scale, resulting in minor alteration to key elements, features or characteristics of the landscape, and/or introduction of elements that are not uncharacteristic in the context. Such development results in minor change to the character of the landscape.
Negligible	Change that is limited in scale, resulting in no alteration to key elements features or characteristics of the landscape, and/or introduction of elements that are characteristic of the context. Such development results in no change to the landscape character.

Table 5.2 Categories of Magnitude of Landscape Change

5.3.2.3 Significance of Landscape Effects

To classify the significance of effects the magnitude of change is measured against the sensitivity of the landscape using the guide in **Table 5.3** below. This matrix is only a guide. The assessor also uses professional judgement informed by their expertise, experience and common sense to arrive at a classification of significance that is reasonable and justifiable.

		Sensitivity of the Landscape/View				
		Very High	**High**	**Medium**	**Low**	**Negligible**
Magnitude of Change to the Landscape/View	**Very High**	Profound	Profound to Very Significant	Very Significant to Significant	Moderate	Slight
	High	Profound to Very Significant	Very Significant	Significant	Moderate to Slight	Slight to Not Significant
	Medium	Very Significant to Significant	Significant	Moderate	Slight	Not Significant
	Low	Moderate	Moderate to Slight	Slight	Not significant	Imperceptible
	Negligible	Slight	Slight to Not Significant	Not significant	Imperceptible	Imperceptible

Table 5.3 Guide to Classification of Significance of Landscape and Visual Effects

5.3.3 Methodology for Visual Impact Assessment

Assessment of visual effects involves identifying a number of representative viewpoints in the site's receiving environment, and for each one of these: (a) classifying the viewpoint sensitivity, and (b) classifying the magnitude of change which would result in the view. These factors are combined to arrive at a classification of significance of the effects on each viewpoint.

5.3.4 Sensitivity of the Viewpoint/Visual Receptor

Viewpoint sensitivity is a function of two main considerations:

- Susceptibility of the visual receptor to change. This depends on the occupation or activity of the people experiencing the view, and the extent to which their attention is focused on the views or visual amenity they experience at that location.

  Visual receptors most susceptible to change include residents at home, people engaged in outdoor recreation focused on the landscape (e.g. trail users), and visitors to heritage or other attractions and places of community congregation where the setting contributes to the experience. Visual receptors less sensitive to change include travellers on road, rail and other transport routes (unless on recognised scenic routes), people engaged in outdoor recreation or sports where the surrounding landscape does not influence the experience, and people in their place of work or shopping, where the setting does not influence their experience.

- Value attached to the view. This depends to a large extent on the subjective opinion of the visual receptor but also on factors such as policy and designations (e.g. scenic routes, protected views), or the view or setting being associated with a heritage asset, visitor attraction or having some other cultural status (e.g. by appearing in arts).

Five categories are used to classify a viewpoint's sensitivity (**Table 5.4**).

Sensitivity	Description
Very High	Iconic viewpoints (views towards or from a landscape feature or area) that are recognised in policy or otherwise designated as being of national value. The composition, character and quality of the view are such that its capacity for change is very low. The principal management objective for the view is its protection from change.
High	Viewpoints that are recognised in policy or otherwise designated as being of value, or viewpoints that are highly valued by people that experience them regularly (such as views from houses or outdoor recreation features focused on the landscape). The composition, character and quality of the view may be such that its capacity for accommodating change may or may not be low. The principal management objective for the view is its protection from change that reduces visual amenity.
Medium	Views that may not have features or characteristics that are of particular value, but have no major detracting elements, and which thus provide some visual amenity. These views may have capacity for appropriate change and the principal management objective is to facilitate change that does not detract from visual amenity, or which enhances it.
Low	Views that have no valued feature or characteristic, and where the composition and character are such that there is capacity for change. This category also includes views experienced by people involved in activities with no particular focus on the landscape. For such views the principal management objective is to facilitate change that does not detract from visual amenity or enhances it.

Sensitivity	Description
Negligible	Views that have no valued feature or characteristic, or in which the composition may be unsightly (e.g. in derelict landscapes). For such views the principal management objective is to facilitate change that repairs, restores or enhances visual amenity.

Table 5.4 Categories of Viewpoint Sensitivity

5.3.4.1 Magnitude of Change to the View

Classification of the magnitude of change takes into account the size or scale of the intrusion of development into the view (relative to the other elements and features in the composition, i.e. its relative visual dominance), the degree to which it contrasts or integrates with the other elements and the general character of the view, and the way in which the change will be experienced (e.g. in full view, partial or peripheral view, or in glimpses). It also takes into account the geographical extent of the change, as well as the duration and reversibility of the visual effects. Five categories are used to classify magnitude of change to a view (**Table 5.5**).

Magnitude of Change	Description
Very High	Full or extensive intrusion of the development in the view, or partial intrusion that obstructs valued features or characteristics, or introduction of elements that are completely out of character in the context, to the extent that the development becomes dominant in the composition and defines the character of the view and the visual amenity.
High	Extensive intrusion of the development in the view, or partial intrusion that obstructs valued features, or introduction of elements that may be considered uncharacteristic in the context, to the extent that the development becomes co-dominant with other elements in the composition and affects the character of the view and the visual amenity.
Medium	Partial intrusion of the development in the view, or introduction of elements that may be prominent but not necessarily uncharacteristic in the context, resulting in change to the composition but not necessarily the character of the view or the visual amenity.
Low	Minor intrusion of the development into the view, or introduction of elements that are not uncharacteristic in the context, resulting in minor alteration to the composition and character of the view but no change to visual amenity.
Negligible	Barely discernible intrusion of the development into the view, or introduction of elements that are characteristic in the context, resulting in slight change to the composition of the view and no change in visual amenity.

Table 5.5 Categories of Magnitude of Visual Change

5.3.4.2 Significance of Visual Effects

As for landscape effects, to classify the significance of visual effects, the magnitude of change to the view is measured against the sensitivity of the viewpoint, using the guide in **Table 5.3** above.

5.3.5 Quality of Effects

In addition to predicting the significance of the effects, EIA methodology requires that the quality of the effects be classified as positive, neutral, or negative.

For landscape to a degree, but particularly for visual effects, this is an inherently subjective exercise. This is because landscape and visual amenity are *perceived* by people and are therefore subject to differences in attitude and values - including aesthetic preferences - of the receptor. One person's attitude to a development may differ from another person's, and thus their response to the effects of a development on a landscape or view may vary.

Additionally, in certain situations there might be policy encouraging a particular development in an area, in which case the policy is effectively prescribing landscape and visual change. If a development achieves the objective of the policy the resulting effect might be considered positive, even if the landscape character is profoundly changed. The classification of quality of landscape and visual effects should seek to take these variables into account and provide a reasonable and robust assessment.

5.4 Baseline Environment

5.4.1 The Site

The site is comprised of a large grassland field, currently in agricultural use, on the south side of the Howth Road, and a small portion of the Deer Park Golf Club to the rear/south of the field (see **Figure 5.3** below). The field slopes down towards the road. The field has 130m road frontage but is set back from the road behind a green verge (with footpath) that widens towards the east where there is a copse of trees outside its north east corner.

The field is enclosed along the roadside boundary by an approximately 3.5m stone wall, a typical demesne boundary wall (although the upper section of the wall is thought to be a later addition, see reports prepared by the project conservation architect, Slattery Conservation, included under separate cover). There is a modern wall along part of the west boundary where the site borders on two residential properties. Along the southern boundary of the field there is a belt of maturing trees approx. 25 years old (part of the framework of woodland that encloses the Deer Park golf course). The subject site includes a triangular area beyond this belt of trees – an area currently occupied by part of a fairway and green. To the east of the site there is a mature woodland belt alongside the entrance road to Howth Castle and the golf club. Most of these trees are outside the boundary but their canopies overhang the site.

The neighbouring lands include:

- to the north across the Howth Road - between the road and the DART line along the coast - a public park (Baltray Park), a former halting site and the extensive Techrete factory, now disused and the site of the permitted Claremont strategic housing development which extends to the town centre 500m to the east;
- to the west, a corridor of low density housing on both sides of the Howth Road;
- to the south, the Deer Park Golf Club and Howth Castle (protected structure), including an extensive area of historic demesne woodland surrounding the castle, and the National Transport Museum housed in a complex of outbuildings near the castle;
- to the east, the entrance and main access road to Howth Castle and Deer Park Golf Club, and beyond that St Mary's Church (protected structure), surrounded by historic demesne woodland.

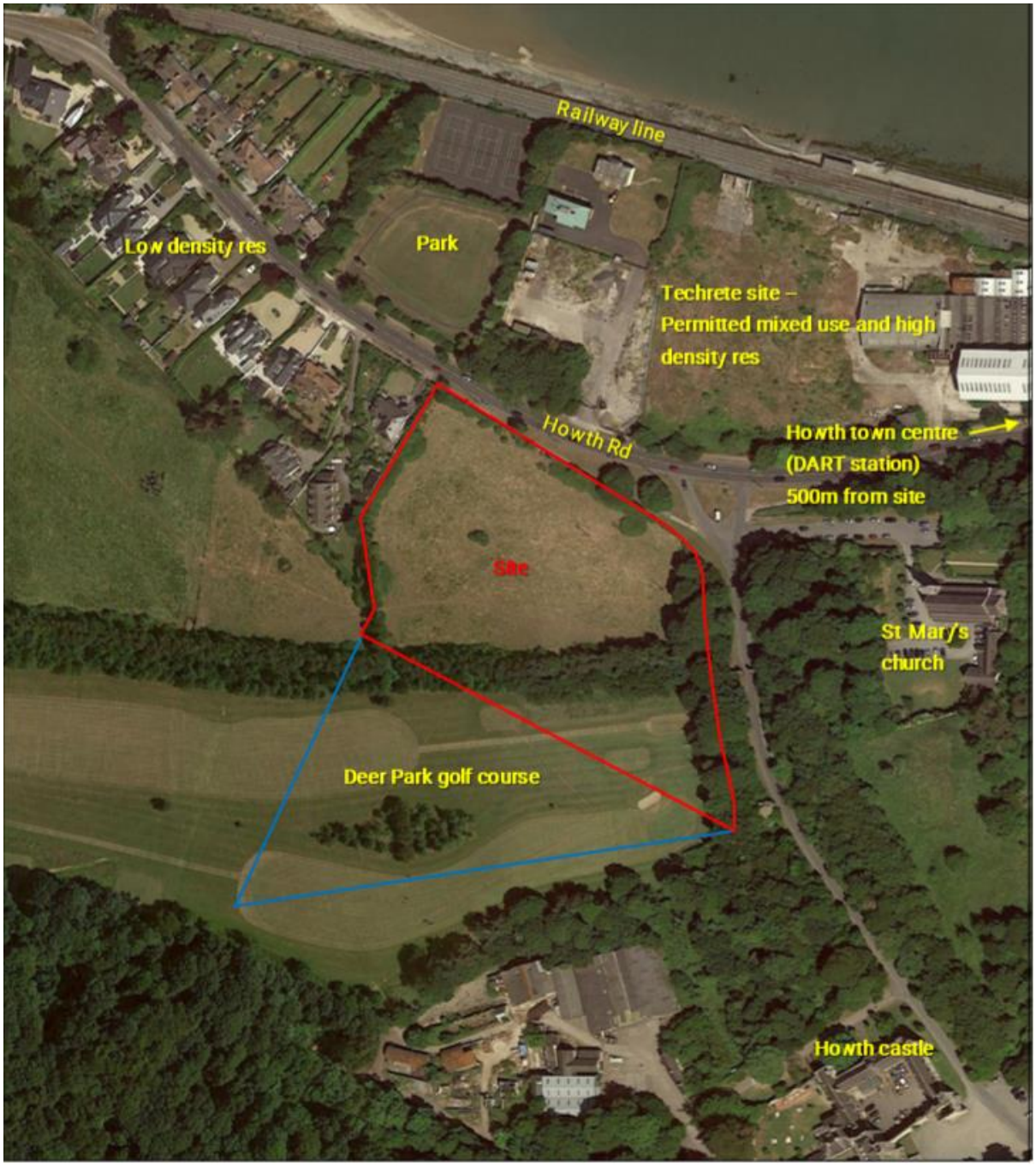

Figure 5.3 The site and immediate landscape context

Although currently greenfield, the application area is mostly zoned for residential development in the Fingal County Development Plan 2017-2023 (see **Figure 5.4**). A small part of the site - the strip to the rear, adjacent to the golf course - is zoned High Amenity. It is thus the objective of the local authority that the site (apart from the High Amenity zoned area) be developed for residential use, forming part of the continuous strip of urban development along the Howth Road and the northern shoreline of the peninsula. This would be another step in the ongoing evolution of the Howth landscape, described in Section 5.4.2 below.

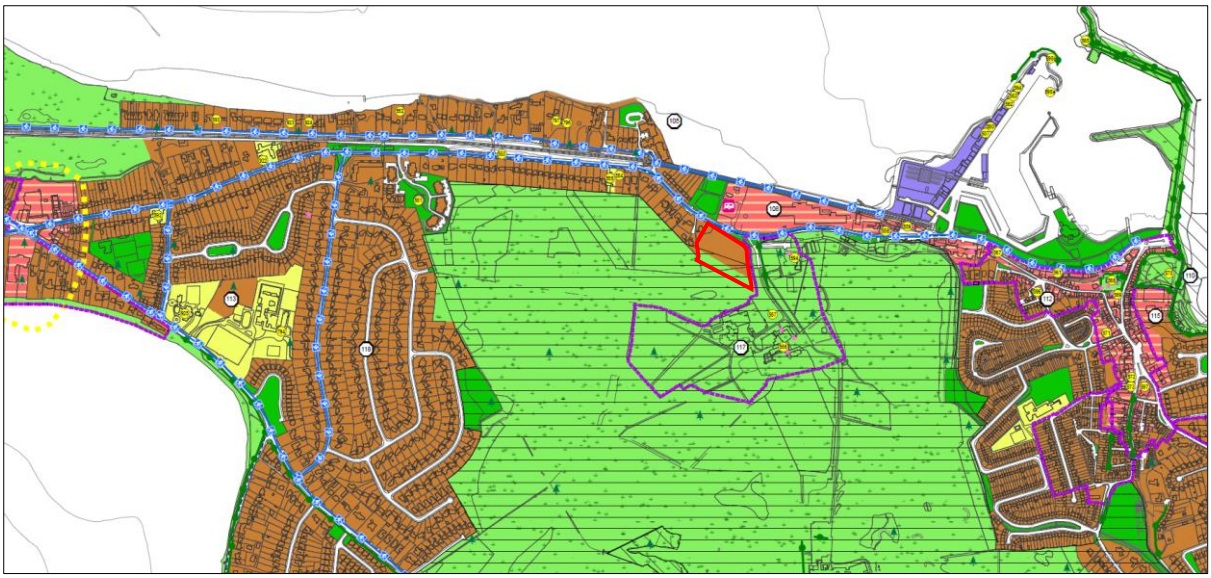

Figure 5.4 Excerpt of Fingal Development Plan Zoning Objectives Map, Sheet No. 10: Baldoyle/Howth

5.4.2 Historic Development of the Landscape

The Ordnance Survey 6 inch map (see **Figure 5.5**), surveyed between 1837 and 1842, shows the Howth Demesne well established, with a large woodland with a central ride to the west of the castle. East of the castle were formal gardens and to the north alongside the road was St Mary's church. The site was part of a field in the vast deer park around the castle, and a race course ran through the field inside the boundary along the road, which led to Howth Harbour and the village 500m to the east. The village had a linear form with the bulk of the development along Main Street at the eastern end of the harbour.

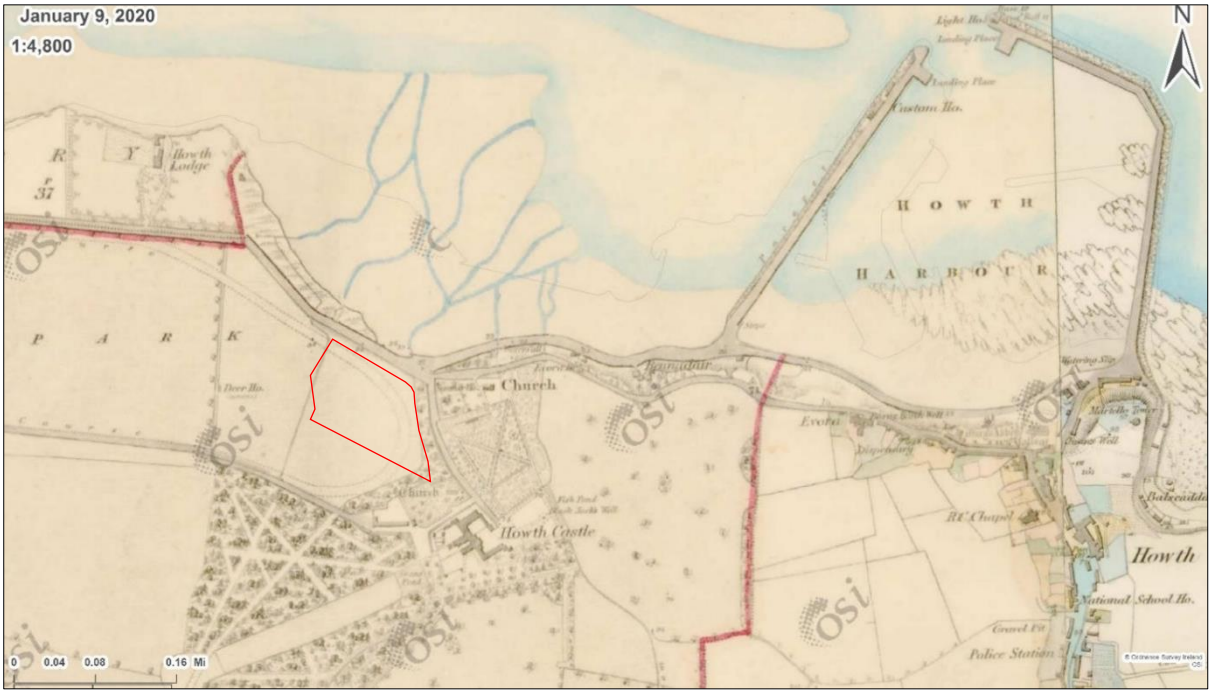

Figure 5.5 Ordnance Survey 6 Inch Map (surveyed 1837-1842)

The 25 inch map (**Figure 5.6**), surveyed between 1888 and 1913, shows the early stages of the town's evolution following the construction of a tramway along the Howth Road, and the railway line, terminating at the western end of the harbour. The urban area had begun to spread westwards along the harbour-front, and onto the lands behind the harbour and Main Street, along secondary streets. The St Lawrence Hotel was built near the railway station, and industry had developed along the west pier of the harbour. Howth Demesne remained intact. The railway line's construction created an area of reclaimed land north of the road, opposite the subject site and St Mary's church. This area would later be occupied by the Techrete factory. Another notable change was the construction of the Claremont Hotel on the shoreline north of the railway line (this site was later to be re-developed as the Howth Lodge apartments), and a row of houses fronting the beach to the west of the hotel, accessed by Claremont Road.

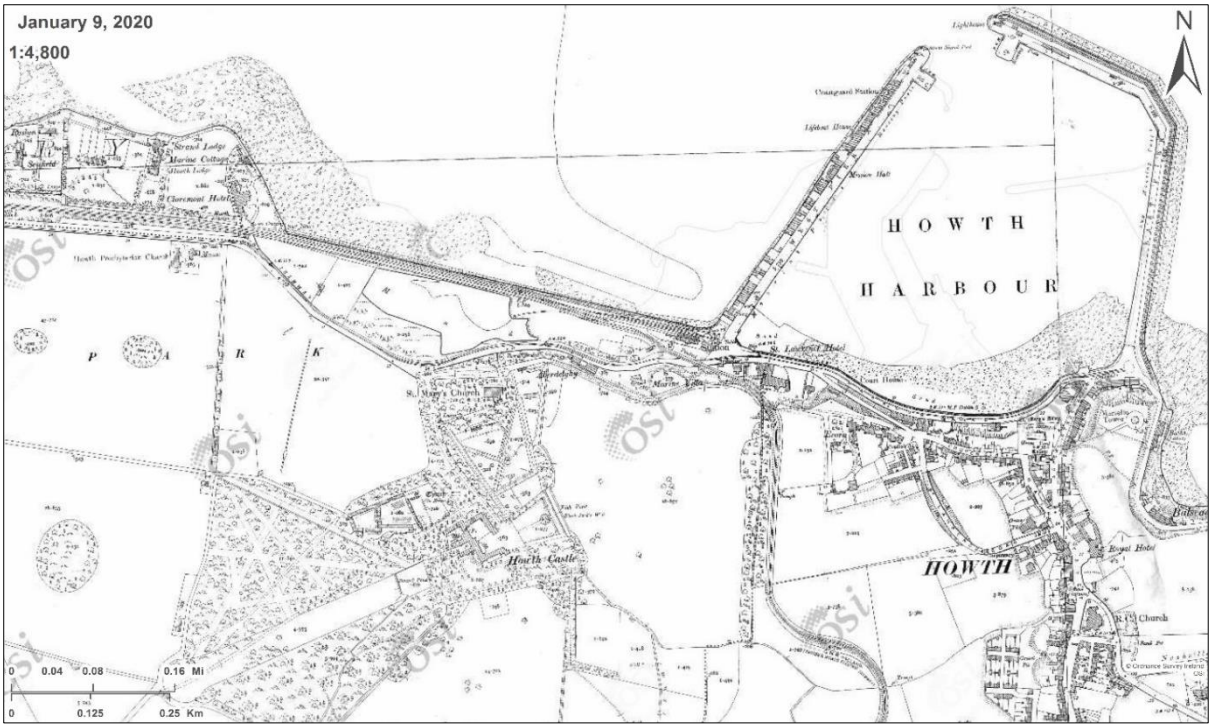

Figure 5.6 Ordnance Survey 25 Inch Map (surveyed 1888-1913)

Over the course of the 20th century extensive suburban expansion occurred behind the Howth harbour front, west of Main Street and all around the sides of the peninsula. The central part of the peninsula, including much of the Howth demesne Deer Park (but excluding the subject site and some adjacent lands), was developed as several golf courses. This preserved the larger part of the peninsula as open space (although not public), with extensive woodlands. On the vicinity of the site, the Techrete factory was developed across the road, and a strip of housing was developed along the road to the west, the easternmost of these residential properties adjoining the site's western boundary.

Approaching the turn of the 21st century a further phase of change began with the start of densification of the suburban area. The Claremont Hotel site on the shoreline near the site was redeveloped as the Howth Lodge apartment complex, with four blocks four storeys in

height. To the west along Howth Road, half way between the town centres of Howth and Sutton, two apartment developments were built on neighbouring sites, namely Corr Castle (six blocks, four storeys) and Offington Manor (three blocks, 3-4 storeys). Some densification took place in Howth town centre also, for example the Findlater apartments in two new four storey blocks flanking the refurbished Villa Hotel building.

A significant further change in the landscape will occur when the Techrete site across the road from the subject site is redeveloped for high density mixed use development. The Techrete lands are zoned Town and District Centre and planning permission was recently granted by An Bord Pleanála for a development ('Claremont') comprising four blocks of up to seven storeys. The Claremont permission reflects the national policy promoting compact growth through efficient use of the built environment.

5.4.3 Present Landscape/Townscape Context – Key Elements, Features & Character Areas

The following are the landscape/townscape elements and character areas which could potentially be affected by the proposed development (i.e. the main potential landscape/ townscape receptors):

- The Howth Road corridor;
- The low density residential strip along Howth Road to the west of the site;
- The Claremont (former Techrete) site;
- Howth town centre and harbour;
- Howth Castle and St Mary's Church;
- Howth Head.

5.4.3.1 Howth Road

The road passes along the northern boundary of the site. It has one lane in each direction, with dedicated cycle lanes, footpaths, a green verge and street trees on both sides. The character of the road corridor changes as it passes the site, from suburban to urban. To the west it is lined by detached houses set back from the road in large gardens. To the east it is fronted on one side by the Techrete buildings, a garden centre and car show room (all to be replaced by the permitted Claremont development), and on the other side by a belt of historic woodland (beyond the entrance to Howth Castle).

Howth Road follows a winding route as it enter/exits the town, so that (a) the distance from which the site can be seen from either direction is limited, but (b) for the stretches approaching the site, it is the focal point of the view. The road users are the largest group of potential visual receptors of the proposed change.

Plate 5-1 The approach to the site from the west along the Howth Road

Plate 5-2 The site frontage to the Howth Road, seen from the west

Plate 5-3 The approach to the site from the east along the Howth Road, with the Techrete buildings to the right

5.4.3.2 Residential Strip to West Along Howth Road

To the west of the site there is a strip of mostly detached houses on large plots forming linear type development, on both sides of the road (except for a small park diagonally across the road from the site). The two plots nearest the site have been subdivided, with houses built behind the street-front houses. The two neighbouring properties, the gardens of which adjoin the site, have a high degree of visual exposure to the site. The exposure lessens with distance to the west.

The Howth Presbyterian Church and neighbouring house some 280m to the west of the site are both protected structures. The site is too far removed from these buildings for its development to materially affect their setting.

While the strip of development to the west of the site is predominantly low density, there is a cluster of medium density development approximately half way between Sutton and Howth, comprised of the Corr Castle and Offington Manor apartment schemes, both four storeys tall.

5.4.3.3 Claremont Development Site

Diagonally across the road from the site and extending east as far as the DART station, is the site of the Claremont development, recently granted planning permission. The development is comprised of four buildings, “U” shaped in plan so that they present a strong urban frontage to the road, with courtyards opening towards the sea to the north. The street-front buildings are up to four storeys, and the arms forming the courtyards up to 7/8 storeys. In addition to the residential use there is retail/commercial use at ground level. This is concentrated in the two blocks furthest east, closest to the town centre.

Figure 5.7 Layout plan of the permitted Claremont development

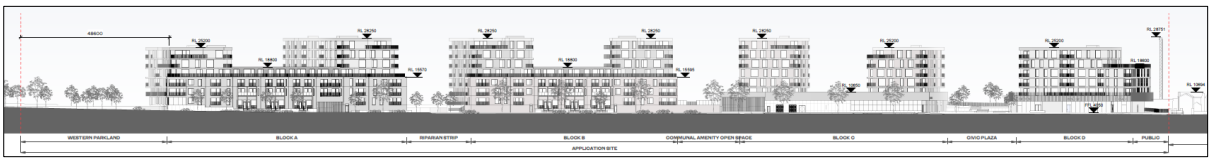

Figure 5.8 Howth Road elevation of the permitted Claremont development

The Claremont development represents a significant change in the townscape of Howth, and in the site's immediate setting. It will extend Howth town centre along the Howth Road as far as the site, and it will change the character along this corridor, so that Howth will in future be approached along a street of contemporary urban character. The proposed development site is at the point of transition between this evolving urban area to the east and the suburban strip to the west.

5.4.3.4 Howth Town Centre and Harbour

The town is highly valued for its visual amenity, generated by the distinctive topography (which encloses/contains the harbour and harbour-front area), the busy harbour, the sea and islands, the harbour-front open space and the historic architecture. It should be recognised however that the townscape is not pristine; it is a working town with visible industry, modern developments among the historic buildings, extensive road infrastructure and parking.

The site lies 500m to the west of the town centre. Due to the sinuous alignment of the road and the woodland belt on the southern side of the road, there is no direct visual relationship between the site and the town centre.

From the end of the harbour piers there is a view west along the northern shoreline of the peninsula in which the Techrete buildings are prominent, as well as the Howth Lodge apartments on a point across an inner bay (see Plate 5-4 below). St Mary's church spire is also visible protruding above the treeline.

Plate 5-4 The view west from the west pier of the harbour

5.4.3.5 Howth Castle and St Mary's Church

Howth Castle lies some 110m to the south east of the site. The entrance and access road to the castle and to the Deer Park Golf Club lies directly to the east of the site. This road is enclosed on both sides by broad belts of mature woodland. The woodland west of the road (site-side) broadens before reaching the castle so that between the site and the castle there is a block of woodland more than 100m deep. Due to the separation distance and the woodland around the castle, the site cannot be seen from the castle and the castle cannot be seen from the site. It is noteworthy that the castle cannot be seen from the Howth Road as it passes the site. It is only in views from the peaks of Howth Head (e.g. Muck Rock) that both can be seen together in a single view.

St Mary's church, also formerly a part of the Howth demesne and also a protected structure, lies 100m to the east of the site. Like the castle, it is separated from the site by a block of mature woodland which screens the site from the church and vice versa.

Although there is no direct visual relationship between the site and the castle or the church, visitors to these heritage buildings pass by the site on their arrival and departure. Development on the site thus has potential to indirectly affect the setting of these historic buildings. Chapter 15 of this EIAR assesses the impact of the proposed development on Built Heritage and should be read in conjunction with this LVIA.

The castle and outbuildings (housing the National Transport Museum), St Mary's church and the remaining demesne woodlands and garden areas surrounding them are collectively an Architectural Conservation Area (ACA). The views from the castle access road – inside and outside of the gate, i.e. covering the views on arrival and departure – are protected views.

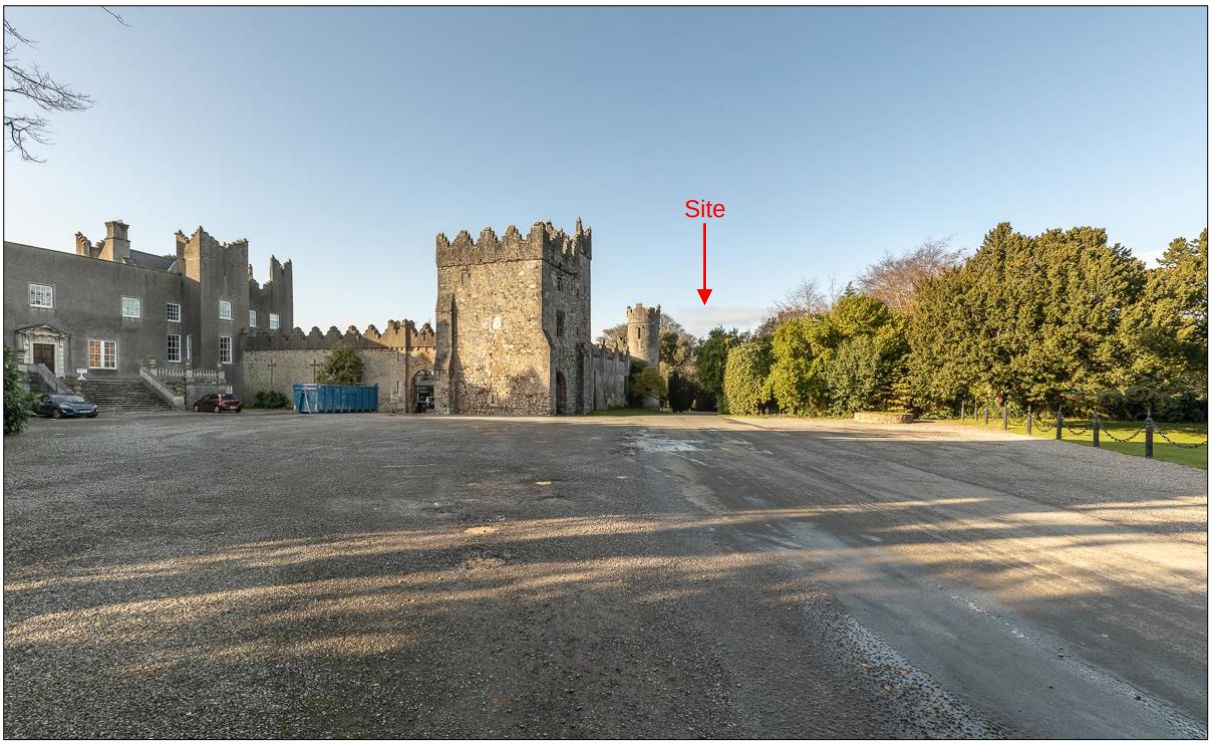

Plate 5-5 The view towards the site from the east front of the castle. The site is behind the woodland, downslope, some 110m beyond the castle.

Plate 5-6 The view towards the site from an upper floor window of the castle. The site is hidden from view by the woodland.

Plate 5-7 The view towards the site from St Mary's church. The site is hidden from view by the woodland.

Plate 5-8 The view towards the site from the Howth Castle access road, approaching the gate from the castle. The site is heavily filtered by the tree canopy in this view (in summer it is completely screened).

Plate 5-9 The view towards the castle entrance gate from Howth Road, with the site behind the wall and trees to the right

Regarding views, the *Howth Castle Architectural Conservation Area Statement of Character* states:

"The principal views of note within the boundaries of the ACA are of Howth Castle itself. There are some views out of the ACA, namely from the entrance gates and from the castle over the golf course. These views contribute to the character of the area and it is important that potential new development within the ACA does not negatively impact on or obscure these views."

The Statement of Character includes a map showing the key views in the ACA (**Figure 5.9** below). This shows that the site (a) is outside of the ACA, and (b) does not feature in any of the identified views (represented by blue arrows on the map).

Figure 5.9 'Annotated Map (Fig. 29), Howth Castle Architectural Conservation Area Statement of Character

5.4.3.6 Howth Head

There is a vast area of open space to the south of the site, rising to several peaks, including Muck Rock 1km directly to the south and Ben of Howth further to the south east. The lower elevations of the hills are occupied by golf courses with large linear woodland belts between fairways and around the perimeter of the courses. This limits the visibility of the surrounding landscape from the golf course. The Deer Park clubhouse (and former hotel) is located up the hillside some 750m to the south of the site, beyond the castle. There is a remnant patch of the demesne woodland (which has been expanded with supplementary planting) in front of the clubhouse and parking area. This provides screening between the clubhouse and the castle, and therefore also between the clubhouse and the site. However, there is a protected view from a fairway to the west of the clubhouse, in which development taller than the trees around the site would most likely be visible, albeit from 750m (see Plate 5-10).

The upper slopes of Howth Head, above the golf courses, are heather-covered with rock outcrops. These areas are crisscrossed by hiking paths. They are a highly valued recreation and tourism resource. The elevation affords panoramic views of Dublin Bay, the city and the coastline to the north and south. The development around the perimeter of the peninsula is also visible, although this is only a part of the complex panoramic views. The potentially most affected view is that from Muck Rock (Plate 5-11), in which development on the site would be visible in close proximity to the castle.

Plate 5-10 The protected view from a position to the west of the clubhouse, with a part of the castle visible some 600m distant. The site is hidden behind the woodland to the west of the castle.

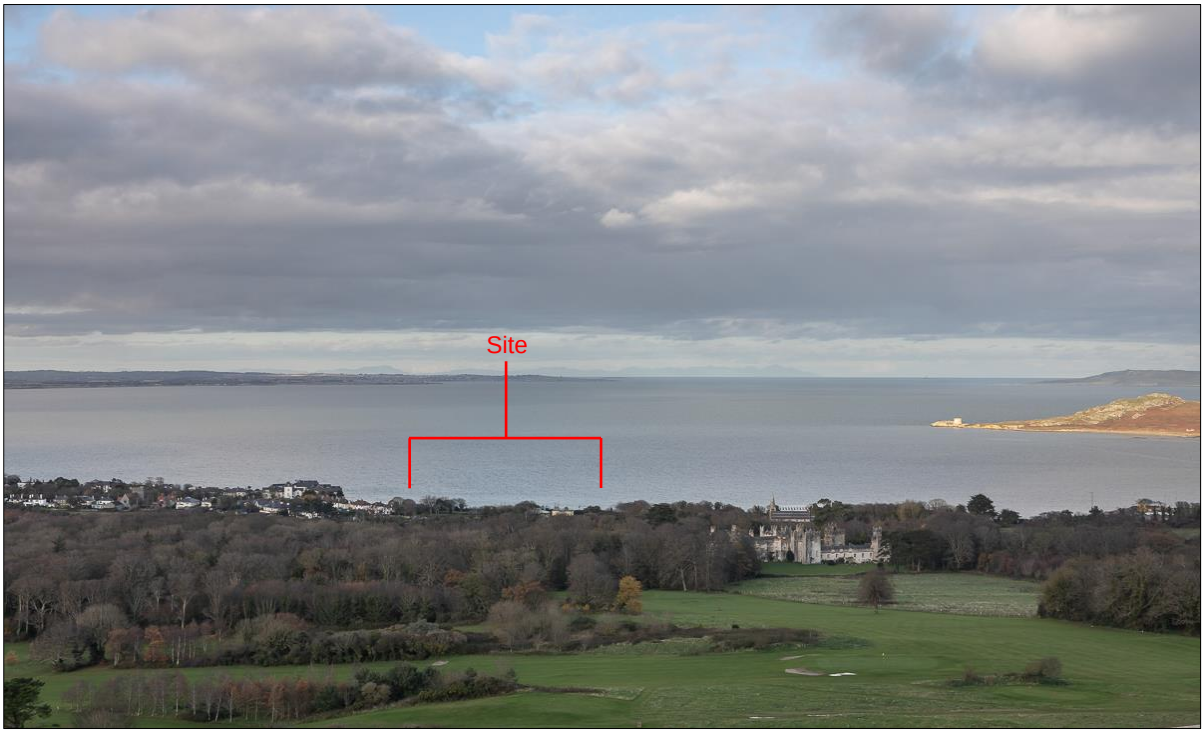

Plate 5-11 The view north from Muck Rock towards the site

5.5 Relevant Planning Policy

5.5.1 Fingal Development Plan 2017 – 2023

5.5.1.1 Zoning

The proposed development site is primarily zoned Rs - Residential, with the objective to *"Provide for residential development and protect and improve residential amenity"*, and the vision to *"Ensure that any new development in existing areas would have a minimal impact on and enhance existing residential amenity"*.

A strip to the rear of the site, adjacent to the golf course, is zoned HA – High Amenity, with the objective to *"Protect and enhance high amenity areas"*.

5.5.1.2 Main Aims of the Development Plan

The following are the most relevant among the Main Aims of the Development Plan (Section 1.5):

"3. Incorporate sustainable development, climate change mitigation and adaptation, social inclusion, high quality design and resilience as fundamental principles, cross cutting and underpinning the Development Plan.

4. Promote an appropriate balance of development across the County, by developing a hierarchy of high quality, vibrant urban centres and clearly delineated areas of growth, and favouring expansion in areas nearest to existing or planned public transport nodes.

5. Ensure an adequate supply of zoned lands to meet forecasted and anticipated economic and social needs, while avoiding an oversupply which would lead to fragmented development, dissipated infrastructural provision and urban sprawl." (emphasis added)

5.5.1.3 Strategic Policy

The following are the most relevant among the Strategic Policies of the Development Plan (Section 1.6):

"6. Consolidate development and protect the unique identities of the settlements of Howth, Sutton, Baldoyle, Portmarnock, Malahide, Donabate, Lusk, Rush and Skerries.

22. Minimise the County's contribution to climate change, and adapt to the effects of climate change, with particular reference to the areas of land use, energy, transport, water resources, flooding, waste management and biodiversity, and maximising the provision of green infrastructure including the provision of trees and soft landscaping solutions."

5.5.1.4 Settlement Hierarchy

Howth is identified as part of the Dublin City and Suburbs Consolidation Area'. The Development Plan states:

Objective SS01: *"Consolidate the vast majority of the County's future growth into the strong and dynamic urban centres of the Metropolitan Area while directing development in the hinterland to towns and villages, as advocated by national and regional planning guidance."*

Objective SS01a: *"Support the implementation of and promote development consistent with the National Strategic Outcome of Compact Growth as outlined in the NPF and the Regional Strategic Outcome of Compact Growth and Regeneration as set out in the RSES."*

Objective SS01b: *"Consolidate within the existing urban footprint, by ensuring of 50% of all new homes within or contiguous to the built up area of Dublin City and Suburbs and 30% of all new homes are targeted within the existing built-up areas to achieve compact growth of urban settlements, as advocated by the RSES."*

5.5.1.5 Policy Specific to Howth

"Future development will be strictly related to the indicated use zones including the infilling of existing developed areas rather than further extension of these areas. Development will be encouraged which utilises the recreational and educational potential of the area and other nearby natural environments of high quality. The strategy for Howth Peninsula is to ensure the conservation and preservation of this sensitive and scenic area, in particular through the implementation of the Howth Special Amenity Area Order..."

The following are the most relevant among the Development Plan Objectives for Howth:

Objective HOWTH 1: *"Ensure that development respects the special historic and architectural character of the area."*

Objective HOWTH 4: *"Protect and manage the Special Amenity Area, having regard to the associated management plan and objectives for the buffer zone."*

5.5.1.6 Residential Density

"*In general, the number of dwellings to be provided on a site should be determined with reference to the Departmental Guidelines document Sustainable Residential Development in Urban Areas –Guidelines for Planning Authorities (2009). As a general principle and to promote sustainable forms of development, higher residential densities will be promoted within walking distance of town and district centres and high capacity public transport facilities".*

Objective PM41: *"Encourage increased densities at appropriate locations whilst ensuring that the quality of place, residential accommodation and amenities for either existing or future residents are not compromised."*

5.5.1.7 Urban Design

"High quality urban design is essential to achieving attractive, high quality places in which people will live, work and relax. The Government Policy on Architecture 2009-2015 promotes the importance of good architecture in the creation of quality places. The Council promotes best practice contemporary architecture and the conservation of the County's architectural heritage throughout the Plan…

"To achieve good urban design in developments, the 12 Urban Design Principles set out in the Urban Design Manual – A Best Practice Guide (2009) should be taken into account in designing schemes. These principles are: Context, Connections, Inclusivity, Variety, Efficiency, Distinctiveness, Layout, Public Realm, Adaptability, Privacy/Amenity, Parking and Detailed Design. Every area of the County is different, therefore the rules of good design

should, in so far as possible, respond to the characteristics, history and culture of a place to which they are applied."

Objective PM31: *"Promote excellent urban design responses to achieve high quality, sustainable urban and natural environments, which are attractive to residents, workers and visitors and are in accordance with the 12 urban design principles set out in the Urban Design Manual – A Best Practice Guide (2009)."*

Objective PM33: *"Enhance and develop the fabric of existing and developing rural and urban centres in accordance with the principles of good urban design, including the promotion of high quality well-designed visually attractive main entries into our towns and villages."*

5.5.1.8 Architecture

It is the Strategic Vision for the County to:

"Create a high quality built environment integrating the conservation of Fingal's built heritage with best practice contemporary architecture and urban design".

"Apartment developments should be of high quality design and site layout having due regard to the character and amenities of the area. All apartment developments shall accord with or exceed all aspects of Government Guidelines in relation to residential development best practice, including 'Sustainable Urban Housing: Design Standards for New Apartments' (2007 & 2015) and 'Sustainable Residential Development in Urban Areas' (2009)" – Policy documents at time of print 2017

Objective DMS44: *"Protect areas with a unique, identified residential character which provides a sense of place to an area through design, character, density and/or height and ensure any new development in such areas respects this distinctive character."*

The above policy (DMS44) is relevant in that the site is not located in an area with a unique, identified residential character. There is low density residential development of mixed styles to the west along the Howth Road (as well as sporadically located apartment developments of four storeys within this area), but this is not an area of valued character. The site context is equally characterised/defined by the Techrete/Claremont site and it is intended that the development would act in concert with Claremont to define a new, unique and identifiable corridor of contemporary urban character on the final approach/entry into the town centre.

5.5.1.9 Built Heritage, Conservation and Protected Structures

There are two architectural conservation areas (ACAs) in the vicinity of the application site. Most pertinent is the Howth Castle Demesne ACA, which adjoins the east boundary of the site and includes the protected structures Howth Castle and St Mary's Church, and the historic demesne woodlands around the buildings. The Howth Historic Core ACA is some 500m to the east of the site and has no direct physical or visual relationship with the site..

Objective CH25: *"Ensure that proposals for large scale developments and infrastructure projects consider the impacts on the architectural heritage and seek to avoid them. The extent, route, services, and signage for such projects should be sited at a distance from Protected Structures, outside the boundaries of historic designed landscapes, and not interrupt specifically designed vistas. Where this is not possible the visual impact must be minimised*

through appropriate mitigation measures such as high quality design and/or use of screen planting."

"A sensitive design approach is also required for development that adjoins or is in close proximity to a Protected Structure as it could have a detrimental visual impact on it, adversely affecting its setting and amenity. The scale, height, massing, building line, proportions, alignment and materials of any development proposed within the curtilage, attendant grounds or in close proximity to a Protected Structure need to respect and compliment the structure and its setting".

5.5.1.10 Green Infrastructure and Trees

Objective GI20: *"Require all new development to contribute to the protection and enhancement of existing green infrastructure and the delivery of new green infrastructure, as appropriate."*

Objective GI24: *"Ensure biodiversity conservation and/or enhancement measures, as appropriate, are included in all proposals for large scale development such as road or drainage schemes, wind farms, housing estates, industrial parks or shopping centres."*

Objective GI36: *"Ensure green infrastructure provision responds to and reflects landscape character including historic landscape character, conserving, enhancing and augmenting the existing landscapes and townscapes of Fingal which contribute to a distinctive sense of place."*

"Trees provide both valuable amenity and wildlife habitat. Visually they add to an area, softening the impact of physical development on the landscape while also fulfilling an important role in the improvement of air quality in urban areas and providing wildlife habitats."

Objective PM64: *"Protect, preserve and ensure the effective management of trees and groups of trees."*

Objective NH27: *"Protect existing woodlands, trees and hedgerows which are of amenity or biodiversity value and/or contribute to landscape character and ensure that proper provision is made for their protection and management."*

5.5.1.11 Landscape Character and Protected Views

Howth falls into the Coastal Character Type which is characterised as having an exceptional landscape value: *"This value is arrived at due to the combination of visual, ecological, recreational and historical attributes. The area has magnificent views out to sea, to the islands and to the Mourne and Wicklow mountains and contains numerous beaches and harbours. The area's importance is highlighted by the High Amenity zoning covering substantial parts of the area..."*

The SAAO designation covers the upper elevations and the south and east sides of the headland to the south and east of the site. It is approximately 730m from the site at its closest. The area between the SAAO and the site (occupied by the Deer Park golf course, the castle, transport museum, St Mary's Church and a small part of the site itself) is identified on the CDP map as the SAA 'buffer zone'. From the SAAO area panoramic views are generally afforded, with compositions including the upland landscape and golf courses, the Howth urban area, the wider city, the coastline to the north and south and the sea.

There are several protected views in the site vicinity, indicated on Sheet No. 10 of the Development Plan Map. These include:

- The view into the Howth Castle entrance from the Howth Road, and the reverse view, from the castle (and Deer Park golf club) access road out through the gate towards the north;
- A view from the fairway to the west of the Deer Park clubhouse, north towards the castle;
- Views from Muck Rock;
- Views from the ends of the piers of Howth Harbour.

5.5.2 National Planning Framework

Compact growth is one of the main principles and intended outcomes of the NPF. This encourages higher density - and therefore taller - development in urban areas where supporting infrastructure and services, particularly public transport, are available. In order to achieve compact growth the NPF sets the following objectives:

- *"Targeting a greater proportion (40%) of future housing development to be within and close to the existing 'footprint' of built-up areas.*
- *Making better use of under-utilised land and buildings, including 'infill', 'brownfield' and publicly owned sites and vacant and under-occupied buildings, with higher housing and jobs densities, better serviced by existing facilities and public transport."*

National Policy Objective 11 of the NPF states: *"In meeting urban development requirements, there will be a presumption in favour of development that can encourage more people and generate more jobs and activity within existing cities… subject to development meeting appropriate planning standards and achieving targeted growth."*

5.5.3 Urban Development & Building Height Guidelines (2018, **updated** 2020)

The Building Height Guidelines state: "*Implementation of the National Planning Framework requires increased density, scale and height of development in our town and city cores …*

In Section 3.2, 'development management criteria' are set out to guide the evaluation of development proposals for buildings taller than the prevailing heights in the area:

"*In the event of making a planning application, the applicant shall demonstrate to the satisfaction of the Planning Authority/ An Bord Pleanála, that the proposed development satisfies the following criteria:*

At the scale of the relevant city/town

- *The site is well served by public transport with high capacity, frequent service and good links to other modes of public transport.*
- *Development proposals incorporating increased building height, including proposals within architecturally sensitive areas, should successfully integrate into/ enhance the character and public realm of the area, having regard to topography, its cultural context, setting of key landmarks, protection of key views. Such development proposals shall undertake a*

landscape and visual assessment, by a suitably qualified practitioner such as a chartered landscape architect.

- *On larger urban redevelopment sites, proposed developments should make a positive contribution to place-making, incorporating new streets and public spaces, using massing and height to achieve the required densities but with sufficient variety in scale and form to respond to the scale of adjoining developments and create visual interest in the streetscape*.

At the scale of district/ neighbourhood/ street:

- *The proposal responds to its overall natural and built environment and makes a positive contribution to the urban neighbourhood and streetscape.*
- *The proposal is not monolithic and avoids long, uninterrupted walls of building in the form of slab blocks with materials / building fabric well considered.*
- *The proposal enhances the urban design context for public spaces and key thoroughfares and inland waterway/ marine frontage, thereby enabling additional height in development form to be favourably considered in terms of enhancing a sense of scale and enclosure while being in line with the requirements of "The Planning System and Flood Risk Management – Guidelines for Planning Authorities" (2009).*
- *The proposal makes a positive contribution to the improvement of legibility through the site or wider urban area within which the development is situated and integrates in a cohesive manner.*
- *The proposal positively contributes to the mix of uses and/ or building/ dwelling typologies available in the neighbourhood*."

5.6 Do Nothing Scenario

If the site were to remain in undeveloped the landscape character and views in the receiving environment would nonetheless undergo significant change as a result of the permitted Claremont development on the Techrete site across the road.

However, the site is zoned for residential use and there are other factors driving its development, including (a) its frontage to the main road entering Howth; (b) its location at the gateway to the expanded urban area (once the permission for the Claremont development is implemented); (c) its proximity to the town centre; (d) its access to the DART station and bus services; (e) its access to an abundance of open space on Howth Head and along the coastline.

These characteristics combined with compact growth policy and factors such as (f) the predominantly low density typology of existing development in the area (albeit with some clusters of medium and high density), and (g) a large proportion of the peninsula being preserved from future development by high amenity zoning and SAAO designation, suggest that the site's development must be of relatively high density, i.e. of apartment typology. This is necessary to make more sustainable use of Howth's high quality amenities and public transport infrastructure.

Therefore, it is unlikely that the site will remain in greenfield condition, and any alternative development proposal for the site will seek to achieve a similar yield of residential units, in accordance with compact growth policy.

5.7 Likely Significant Effects – Landscape/Townscape Impact Assessment

5.7.1 Construction Phase

The construction process (estimated to be 22 months in duration) would entail the following:

- Site set-up, installation of perimeter hoarding to secure the site.
- Enabling works and services diversions within the site.
- Excavation works for proposed basement area.
- Commencement of foundation works.
- Completion of super-structures for each of the buildings.
- External facades and completion of internal fit-out works.
- Completion of site works including final services connections.
- Completion of all external landscaping works.

During construction the site and immediate environs would be heavily disturbed by the above activities and the incremental growth of the buildings on site. The magnitude of change to the site itself would be high, and to the surrounding landscape/townscape receptors high to low (reducing with distance from the site). The effects would be negative, although temporary.

5.7.2 Operational Phase

The assessment of potential landscape/townscape effects involves (a) classifying the sensitivity of the receptors (the main elements, features, characteristics and character areas that could be affected), (b) classifying the potential magnitude of change to each of the receptors, (c) combining these factors to arrive at an assessment of significance of the effects on each receptor, and (d) making a judgement as to the quality of the effects, i.e. classifying them as positive, neutral or negative. The following receptors are individually assessed below.

Townscape characteristics:

- Land use pattern;
- Plot and building typologies, scale and architecture;
- Landscape/green infrastructure.

Townscape character areas:

- The Howth Road corridor including the Claremont development site to the east;
- Howth town centre and harbour;
- The low density residential strip along Howth Road to the west of the site;
- Howth Castle and St Mary's Church;
- Howth Head.

5.7.2.1 Effects on the Land Use Pattern

Baseline:

- There is a continuous strip of development around the northern perimeter of the peninsula, and along the Howth Road between Sutton and Howth. This varies between urban in character and suburban.
- The Claremont development will change the land use pattern locally, extending Howth town centre along the road as far as the site, and establishing a contemporary urban gateway to the town.
- The site is at the point of transition between this evolving urban area to the east and an area of residential use and predominantly suburban character to the west, although there are clusters of higher density residential use west of the site, e.g. Howth Lodge, Corr Castle and Offington Manor apartments.
- Given this established pattern and the site's zoning and strategic location, the land use pattern – as a landscape/townscape receptor – is of low sensitivity to the change proposed.

Proposed Change:

- The introduction of a high density residential scheme would complement the evolving pattern of land use in the area, (a) filling a gap in the otherwise continuous strip of development along the Howth Road, (b) increasing the density and sustainability of residential use in proximity to the town centre and the DART station, and (c) contributing (in concert with the Claremont scheme) to the establishment of an appreciable edge between the town centre and the suburban area to the west.
- The change (high density use in proximity to public transport and other urban amenities) is encouraged by compact growth policy.
- The magnitude of change to the land use pattern would be low.

Significance and Quality of Effect:

- The significance of the effect would be slight. Due to the proposal's accordance with policy and the trend of change in the area, the effect on landscape/townscape character would be positive.

5.7.2.2 Effects on Plot & Building Typologies, Scale and Architecture

Baseline:

- The receiving environment is characterised by variety in building typology and scale, including:
  - Two storey detached and semi-detached houses west of the site along the Howth Road;
  - Historic buildings/protected structures of large scale (i.t.o. massing, e.g. the castle, and height, e.g. St Mary's steeple), together covered by ACA designation along with the surrounding woodland;

- Late 20th and early 21st century apartment buildings of up to four storeys west of the site, e.g. Howth Lodge, Corr Castle, Offington Manor, and east of the site in the town centre, e.g. the Findlater apartments;
- Large footprint industrial/ warehouse-type buildings, on the Techrete site (to be demolished) and along the west pier of the harbour;
- High density residential buildings of contemporary, urban architecture, up to 7/8 storeys on the Techrete/Claremont site, and five storeys at the far end of the town ('Rennie Place', adjacent to the Martello tower).

- While the site's immediate context is currently characterised by low density residential and industrial typologies, this will change with the construction of Claremont.
- The proximity of the two protected structures (although buffered from the site by broad belts of woodland) adds sensitivity to this factor.
- Given this mix of building typologies, scale and architecture, this aspect of the landscape/townscape character is of medium sensitivity to the change proposed.

Proposed Change:

- The proposed development would introduce three apartment buildings of urban scale (max. six storeys) and contemporary architecture to the townscape, laid out and designed to address and provide enclosure to the Howth Road. The change would be in keeping with the policy-driven trend represented most clearly by the Claremont permission.
- It would contribute (along with Claremont) to the ongoing shift in character at the western edge of the town centre, (a) forming a corridor of contemporary urban buildings as the Howth Road enters/exists the town centre, and (b) through its contrast with the houses to the west, strengthening the urban edge, improving the coherence and legibility of the landscape/townscape.
- The magnitude of change to the mix of building typologies, scale and architecture would be medium.

Significance and Quality of Effect:

- The significance of the effect would be moderate. Given the high design and material quality of the proposed development, its accordance with policy and the trend of change in the area, the effect would be positive.

5.7.2.3 Effects on the Landscape, Green Infrastructure and Trees

Baseline:

- The site is in greenfield condition, being comprised of an agricultural field and a small part of the neighbouring golf course. In the wider context, characterised by an abundance of high value open space and woodland, the field is of limited landscape/GI value.
- Its zoning for residential development is also pertinent.
- The belt of trees along the east boundary (most of the trees located outside of but close to the site boundary) is a highly valuable element of the landscape - for its cultural

heritage value (the entrance avenue to the castle/demesne), biodiversity, and as a structural/spatial and visual feature of the landscape.

- The belt of trees crossing the southern part of the site is less valuable, having been planted more recently (late 20th century) as part of a shelter belt of woodland around the golf course.
- With a mix of sensitive and less sensitive elements, the sensitivity of the receiving environment's landscape/GI resources can be classified medium.

Proposed Change:

- The development would preserve the valuable historic woodland belt to the east of the site, and supplement this with new planting inside the site boundary to reinforce this feature.
- The field would be occupied by a constructed landscape of buildings, circulation space and amenity space, in keeping with the site's zoning.
- A substantial portion of the golf course shelter belt on the site would be removed (with selected trees relocated on the site where feasible). It is proposed to replace the removed section of shelter belt with a realigned woodland belt along the southern site boundary (refer to **Figure 5.1**), so that the east-west woodland connection across the site would be retained.
- In total, the development would include the planting of 9 no. mature trees, 12 no. semi-mature trees, 44 no. standard/multi-stem trees, and 1,960 whips (in the new/relocated woodland belt). This large number of trees would perform screening, landscape/visual amenity and biodiversity functions. The Arboricultural Impact Assessment concludes (Paragraph 5.44) that *"… within 25-30 years of planting, there will be a significant increase in canopy cover in the local landscape. Therefore, the long-term result will be an improvement on the pre-development baseline"*.
- The portion of the site zoned High Amenity, would be retained as open space to the rear of the buildings, in the form of a terraced grassland.
- The magnitude of change to the landscape and green infrastructure of the receiving environment would be medium.

Significance and Quality of Effect:

- The significance of the effect would be moderate. Given the preservation of the most valuable local landscape/GI feature, the retention of the High Amenity area as open space, and the volume of trees proposed in compensation for the removed shelter belt, the quality of the effect would be neutral.

The above assessments address the key *characteristics* of the receiving environment. The assessments below address the key *character areas* surrounding the site.

5.7.2.4 Effects on the Howth Road Corridor including the Claremont Development Site

Baseline:

- As the road approaches Howth from the west it follows a long, straight route alongside the railway line, passing the four storey cluster of Corr Castle and Offington Manor

apartments, then a long row of houses, then the Howth Lodge apartments to the left beside the level crossing to Claremont Road. At this point the Howth Road dog-legs and the site comes into view, less than 200m distant.

- As the road passes the site the Techrete/Claremont development site comes into view (with woodland opposite), and extends as far as the DART station beside the harbour-front, signalling the town centre.
- In the Howth Road corridor the site is thus strategically located, (a) becoming visible as the road bends away from the railway and follows a winding route for the final 750m approach to the town, and (b) for a short stretch (along the site frontage) being concurrently visible with the Claremont development. The reverse is experienced on departing the town centre.
- It should be noted that the road corridor is urban/suburban along its entire length between the town centres of Sutton and Howth. Its zoning for residential development is also pertinent.
- Given the trend of change along the road corridor, the site's strategic location in that corridor, the site's zoning, and relevant policy (e.g. Objective PM33: *"Enhance and develop the fabric of existing and developing rural and urban centres in accordance with the principles of good urban design, including the promotion of high quality well-designed visually attractive main entries into our towns and villages"*), the sensitivity of the Howth Road corridor can be classified low.

Proposed Change:

- The development would introduce a cluster of buildings of contemporary urban character, scale and arrangement, complemented by specimen trees, at a key point along the road corridor. While distinct in its layout, architecture and materials, it would complement the Claremont development by addressing the Howth Road (with similarly strong frontage and sufficient height to generate a degree of built enclosure), shifting the road corridor's character towards that of an urban street – appropriate to the main entrance to the town (see **Figures 5.10 a** and **b** below).
- Due to the winding alignment of the road, the development's effect, while strong, would affect a relatively short stretch of the road, that being the final approach into the town centre.
- Through its contrast with the housing to the west, it would establish (in concert with Claremont) a strong urban edge to the town centre.
- The magnitude of change to the Howth Road townscape corridor would be medium.

Significance and Quality of Effect:

- The significance of the effect would be moderate. The development would be a prominent addition to the Howth Road corridor, but one which is appropriately located and of appropriate character, in keeping with the trend of change in the area and contributing to the realisation of urban design policy. The effect would be positive.

Figure 5.10 a & b - The existing view and the potential cumulative view of the proposed development and the permitted Claremont development as seen from the Howth Road to the east of the site

5.7.2.5 Effects on the Howth Town Centre and Harbour

Baseline:

- Howth town centre, particularly the harbour area, has a rich character deriving from the town's distinctive topography, a fine grain of development including many buildings and sites of heritage value, the activity of a working harbour, a generous public realm and the seascape.
- It benefits from a high degree of physical and visual enclosure, generated by the bowl-like landform, emphasised by the buildings fronting the curved Harbour Road, and the harbour walls – all of which orientate views north over the harbour towards the sea and Ireland's Eye.
- These factors contribute to Howth's highly valued townscape character (of a remote, small but substantial, and vibrant town) despite its metropolitan location and public transport services. The town centre, with much of the area designated ACA, is highly sensitive to change.

Proposed Change:

- Due to a combination of the winding alignment of the Howth Road and the woodland on the south side of the road, the site is not visible from the harbour area (and it is completely removed from the eastern part of the town centre, i.e. Abbey Street and Main Street), despite its proximity to the town centre.
- The development would have no direct effect on the town centre, except for views from the ends of the piers, in which the Claremont development will be far more prominent.
- The only effect on the historic town centre would be the experience of contrast between this area and the new contemporary urban gateway/corridor, formed by a combination of Claremont and the proposed development, on arrival and departure from the harbour area.
- The magnitude of change to the town centre would be negligible.

Significance and Quality of Effect:

- The significance of the effect would be slight. The minor, indirect effect would be positive, emphasising the historic town centre's character.

5.7.2.6 Effects on the Low Density Residential Strip along Howth Road to West of Site

Baseline:

- West of the site the road is lined by houses on large plots, and a public park diagonally across the road from the site.
- The area potentially affected by the development is a less than 200m stretch from the site to the bend where the road meets and runs alongside the railway line. This stretch is suburban in character, although the Techrete/Claremont site is at its eastern end (diagonally across the road from the site) and the Howth Lodge apartments are near (and visible from) the western end.
- Most of the houses are arranged facing the road, so that the principal views from the houses and gardens are roughly to the north or south and not towards the site.
- Given the location on the approach to the town centre, and the zoning of both the site and the Techrete site, the sensitivity to change of the type proposed can be classified

medium (i.e. there is capacity for change). However, the easternmost residential properties, closest to the site, are individually more sensitive due to their proximity.

Proposed Change:

- The development would be visible (a) along the 200m stretch of road, the focal point of the view along the road, framed by the houses and garden vegetation in the foreground; (b) in lateral views from the gardens of the houses (although partially screened/ filtered by garden vegetation); and (c) featuring prominently in views from the windows and gardens of a small number of houses immediately to the west of the site.
- In building typology, scale and architecture the development would contrast strongly with the otherwise suburban strip of development west of the site (while complementing the Claremont development to the east), changing the townscape character of this clearly defined, small area.
- Importantly, the design and material quality of the development would be appreciable from this proximity.
- The magnitude of change on this area would be medium.

Significance and Quality of Effect:

- The significance of the effect would be Moderate. Considered in isolation, the change in character may be deemed (by the existing residents) to negatively affect the area, particularly the small number of houses nearest to the site and most directly affected, despite the development's design and material quality.
- However, considered at the wider scale, in the context of the Howth urban area, the change is not inappropriate, being located on the final approach to the town centre, being complementary to the Claremont development, being of high design and material quality, and – due to the contrast with the houses to the west – establishing a strong urban edge in compliance with the principles of good urban design.

5.7.2.7 Effects on Howth Castle and St Mary's Church

Baseline:

- The two protected structures form the core of an ACA that also includes their surrounding woodlands, which buffer the buildings and their immediate setting from the site. There is thus no direct visual relationship between the site and the ACA, despite the two areas being adjacent.
- However, visitors to the historic buildings pass by the site on their arrival and departure. Development on the site thus has potential to indirectly affect the setting of the buildings.
- The area is highly sensitive to inappropriate or insensitive change.

Proposed Change:

- The development would have no direct impact on the ACA. The woodland belt outside the site's eastern boundary (which falls into the ACA, being part of the woodland

avenue along the entrance to the castle from the Howth Road) would be unaffected by the development.

- The photomontages (Viewpoints 11-18) show that the development would not be visible from either the castle or the church. The development would however be prominent when approaching or departing the castle grounds or the church along the Howth Road.
- These indirect changes to the wider setting would amount to a low magnitude of change on the Howth Castle and St Mary's character area, with no reduction in the landscape and visual amenity experienced when visiting the historic buildings.

Significance and Quality of Effect:

- The significance of the effect would be slight and neutral.

5.7.2.8 Effects on Howth Head

Baseline:

- The lower slopes of Howth Head to the south of the site are occupied by a golf course, with linear woodland belts between fairways and around the perimeter of the course, limiting the visibility of the surrounding landscape. The clubhouse is located up the hillside some 750m from the site, buffered from the site by woodland in the intervening landscape. (There is a protected view from a fairway to the west of the clubhouse, in which development taller than the trees around the site would be visible.)
- The upper slopes of Howth Head are a highly valued recreation and tourism resource and form part of the Howth SAAO.
- The elevation of this area affords panoramic views of the headland itself, the Howth and Sutton urban areas, the wider city (including the city centre, the airport, etc.) and the seascape. The potentially most affected view is the view from Muck Rock 1km directly to the south of the site.
- The area is highly sensitive to internal change, but of lower sensitivity to change in the urban fringe around the peninsula (i.e. the change proposed).

Proposed Change:

- The development would be visible from parts of Howth Head, including in the protected view from Muck Rock. However, it would form part of a vast and varied panorama.
- The change to the landscape character and visual amenity experienced on Howth Head (including the SAAO) would be negligible.

Significance and Quality of Effect:

- The effect would be not significant and neutral.

5.7.3 Cumulative Effects

There is potential for the proposed development and the permitted Claremont development to have cumulative effects on the landscape/townscape. The two sites are diagonally across the Howth Road from each other and would be passed one after the other (and seen concurrently) by people entering and exiting the town centre along the road.

The proposed buildings are of similar scale to the permitted Claremont buildings, with similar design intent (albeit with different architectural styles) - to establish a strong built frontage and a degree of urban-type enclosure to the road, while retaining visual permeability with gaps between the buildings.

Together the two developments would form a corridor of contemporary urban buildings as the Howth Road enters/exits the town centre, complemented by the woodland-framed entrance to Howth Castle and the woodland across the road from Claremont, and emphasising the historic character of the harbour area, by their contrast with it.

The developments would both enhance and diminish (with positive effect) each other's influence on the townscape. A development of Claremont's scale would have a singular, defining influence on the gateway to the town centre, whereas, when complemented by another development of similar type but distinct character, its influence would be lessened while the urban character of the gateway would be strengthened.

5.7.4 Summary

Table 5.6 below summarises the identified likely effects in the absence of mitigation during the construction phase of the proposed development.

Landscape/ Townscape Receptor	Quality	Significance	Extent	Probability	Duration	Type
Key Landscape/Townscape Characteristics						
Land use pattern	Negative	Slight	Local	Likely	Temporary	Direct
Building typologies, scale and architecture	Negative	Moderate	Local	Likely	Temporary	Direct
Landscape, GI and trees	Negative	Moderate	Local	Likely	Temporary	Direct
Surrounding Character Areas						
Howth Road corridor including Claremont development site	Negative	Moderate	Local	Likely	Temporary	Direct
Howth town centre and harbour	Neutral	Not significant	Local	Likely	Temporary	Indirect
Low density residential strip along Howth Rd west of site	Negative	Moderate to high	Local	Likely	Temporary	Direct
Howth Castle and St Mary's Church	Negative	Slight	Local	Likely	Temporary	Indirect
Howth Head	Negative	Not significant	Local	Likely	Temporary	Indirect

Table 5.6 Summary of Construction Phase Likely Significant Landscape/Townscape Effects

Table 5.7 below summarises the identified likely effects in the absence of mitigation during the operational phase of the proposed development.

Landscape/ Townscape Receptor	Quality	Significance	Extent	Probability	Duration	Type
Key Landscape/Townscape Characteristics						
Land use pattern	Positive	Slight	Local	Likely	Permanent	Direct
Building typologies, scale and architecture	Positive	Moderate	Local	Likely	Permanent	Direct
Landscape, GI and trees	Neutral	Moderate	Local	Likely	Permanent	Direct
Surrounding Character Areas						
Howth Road corridor including Claremont development site	Positive	Moderate	Local	Likely	Permanent	Direct
Howth town centre and harbour	Positive	Slight	Local	Likely	Permanent	Indirect
Low density residential strip along Howth Rd west of site	Positive/ Negative	Moderate	Local	Likely	Permanent	Direct
Howth Castle and St Mary's Church	Neutral	Slight	Local	Likely	Permanent	Indirect
Howth Head	Neutral	Not significant	Local	Likely	Permanent	Indirect

Table 5.7 Summary of Operation Phase Likely Significant Landscape/Townscape Effects

5.8 Likely Significant Effects – Visual Impact Assessment

5.8.1 Construction Phase

During construction the site would be heavily disturbed by construction activities and haulage and the incremental growth of the buildings on site. (These impacts are typical of building developments and are a normal feature of the urban landscape.) The most significantly affected views would be those from the Howth Road (up to approximately 200m to either side of the site), and from the nearest houses to the west of the site. The magnitude of change to these views would be high. The sensitivity of the visual receptors ranges from medium (road users) to high (occupants of the neighbouring houses). The significance of the effects would range from slight to significant. The effects would be negative, but temporary to short-term.

5.8.2 Operational Phase

To assess the proposal's potential visibility and visual effects, 20 no. viewpoints were selected for assessment informed by verified photomontages (see viewpoint maps, **Figures 5.11 a, b, c** below). The viewpoints were selected to represent the key townscape character areas and visual receptors in the receiving environment, and to provide photomontage views from a range of angles and distances. The viewpoint selection also took account of pre-planning consultation with Fingal Co. Co. and An Bord Pleanála; a number of views were included specifically to address the potential cumulative effects of the proposed development and the permitted Claremont development on their immediate environs (e.g. Viewpoints 1, 2, 3, 4, 5).

1. Howth Harbour, west pier
2. Howth Rd east of site alongside Techrete/Claremont site – A
3. Howth Rd east of site alongside Techrete/Claremont site – B
4. Access Road to St Mary's Church
5. Howth Rd approaching site from east
6. Howth Rd entry to Howth Castle demesne
7. Howth Road alongside site - View east
8. Howth Rd approaching site from west
9. Howth Rd from west - A
10. Howth Rd from west - B
11. St Mary's Church
12. Exit From Howth Demesne
13. Howth Castle grounds near 'Black Jack's well'
14. Howth Castle east facade
15. Howth Castle upper floor window
16. Howth Castle outbuildings (National Transport Museum)
17. Howth Castle grounds west of castle - A
18. Howth Castle grounds west of castle - B
19. Muck Rock
20. Portmarnock Harbour, west pier;

The viewpoint assessments below should be read in conjunction with the photomontage booklet provided under separate cover . For the methodology, terminology and assessment criteria used refer to Section 5.3.3 of this chapter.

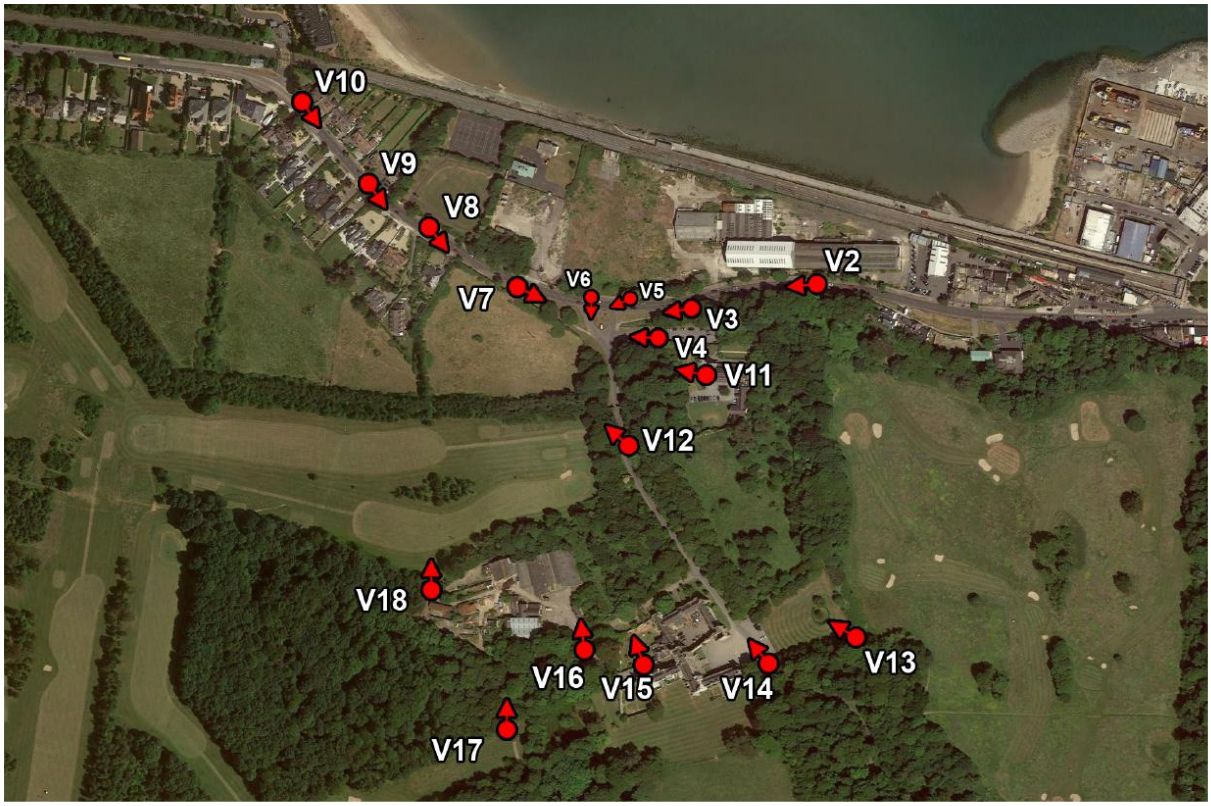

Figure 5.11 a, b, c - Viewpoints for visual impact assessment

5.8.2.1 Viewpoint 1 – Howth Harbour, West Pier

Baseline:

- The principal views from the piers are the view north across the sea to Ireland's Eye, and the view back across the harbour to the town centre.
- In the view west the storage areas, dry docks and factory buildings of the harbour are visible to the left, and beyond that the factory buildings and yards of the Techrete site spread along the shoreline behind the railway line. The Howth Lodge apartments are on the far side of the bay. The wooded landscape of the Howth demesne rises to the south, with the spire of St Mary's church protruding above the tree line.
- The Claremont development will change the view substantially, introducing a row of buildings of urban scale and architecture along the shoreline, with the wooded headland rising to the rear.
- The view is a composition of sea, built up shoreline, urban development and open space. It has a working urban harbour character. Given that the eye is drawn to the sea and the main harbour and town centre area (i.e. away from the site), the view sensitivity is medium.

Proposed Change:

- Proposed development: The buildings would protrude above the tree line beyond the Techrete site, emerging from the wooded hillside and stepping down towards the

shoreline, reflecting the topography. The varied strata of materials and articulated and textured facades would reduce the buildings' presence and they would be no more prominent than the other buildings in view. The magnitude of change would be low.

- Cumulative change: The Claremont buildings would screen the proposed development entirely.

Significance and Quality of Effect:

- Proposed development: The visual effect would be of slight significance and neutral. The development would introduce a complementary built element to the composition with no negative effect on any valued elements or characteristics of the view.
- Cumulative change: The proposed development would have no effect.

5.8.2.2 Viewpoint 2 – Howth Road to East of Site Alongside Techrete/Claremont Site - A

Baseline:

- Visual receptors would have just left the town centre and harbour area, passing the DART station, before travelling along the frontage of the Techrete site with the factory buildings to the right. Across the road is an area of historic demesne woodland, zoned High Amenity. The trees and factory buildings frame the view along the winding road and in the distance a small copse of trees can be seen in front of the demesne wall, behind which is the site.
- The Claremont development will change the view substantially, introducing a row of buildings of urban scale and architecture to the road-front, shifting the character of the road towards that of an urban street. This is the realisation of the planned expansion of the town centre.
- Representing the view from a road passing out of a town centre alongside lands zoned for development (and soon to be developed), the viewpoint sensitivity is medium.

Proposed Change:

- Proposed development: The buildings would be visible in the distance along the road, protruding above the retained demesne wall and the roadside trees, framed by the factory buildings and trees in the foreground. The trees and demesne wall in front of the building and the varied materials and large windows of the façade would soften the building's presence. The magnitude of change would be low.
- Cumulative change: The two developments would combine to urbanise the streetscape to an extent, but the landscape would remain strongly green/ wooded in character. The magnitude of change would be high.

Significance and Quality of Effect:

- Proposed development: The visual effect would be of slight significance and positive, the development adding visual interest (and a building of high quality) to the route out of the town centre, with no loss or compromise of any valued element or characteristic of the view.

- Cumulative change: The visual effect would be significant and positive. The two developments would be complementary, together forming a corridor of contemporary urban character, distinct from the historic harbour area which the road has just exited. The characteristic woodland, trees and demesne wall would however be retained, maintaining Howth's distinctive character in the evolving western edge to the town.

5.8.2.3 Viewpoint 3 – Howth Road to East of Site Alongside Techrete/Claremont Site - B

This view was included specifically to address the potential cumulative impact of the proposed development and the permitted Claremont development on their immediate environs.

Baseline:

- The Techrete site is to the right of the road behind a low wall and a row of mature Leylandii. To the left is the wooded embankment below the access road to St Mary's Church.
- The site is in the middle distance, beyond the entrance to Howth Demesne, with the demesne wall prominent along the boundary, set back from the road behind a wide green verge featuring a stand of trees.
- After implementation of the Claremont permission the view will be transformed, the tall cypress trees replaced by a five storey building of contemporary urban character fronting the street behind a planted verge.
- The sensitivity of the viewpoint, representing a busy road departing an urban centre, alongside a former industrial site, is medium.

Proposed Change:

- Proposed development: The proposed buildings would be a prominent addition to the view, forming a stepped building line and roofline (emphasising the topography) behind the retained demesne wall and street trees.
- The steps in height, variations in material and the absence of projecting balconies on the front volumes (giving the buildings clean lines but highly articulated facades with depth and shadow) would contribute to an attractive architectural composition.
- The retained boundary wall and street trees, supplemented by trees inside the boundary, would soften the development's presence despite its urbanising effect.
- Importantly, this view illustrates that the five storey height can be comfortably accommodated in the wide road corridor.
- The magnitude of change would be medium.
- Cumulative change: The proposed development would combine with Claremont to shift the character of the Howth Road towards a more contemporary, urban condition (by introducing buildings of appreciably high design and material quality) while retaining the key features of the view (the trees to the left and the demesne wall. The cumulative magnitude of change would be high.

Significance and Quality of Effect:

- Proposed development: The visual effect would be of moderate significance and positive, the development adding visual interest to the route out of the town centre, with no loss or compromise of any valued element or characteristic of the view.
- Cumulative change: The visual effect would be significant and positive. The two developments would be complementary, together forming a corridor of contemporary urban character, distinct from the historic harbour area. The characteristic woodland, trees and demesne wall would be retained, maintaining Howth's distinctive character in the evolving western edge to the town.

5.8.2.4 Viewpoint 4 – St Mary's Church Access Road

This view was included specifically to address the potential cumulative impact of the proposed development and the permitted Claremont development on their immediate environs.

Baseline:

- The road from St Mary's descends the hill towards the junction which gives access to Howth Castle, Deer Park Golf Course and the Transport Museum. The elevation of the viewpoint reveals the width of Howth Road as it passes the site.
- To the right across the street is the Techrete site and a former halting site (with a belt of trees inside its roadside boundary wall) – both sites zoned Town Centre. Beyond the halting site is Baltray Park and tennis club. The westernmost 5 storey block of the Claremont development will be visible to the right of the field of view.
- In the foreground to the left is the woodland belt that lies between the Howth Castle access road and St Mary's church.
- The tall stone demesne boundary wall of the site is set back from the road behind a wide green verge featuring a copse of trees. Beyond the site the roofs of the houses to the west along the Howth Road can be seen.
- The sensitivity of the viewpoint, overlooking a former a former industrial site zoned Town Centre, is medium.

Proposed Change:

- Proposed development: The proposed buildings would be a prominent addition to the view, forming a stepped building line and roofline (emphasising the topography) behind the retained demesne wall and street trees.
- The steps in height, variations in material and the absence of projecting balconies on the front volumes (giving the buildings clean lines but highly articulated facades) would contribute to an attractive architectural composition.
- The retained boundary wall and street trees, supplemented by trees inside the boundary, would soften the development's presence despite its urbanising effect.
- Importantly, this view illustrates that the modest five storey height can be comfortably accommodated in the wide road corridor, with no sense of excessive enclosure or dominance of any valued feature.
- The magnitude of change would be medium.

- Cumulative change: The proposed development would combine with Claremont to shift the character of the Howth Road towards a more contemporary, urban condition while retaining the key features and characteristics of the view - and a sense of space (even in combination there would be no perception of excessive enclosure). The cumulative magnitude of change would be medium.

Significance and Quality of Effect:

- Proposed development: The visual effect would be of moderate significance and positive, the development adding a building of design and material quality to the composition, adding visual interest with no loss or compromise of any valued element or characteristic of the view.
- Cumulative change: The visual effect would be significant and positive. The two developments would be complementary, together forming a corridor of contemporary urban character but maintaining the valued features and characteristics of the view, and a sense of space around the junction.

5.8.2.5 Viewpoint 5 – Howth Road Approaching Site from East

Baseline:

- The Techrete site is to the right in this view, behind the low wall, and beyond that opposite the site is the disused halting site. To the left across the road is the entrance to Howth Castle, the National Transport Museum and Deer Park Golf Club, with a branch leading to St Mary's Church. The demesne trees lining the entrance road are prominent.
- The demesne wall marks the site boundary and outside the wall is a wide green verge with a stand of maturing trees. The golf course perimeter woodland (a modern feature planted in the 1990s) can be seen in the background.
- At this point the viewer would be standing in front of the westernmost building of the Claremont development, in the newly urbanised streetscape, with the scheme's main public open space area to the right opposite the entrance to Howth Castle.
- The sensitivity of the viewpoint, representing busy road departing an urban centre, with lands zoned for development on both sides, is medium.

Proposed Change:

- Proposed development: The proposed buildings would be a prominent addition, dramatically changing the composition and generating a degree of enclosure. The staggered building line would be appreciable from this angle, with the large specimen trees in the open space behind the retained wall combining with the retained street trees to partially soften the built frontage.
- The steps in height (reflecting the site topography), variations in material and the absence of projecting balconies on the front volumes (giving the buildings clean lines but highly articulated facades) would contribute to an attractive architectural composition.
- There are two important points to note: (1) All of the valued elements in the view, i.e. the demesne woodland, the demesne wall and the street trees in the wide road

corridor, would be retained, and (2) there would be no sense of excessive height or enclosure. The five storey height can be comfortably accommodated alongside the wide road/ junction and the belt of mature woodland.

- The magnitude of change would be medium-high.
- Cumulative change: The above would be experienced immediately after passing the Claremont development on the right hand side of the road, which would be more urban in character, with the buildings of similar typology and scale but addressing the street more directly.
- In combination the two developments would form a corridor of contemporary character at the entry/exit to the town centre, but with a noticeable transition between them – from the deliberately urban of Claremont to a more transitional character incorporating cultural and natural heritage elements on the site.
- The cumulative magnitude of change would be high.

Significance and Quality of Effect:

- Proposed development: The visual effect would significant and positive, the development adding visual interest to the route out of the town centre, with no loss or compromise of any valued element or characteristic of the view.
- Cumulative change: The visual effect would be significant and positive. The two developments would be complementary, together forming a corridor of contemporary urban character, distinct from the historic harbour area. The characteristic woodland, trees and demesne wall would be retained, maintaining Howth's distinctive character in the evolving western edge to the town.

5.8.2.6 Viewpoint 6 – Howth Road Entry to Howth Castle Demesne and Deer Park Golf Club

Baseline:

- This view is similar to View 5 but directed south towards the Howth Castle gate and along the access road. The Development Plan map shows a protected view along the axis of the castle access road.
- The access road and gate are framed by wide belts of woodland, and the demesne boundary wall and street trees to the right contribute further to an attractive composition combining cultural and natural heritage elements.
- The site, which is zoned for development, is to the right, separated from the gate structure by the 25-30m wide woodland belt outside the site's east boundary.
- The viewpoint sensitivity is high, although it should be recognised that (a) the viewer is positioned alongside the Claremont development which is part of Howth town centre, and (b) the site is zoned for residential development.

Proposed Change:

- The proposed buildings would be a prominent addition, changing the composition of the view while retaining all of the existing valued features. From this proximity the quality of the design and materials would be appreciable.

- The setback of the easternmost building from both the Howth Road and the castle access road is significant. This avoids any sense of excessive enclosure, or crowding of the historic elements (the boundary wall, the gate or the woodland). The proposed tree planting inside the eastern boundary would contribute further to the softening of the development's presence despite its urban character and scale.
- Taking account of the evolving context and the site's zoning, the magnitude of change would be medium-high.

Significance and Quality of Effect:

- The visual effect would significance and positive. The development would add a distinctly contemporary built element to the view, of a quality that matches the existing historic elements. The resulting composition would have a high degree of visual interest and there would be no reduction in visual amenity.

5.8.2.7 Viewpoint 7 – Howth Road alongside site - View east

This view was included specifically to address the potential cumulative impact of the proposed development and the permitted Claremont development on their immediate environs.

Baseline:

- The site is to the right, set back from the road behind a wide green verge. The demesne boundary wall hides the interior of the site from view.
- To the left of the road is the entrance to the former Techrete site. The complex of industrial buildings, containers and yards behind a concrete block wall detracts from the landscape quality and visual amenity at this western gateway to the town centre (the lands on both sides of the road in the foreground are zoned for development, with the Techrete site zoned Town Centre).
- Ahead, and extending up the hill to the right, is the demesne woodland around the entrance to Howth Castle and St Mary's church. The church stands prominently above the Howth Road among the mature woodland trees. The church and the woodland, along with the demesne boundary wall in the foreground and a general sense of space, are the valuable features and characteristics of the view.
- The Claremont development will dramatically change this view, replacing an unsightly industrial development with a development of contemporary urban character and scale (the building in view being six storeys).
- The sensitivity of the viewpoint, representing busy road entering an urban centre, with lands zoned for development on both sides, is medium.

Proposed Change:

- Proposed development: The proposed buildings would be a prominent addition, rising behind the retained boundary wall but sufficiently set back from the street to avoid excessive enclosure. The staggered building line and the design and material quality of the buildings would be appreciable from this angle and proximity. In time the large specimen trees in the open space corridor behind the wall would mature to further soften the presence of the development in the view.

- The setback of the easternmost building from both the Howth Road and the Howth Castle/ St Mary's access roads is important. This retains a substantial pocket of historic woodland and the spite of St Mary's as the focal point of the view at this gateway location.
- The magnitude of change would be medium-high.
- Cumulative change: In combination the two developments would form a legible gateway of contemporary built form at the new western edge of the town centre. Both of appreciably high design and material quality, they would frame the view of St Mary's in the Howth Demesne woodland, forming a composition of visual interest and high amenity value.
- The cumulative magnitude of change would be high.

Significance and Quality of Effect:

- Proposed development: The visual effect would be of moderate significance and positive. The development would add a built element of high design and material quality to the view at this gateway location, adding visual interest without detracting from any value feature or characteristic of the view.
- Cumulative change: The visual effect would be significant and positive. The two developments would combine to form a legible gateway at the western entry to the town centre, transforming the view while retaining the sensitive cultural and natural heritage features.

5.8.2.8 Viewpoints 8, 9 and 10 – Howth Road Approaching Site from the West

Baseline:

- As the road approaches Howth from the west it follows a long, straight route alongside the railway line, passing the four storey cluster of Corr Castle and Offington Manor apartments, then a long row of houses, then the Howth Lodge apartments to the left beside the level crossing to Claremont Road.
- At this point the road dog-legs and the site comes into view, less than 200m distant, framed by the suburban houses in the foreground (View 10). The Howth Demesne woodland is behind the site and the ridgeline is visible behind the houses to the right.
- Moving east along the road, approaching the site, the houses are lower and more widely spaced (Views 8, 9) and a vista opens across the site towards the woodlands and the headland.
- The sensitivity of the viewpoints, representing the road approaching a town centre, on which the site (and the nearby Techrete/Claremont site) are zoned for residential development, is medium.

Proposed Change:

- The views from the road approaching the town centre, and from the nearest houses to the site, would be the most affected views in the receiving environment. In the views from the road the buildings would stand prominently at the centre of the view, framed by the foreground houses.

- The abrupt transition in scale and architecture is evident in these views, as are several key design features, including
  - the effect of angling the north/front facades towards the west, i.e. towards the visual receptors approaching the town centre (also forming open spaces for screen planting in front of the buildings);
  - breaking the buildings into two off-set volumes so that the perception of massing is reduced (also opening views to sea from the apartments in the rear volumes);
  - stepping the buildings down from the rear, so that the building profiles reflect the topography;
  - using different materials on the front and rear volumes, and the upper levels, reducing the perception of scale/massing;
  - using recessed balconies and large windows to articulate the facades;
  - planting large trees in front of the buildings behind the retained demesne wall, to soften the built frontage and express the wooded character of the area.
- As shown by the photomontages, the high design and material quality of the development would be more evident the closer the viewer gets to the site. View 8 shows a well-considered, elegant development, suitably scaled for the main road entrance to the town. While the character of the view would be changed, the quality of the view would not be diminished.
- It should be noted that only a 200m stretch of the road west of the site, on the final approach to the town centre, would be affected.
- The magnitude of change would range from medium (View 10) to high (Views 8, 9).

Significance and Quality of Effect:

- The effects would be moderate to significant, and positive. The development would change the character of the road corridor, establishing a strong edge to the expanded urban area, introducing a development of suitable quality to the road corridor.
- While a part of the demesne woodland and Howth Head ridgeline would be screened along this stretch, the demesne would remain a part of the landscape corridor on the entry to the town – as shown by Viewpoint 7 (in which the woodland and St Mary's church would remain the focal points of the view).
- It should also be noted that the Howth Road passes three existing apartment developments (all four storeys tall) in the final kilometre before entering the town centre. The change would not therefore be out of character in the Howth Road corridor, and the location – at the urban edge – is not inappropriate.

5.8.2.9 Viewpoint 11 – St Mary's Church

Baseline:

- St Mary's Church lies approximately 100m to the east of the site. The area between the site and the church is occupied by the demesne woodland through which the access road passes to the Howth Castle, the transport museum and Deer Park Golf Club.
- The block of woodland between the site and the church (a) forms part of the Howth Castle ACA and (b) is subject to a Specific Objective to 'protect and preserve trees

and woodlands' (indicated on the Development Plan map Sheet no. 10), i.e. the presence of the woodland can be considered permanent.

- The view from the protected structure, within the ACA, is highly sensitive.

Figure 5.12 The position of St Mary's Church relative to the site

Proposed Change:

- The proposed development would be screened by the woodland.

Significance and Quality of Effect:

- No effect, neutral.

5.8.2.10 Viewpoint 12 – Exit From Howth Demesne

Baseline:

- The view along the access road to/from the castle and Deer Park Golf Club is a protected view. The road is enclosed on both sides by belts of woodland.
- Approaching the exit onto the Howth Road the demesne gate is visible ahead, and to the left, the woodland screens the site from view (even in winter with of the deciduous trees out of leaf).
- The protected view is highly sensitive.

Proposed Change:

- The buildings would be largely screened by the woodland in the foreground, although in winter the rear volume of the nearest block (Building C) would be discernible through the tree canopies. In summer the development would be entirely screened.

- The proposal includes supplementary woodland planting inside the site boundary in front of Building C. In time this would mature to provide additional screening.
- The magnitude of change would be negligible.

Significance and Quality of Effect:

- The significance of the effect would be slight, and the change would be neutral, i.e. there would be no reduction in visual amenity.

5.8.2.11 Viewpoint 13 – Howth Castle grounds near 'Black Jack's well'
Baseline:

- The view is taken from the embankment around a basin-like landform, identified on the historic maps as a fish pond, to the east of the castle. A large block of woodland lies between the viewpoint and the site, and the castle is visible to the left.
- Falling within the ACA the view is highly sensitive.

Proposed Change:

- The proposed development would be screened by a combination of the topography and woodland.

Significance and Quality of Effect:

- No effect, neutral.

5.8.2.12 Viewpoint 14 – Howth Castle, View from the East Facade
Baseline:

- The castle is positioned and designed to take advantage of the views east towards the harbour, town and the sea, and south towards the upland. Views north (towards the site) and west are blocked by the extensive woodlands enclosing the castle on those sides.
- The castle is separated from the proposed buildings by over 180m (see **Figure 5.13** below), and there is a 100m wide block of mature woodland that screens the site from view from the castle. This woodland is part of the Howth Castle ACA, i.e. it is protected, managed, and its presence can be considered permanent. Additionally, the site is at lower elevation than the castle.
- The view north along the east face of the castle towards the demesne entrance/exit, is a protected view. The viewpoint is highly sensitive.

Proposed Change:

- The proposed development would not be visible.

Significance and Quality of Effect:

- No effect, neutral.

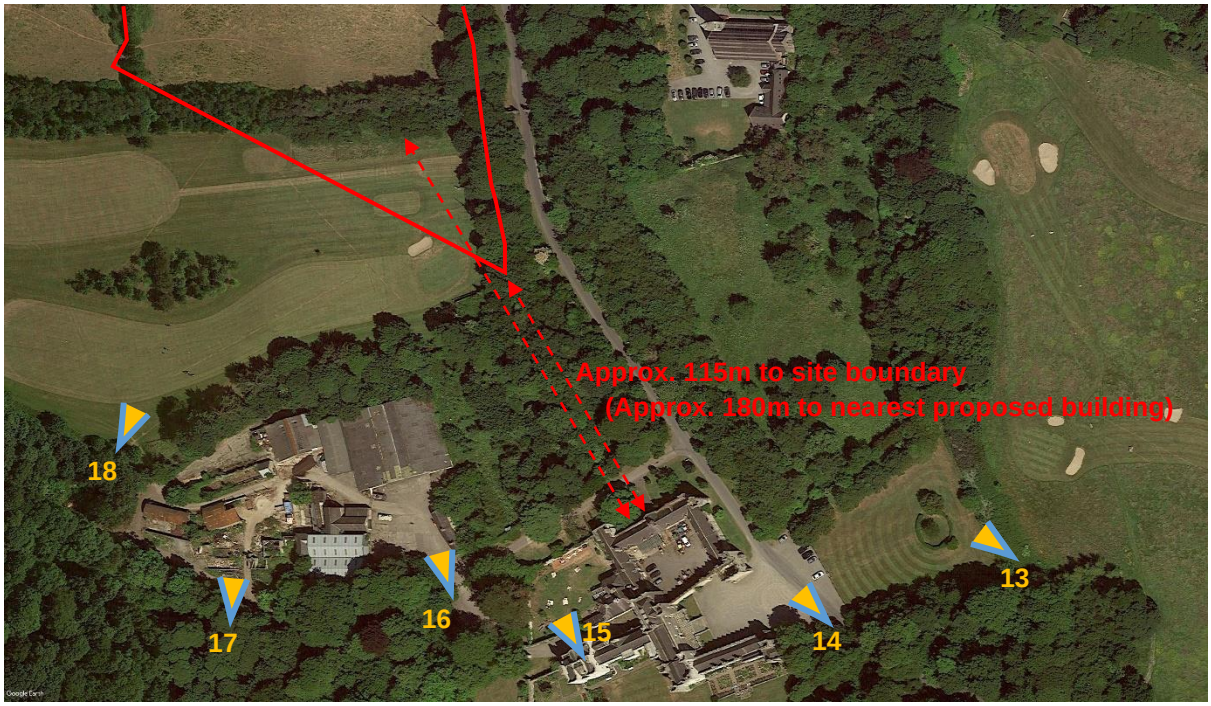

Figure 5.13 The position of Howth Castle and outbuildings (occupied by the National Transport Museum) relative to the site

5.8.2.13 Viewpoint 15 – Howth Castle, View from Upper Floor Window in North Facade

Baseline:

- The 3rd floor window in a (relatively) modern west extension of the castle overlooks a walled garden. Beyond the garden, between the castle and the site, is a 100m wide woodland block. Through a gap in the tree canopy a small part of the sea and the coastline of Portmarnock can be seen in the distance.
- The viewpoint sensitivity is high.

Proposed Change:

- The proposed development would be screened by the woodland.

Significance and Quality of Effect:

- No effect, neutral.

5.8.2.14 Viewpoint 16 – Howth Castle outbuildings (National Transport Museum)

Baseline:

- The view is taken from the southern approach to the complex of outbuildings that now houses the transport museum.
- Being part of the ACA the viewpoint sensitivity is high.

Proposed Change:

- The proposed development would be screened by the buildings.

Significance and Quality of Effect:

- No effect, neutral.

5.8.2.15 Viewpoint 17 – Howth Castle grounds west of castle – A
Baseline:

- The view is taken from an area of woodland to the west of the castle and south of the complex of outbuildings.
- Being part of the ACA the viewpoint sensitivity is high.

Proposed Change:

- The proposed development would be screened by the buildings and vegetation.

Significance and Quality of Effect:

- No effect, neutral.

5.8.2.16 Viewpoint 18 – Howth Castle grounds west of castle –B
Baseline:

- The view is taken from the edge of the woodland block to the west of the castle, at the boundary of the ACA, overlooking the golf course.
- There is a belt of trees between two fairways and beyond that the golf course perimeter woodland belt can be seen. The site incorporates a section of the perimeter woodland and extends into the fairway in view.
- Although at the edge of the ACA the view is of the golf course and is not a view of historic significance or particular amenity value. The viewpoint sensitivity is medium.

Proposed Change:

- The buildings would be discernible protruding above the fairway trees, and, where it is proposed to remove a section of the perimeter woodland belt (**see Figure 5.10** above), the buildings would be more exposed (although still partly screened/filtered by the fairway trees which would be retained).
- It is proposed to establish a new tree belt around the applicant's landholding which extends into the fairways in view. In time these trees would mature to provide further screening.
- The magnitude of change would be low.

Significance and Quality of Effect:

- Slight, neutral. The development would be discernible from this position but the view is not an important or historic view and there would be no change to visual amenity.

5.8.2.17 Viewpoint 19 – Muck Rock

Baseline:

- Muck Rock affords an iconic, panoramic view of the north side of Howth Head. The land falls away steeply from the rocky peak to the golf course around the base of the cliff. The clubhouse is visible to the right (see below - although out of view in the photomontage), and the castle is prominent, enclosed on three sides by woodland. From this elevation the built-up fringe of the peninsula can be seen to the left (e.g. the Howth Lodge apartments and the houses west of the site along the Howth Road), and the harbour and parts of the town to the right. The eye is however drawn to the coastline and the sea.
- The Claremont development will be a significant change in the view, the buildings appearing to project out from the coastline into the bay directly behind the castle and St Mary's Church. It will have the effect of expanding the town westwards from the harbour, reducing the separation of the castle from the urban area in the view.

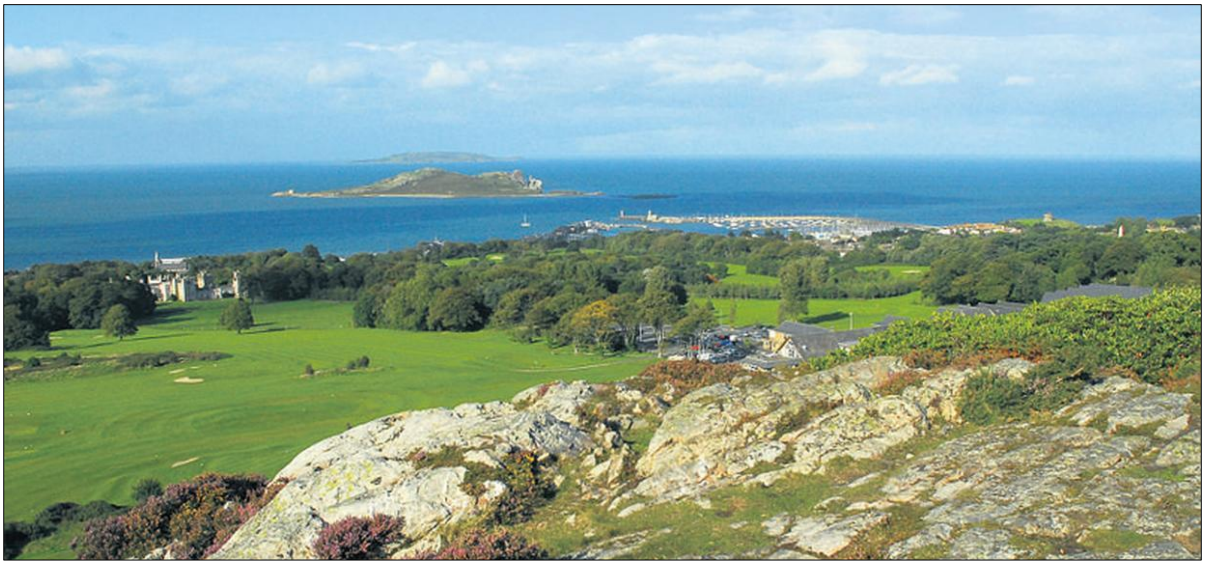

Plate 5-12 The view north east from Muck Rock

- Although a protected view, with numerous features contributing to the visual amenity, due to the breadth and complexity of the view, and the trend of change, there is a degree of capacity for change. The viewpoint sensitivity is classified medium.

Proposed Change:

- Proposed development: The three buildings would be visible beyond the golf course and the woodlands, taking their place in the built-up strip along the coastline, well removed from Howth Castle.
- The offset volumes, varied materials and articulated facades would reduce the prominence of the buildings. The rear volumes in particular, being of grey brick, would blend into the landscape and avoid competing with the castle. In the wide and diverse panorama the magnitude of change would be low.

- Cumulative change: The proposed development would be less prominent than Claremont and would cause less of a change in character. However, in combination they would form a distinct new corridor of contemporary urban character extending to the west of the town centre and the harbour. The cumulative magnitude of change would be medium.

Significance and Quality of Effect:

- Proposed development: The visual effect would be of slight significance and neutral. The development would be visible but it would have no effect on visual amenity.
- Cumulative change: The visual effect would be moderate and positive. In combination the proposed development and Claremont would form a corridor/ area of contemporary urban character in the coastal development strip. The castle would lose some prominence in the view (as a result of Claremont, not the proposed development) but all other valued elements, i.e. the open space of the headland, the harbour area, the seascape – would be unaffected.

5.8.2.18 Viewpoint 20– Portmarnock

- The Portmarnock coastline affords a panoramic view out to sea, framed by the Howth peninsula to the south. Although seen from a distance, the pattern of development on the peninsula can be clearly discerned. There is a strip of buildings of various scale along the shoreline, against a backdrop of green open space (golf courses, woodland and heather-covered peaks), leading to the substantial urban area of Howth, which rises over the headland above the harbour.
- The Claremont development will be visible extending along the shoreline to the side of the town, but will amount to a relatively inconspicuous expansion of the urban area when seen in the wider context.
- Views from the Portmarnock coastline are protected. However, the coastline itself and the seascape are the most valued elements of the view, and there is capacity for change in the distant Howth urban area. The viewpoint sensitivity is classified medium.

Proposed Change:

- Proposed development: The buildings would be discernible as an addition to the existing strip of development above the distant shoreline, but the composition would not be substantially changed. The magnitude of change would be negligible.
- Cumulative change: The proposed development would be considerably less prominent than Claremont. However, it would contribute slightly to the visible expansion of the urban area along the shoreline to the west of the town. The cumulative magnitude of change would be low.

Significance and Quality of Effect:

- Proposed development: The visual effect would be not significant and neutral.
- Cumulative change: The visual effect would be slight and neutral. The existing pattern of urban development on the distant peninsula would be slightly reinforced.

5.8.3 Summary

Table 5.8 below summarises the identified likely visual effects in the absence of mitigation during the construction phase of the proposed development.

Visual Receptor	Quality	Significance	Extent	Probability	Duration	Type
1. Howth Harbour, west pier	Negative	Not significant	Local	Likely	Temporary	Direct
2. Howth Rd east of site beside Techrete/ Claremont site - A	Negative	Slight	Local	Likely	Temporary	Direct
3. Howth Rd east of site beside Techrete/ Claremont site - B	Negative	Moderate	Local	Likely	Temporary	Direct
4. St Mary's Church Access Road	Negative	Moderate	Local	Likely	Temporary	Direct
5. Howth Rd approaching site from east	Negative	Significant	Local	Likely	Temporary	Direct
6. Howth Rd entry to Howth Castle demesne	Negative	Significant	Local	Likely	Temporary	Direct
7. Howth Road along-side site – view east	Negative	Significant	Local	Likely	Temporary	Direct
8. Howth Rd from west – A (approx.. 40m)	Negative	Significant	Local	Likely	Temporary	Indirect
9. Howth Rd from west – B (approx.. 100m)	Negative	Significant	Local	Likely	Temporary	Indirect
10. Howth Rd from west – C (approx. 200m)	Negative	Moderate	Local	Likely	Temporary	Indirect
11. St Mary's Church	Neutral	No effect	n/a	n/a	n/a	n/a
12. Exit From Howth Castle Demesne	Negative	Slight	Local	Likely	Temporary	Direct
13. Howth Castle grounds near 'Black Jack's well'	Neutral	No effect	n/a	n/a	n/a	n/a
14. Howth Castle east facade	Neutral	No effect	n/a	n/a	n/a	n/a
15. Howth Castle upper floor window	Neutral	No effect	n/a	n/a	n/a	n/a
16. Howth Castle outbuildings (National Transport Museum)	Neutral	No effect	n/a	n/a	n/a	n/a
17. Howth Castle grounds west of castle – A	Neutral	No effect	n/a	n/a	n/a	n/a
18. Howth Castle grounds west of castle – B	Negative	Slight	Local	Likely	Temporary	Direct
19. Muck Rock	Negative	Slight	Local	Likely	Temporary	Indirect
20. Portmarnock	Neutral	Not significant	Local	Likely	Temporary	Indirect

Table 5.8 Summary of Construction Phase Likely Significant Visual Effects

Table 5.9 below summarises the identified likely effects in the absence of mitigation during the operational phase of the proposed development.

Visual Receptor	Quality	Significance	Extent	Probability	Duration	Type
1. Howth Harbour, west pier	Neutral	Slight	Local	Likely	Temporary	Direct
2. Howth Rd east of site beside Techrete/ Claremont site - A	Positive	Slight	Local	Likely	Temporary	Direct
3. Howth Rd east of site beside Techrete/ Claremont site - B	Positive	Moderate	Local	Likely	Temporary	Direct
4. St Mary's Church Access Road	Positive	Moderate	Local	Likely	Temporary	Direct
5. Howth Rd approaching site from east	Positive	Significant	Local	Likely	Temporary	Direct
6. Howth Rd entry to Howth Castle demesne	Positive	Significant	Local	Likely	Temporary	Direct
7. Howth Road along-side site – view east	Positive	Moderate	Local	Likely	Temporary	Direct
8. Howth Rd from west – A (approx.. 40m)	Positive	Significant	Local	Likely	Temporary	Indirect
9. Howth Rd from west – B (approx.. 100m)	Positive	Significant	Local	Likely	Temporary	Indirect
10. Howth Rd from west – C (approx. 200m)	Positive	Moderate	Local	Likely	Temporary	Indirect
11. St Mary's Church	Neutral	No effect	n/a	n/a	n/a	n/a
12. Exit From Howth Castle Demesne	Neutral	Slight	Local	Likely	Temporary	Direct
13. Howth Castle grounds near 'Black Jack's well'	Neutral	No effect	n/a	n/a	n/a	n/a
14. Howth Castle east facade	Neutral	No effect	n/a	n/a	n/a	n/a
15. Howth Castle upper floor window	Neutral	No effect	n/a	n/a	n/a	n/a
16. Howth Castle outbuildings (National Transport Museum)	Neutral	No effect	n/a	n/a	n/a	n/a
17. Howth Castle grounds west of castle – A	Neutral	No effect	n/a	n/a	n/a	n/a
18. Howth Castle grounds west of castle – B	Neutral	Slight	Local	Likely	Temporary	Direct
19. Muck Rock	Neutral	Slight	Local	Likely	Temporary	Indirect
20. Portmarnock	Neutral	Not significant	Local	Likely	Temporary	Indirect

Table 5.9 Summary of Operation Phase Likely Significant Visual Effects

5.9 Mitigation

5.9.1 Incorporated Design Mitigation

The proposed layout and the design of the buildings and landscape are a considered response to the sensitivities and opportunities in the receiving environment - intended to have a positive effect on the local landscape/townscape and views, and to deliver a high quality living environment in a setting that is both urban and sylvan.

The provision of the car parking in the basement (as opposed to ground level) is a key incorporated mitigation measure. This allows for the site to retain a substantial proportion of open space, and to introduce a large number of trees to the site, for visual screening and residents' amenity.

The three buildings are arranged and scaled to have a strong visual presence in the Howth Road corridor, but with the facades angled to present towards the west and east (the approaches to the site), as opposed to facing the road in front of the site. This recognises the fact that the greatest number of visual receptors would be moving towards the site as opposed to seeing it face-on from or across the street. The wide, landscaped corridors between the buildings would however provide relief in the built frontage and glimpses of the trees and the headland to the south, when seen from the road as it passes the site.

The angled front facades also create three triangles of green space in front of the buildings, in which large specimen trees are proposed, softening the built frontage.

The buildings - set back behind the existing road-side verge, the retained demesne wall and the green space and trees described above - are five storeys at the road-front (with the fifth storey set back). This is an appropriate scale for a development intended to have an urbanising effect on the road corridor at the gateway to the town. They would generate a degree of built enclosure - but with no buildings directly opposite, a sense of space would be retained, orientated towards the coastline and sea to the north. There would be no sense of excessive enclosure. The buildings each step up to six storeys in their rear volume, the step in height reflecting the gradient of the site (like the top floor of the front volume, the sixth storey of the rear volume is set back).

The proposed development would not affect the historic woodland belt (part of the demesne woodland framework) outside the site's east boundary. It is proposed to reinforce and enhance this woodland belt with supplementary planting inside the boundary.

A part of the golf course perimeter woodland belt (a modern/late 20th century intervention) would be removed from the rear portion of the site. This would be replaced with a new belt of woodland planting along the southern site boundary, retaining the east-west woodland link across the site.

5.9.2 Construction Phase Mitigation

No mitigation measures are proposed other than standard best practice construction site management (e.g. erection and maintenance of site hoarding, orderly storage of materials and vehicles, etc.).

However, given the importance of the existing trees to be retained within and in close proximity to the site, particular attention should be paid during construction to the arboricultural inspection and supervision programme.

Similar attention should be paid to the measures recommended by Slattery Conservation for (a) the protection of the demesne wall during construction, and (b) the creation of the two new openings in the wall.

5.9.3 Operational Phase Mitigation

The incorporated design mitigation would ensure that the development's landscape/ townscape effects would be generally positive after the construction phase. No operational phase mitigation is deemed necessary, other than a programme of monitoring and maintenance of the existing and proposed woodland and other landscaping to ensure its establishment and continued heath.

5.10 Residual Impact Assessment – Landscape/Townscape Effects

5.10.1 Construction Phase

Since no landscape-specific mitigation is recommended, the residual effects would be the same as identified under Likely Impacts in Sections 5.7.1 and 5.7.4 above. The effects are summarised in **Table 5.10** below.

Landscape/ Townscape Receptor	Quality	Significance	Extent	Probability	Duration	Type
Key Landscape/Townscape Characteristics						
Land use pattern	Negative	Slight	Local	Likely	Temporary	Direct
Building typologies, scale and architecture	Negative	Moderate	Local	Likely	Temporary	Direct
Landscape, GI and trees	Negative	Moderate	Local	Likely	Temporary	Direct
Surrounding Character Areas						
Howth Road corridor incl. Claremont site	Negative	Moderate	Local	Likely	Temporary	Direct
Howth town centre and harbour	Neutral	Not significant	Local	Likely	Temporary	Indirect
Low density residential strip along Howth Rd west of site	Negative	Moderate to high	Local	Likely	Temporary	Direct
Howth Castle and St Mary's Church	Negative	Slight	Local	Likely	Temporary	Indirect
Howth Head	Negative	Not significant	Local	Likely	Temporary	Indirect

Table 5.10 Summary of Construction Phase Likely Significant Effects

5.10.2 Operational Phase

Since no landscape-specific mitigation is recommended, the residual effects would be the same as identified under Likely Impacts in Section 5.7.2 and 5.7.4 above. The effects are summarised in Table **5.11** below.

Landscape/ Townscape Receptor	Quality	Significance	Extent	Probability	Duration	Type
Key Landscape/Townscape Characteristics						
Land use pattern	Positive	Slight	Local	Likely	Permanent	Direct
Building typologies, scale and architecture	Positive	Moderate	Local	Likely	Permanent	Direct
Landscape, GI and trees	Neutral	Moderate	Local	Likely	Permanent	Direct
Surrounding Character Areas						
Howth Road corridor incl. Claremont site	Positive	Moderate	Local	Likely	Permanent	Direct
Howth town centre and harbour	Positive	Slight	Local	Likely	Permanent	Indirect
Low density residential strip along Howth Rd west of site	Positive/ Negative	Moderate	Local	Likely	Permanent	Direct
Howth Castle and St Mary's Church	Neutral	Slight	Local	Likely	Permanent	Indirect
Howth Head	Neutral	Not significant	Local	Likely	Permanent	Indirect

Table 5.11 Summary of Operation Phase Likely Significant Effects

5.10.3 Cumulative

As described in Section 5.7.3 above, there is potential for the proposed development and the permitted Claremont development to have cumulative effects on the landscape/townscape and some views. The two developments would form a corridor of contemporary urban buildings as the Howth Road enters/exits the town centre, forming a distinct western edge to the town centre, and emphasising the historic character of the harbour area by their contrast with it. The two developments would subtly diminish each other's presence/impact in the townscape, but complement each other's urbanising effect.

5.11 Residual Impact Assessment – Visual Effects

5.11.1 Construction Phase

Since no landscape or visual-specific mitigation is recommended, the residual effects would be the same as identified under Likely Impacts in Section 5.8.2 above. The visual effects during the construction phase are summarised in **Table 5.12** below.

Visual Receptor	Quality	Significance	Extent	Probability	Duration	Type
1. Howth Harbour, west pier	Negative	Not significant	Local	Likely	Temporary	Direct
2. Howth Rd east of site beside Techrete/ Claremont site - A	Negative	Slight	Local	Likely	Temporary	Direct
3. Howth Rd east of site beside Techrete/ Claremont site - B	Negative	Moderate	Local	Likely	Temporary	Direct
4. St Mary's Church Access Road	Negative	Moderate	Local	Likely	Temporary	Direct
5. Howth Rd approaching site from east	Negative	Significant	Local	Likely	Temporary	Direct
6. Howth Rd entry to Howth Castle demesne	Negative	Significant	Local	Likely	Temporary	Direct
7. Howth Road along-side site – view east	Negative	Significant	Local	Likely	Temporary	Direct
8. Howth Rd from west – A (approx.. 40m)	Negative	Significant	Local	Likely	Temporary	Indirect
9. Howth Rd from west – B (approx.. 100m)	Negative	Significant	Local	Likely	Temporary	Indirect
10. Howth Rd from west – C (approx. 200m)	Negative	Moderate	Local	Likely	Temporary	Indirect
11. St Mary's Church	Neutral	No effect	n/a	n/a	n/a	n/a
12. Exit From Howth Castle Demesne	Negative	Slight	Local	Likely	Temporary	Direct
13. Howth Castle grounds near 'Black Jack's well'	Neutral	No effect	n/a	n/a	n/a	n/a
14. Howth Castle east facade	Neutral	No effect	n/a	n/a	n/a	n/a
15. Howth Castle upper floor window	Neutral	No effect	n/a	n/a	n/a	n/a
16. Howth Castle outbuildings (National Transport Museum)	Neutral	No effect	n/a	n/a	n/a	n/a
17. Howth Castle grounds west of castle – A	Neutral	No effect	n/a	n/a	n/a	n/a
18. Howth Castle grounds west of castle – B	Negative	Slight	Local	Likely	Temporary	Direct
19. Muck Rock	Negative	Slight	Local	Likely	Temporary	Indirect
20. Portmarnock	Neutral	Not significant	Local	Likely	Temporary	Indirect

Table 5.12 Summary of Construction Phase Likely Significant Visual Effects

The residual visual effects during operation are summarised in **Table 5.13** below.

Visual Receptor	Quality	Significance	Extent	Probability	Duration	Type
1. Howth Harbour, west pier	Neutral	Slight	Local	Likely	Temporary	Direct
2. Howth Rd east of site beside Techrete/ Claremont site - A	Positive	Slight	Local	Likely	Temporary	Direct
3. Howth Rd east of site beside Techrete/ Claremont site - B	Positive	Moderate	Local	Likely	Temporary	Direct
4. St Mary's Church Access Road	Positive	Moderate	Local	Likely	Temporary	Direct
5. Howth Rd approaching site from east	Positive	Significant	Local	Likely	Temporary	Direct
6. Howth Rd entry to Howth Castle demesne	Positive	Significant	Local	Likely	Temporary	Direct
7. Howth Road along-side site – view east	Positive	Moderate	Local	Likely	Temporary	Direct
8. Howth Rd from west – A (approx.. 40m)	Positive	Significant	Local	Likely	Temporary	Indirect
9. Howth Rd from west – B (approx.. 100m)	Positive	Significant	Local	Likely	Temporary	Indirect
10. Howth Rd from west – C (approx. 200m)	Positive	Moderate	Local	Likely	Temporary	Indirect
11. St Mary's Church	Neutral	No effect	n/a	n/a	n/a	n/a
12. Exit From Howth Castle Demesne	Neutral	Slight	Local	Likely	Temporary	Direct
13. Howth Castle grounds near 'Black Jack's well'	Neutral	No effect	n/a	n/a	n/a	n/a
14. Howth Castle east facade	Neutral	No effect	n/a	n/a	n/a	n/a
15. Howth Castle upper floor window	Neutral	No effect	n/a	n/a	n/a	n/a
16. Howth Castle outbuildings (National Transport Museum)	Neutral	No effect	n/a	n/a	n/a	n/a
17. Howth Castle grounds west of castle – A	Neutral	No effect	n/a	n/a	n/a	n/a
18. Howth Castle grounds west of castle – B	Neutral	Slight	Local	Likely	Temporary	Direct
19. Muck Rock	Neutral	Slight	Local	Likely	Temporary	Indirect
20. Portmarnock	Neutral	Not significant	Local	Likely	Temporary	Indirect

Table 5.13 Summary of Operation Phase Likely Significant Visual Effects

5.12 Monitoring

No landscape or visual-specific mitigation measures or monitoring are recommended, for either the construction or operation phases. This assumes that (a) the inspection and supervision programme by an Arboricultural Clerk of Works (ACoW), as recommended in the Arboricultural Impact Assessment prepared by John Morris Arboricultural Consultant, and (b) a programme of inspection and supervision of protection measures and works to the demesne boundary wall, as recommended by Slattery Conservation, will be implemented.

5.13 Interactions

The potential interactions of townscape and visual impacts with other environmental factors are as follows:

- Population and Human Health: The provision of 162 no. new homes within walking distance of Howth town centre and abundant open space amenities (a public park across the road, Howth Harbour promenade and piers, Howth Head walks, Claremont, Hole in the Wall and Burrow Road beaches) would facilitate a healthy lifestyle for the new resident community.
- Climate change: The provision of 162 no. new homes within walking distance of Howth town centre, bus and DART services and abundant open space amenities would encourage the use of public transport, walking and cycling, i.e. sustainable mobility, with positive impacts on climate change adaptation.
- Biodiversity: Although a part of the golf course perimeter tree belt would be removed from the site, the most valuable trees/woodland in the area – the woodland belt outside the east site boundary – would be retained. New woodland planting is proposed inside the east, south and west boundaries of the applicant's land holding, ultimately resulting in a net increase in tree cover and diversity on the site – with amenity and biodiversity benefits.
- Architectural Heritage: There would be no direct visual effects on Howth Castle or St Mary's Church, nor the majority of the ACA of which they are part, despite its proximity to the site. The dramatic change of character of the site itself would however indirectly affect the wider setting of the protected structures and the ACA, emphasising the historic character (and its value) by juxtaposition.

5.14 References and Sources

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CHAPTER 6
MATERIAL ASSETS: TRAFFIC & TRANSPORT

MAY 2021

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6 Material Assets: Traffic & Transport

6.1 Introduction

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Martin has over 40years experience across a range of similar type and scale developments including preparation of Traffic Impact Assessments and EIAR's for previous applications such as

- Claremont Howth (ABP-306102-19 / FCC),
- Concorde, Naas Road (ABP-304383-19 / DCC)
- Cookstown Enniskerry (ABP-307089-20 / WCC)
- Airton Road, Tallaght (ABP-306705-20 / SDCC)

This section of chapter 6 assesses the traffic and transport impacts of the proposed residential development at Howth Road, Howth, Co. Dublin (the **Proposed Development**) on the existing road network in the vicinity of the site, as well as identifying proposed mitigation measures to minimise any impacts. There is a separate Traffic & Transport Assessment and Construction Environmental Management Plan that should be read in conjunction with this chapter.

6.2 Methodology

The assessment of the potential impact of the Proposed Development on the material assets in the area was carried out according to the methodology specified by the EPA and the specific criteria set out in the Guidelines on Information to be Contained in an Environmental Impact Assessment Report 2017 (Draft).

The traffic analysis undertaken on the basis of 1.4% annual growth in network traffic over the period 2019 to 2030 period, decreasing to 0.4% in the 2030 to 2039 period, consistent with the 'low growth' assumption for the four planning authorities within the Dublin city area as detailed within the 2016 Transport Infrastructure Ireland document 'Project Appraisal Guidelines for National Roads Unit 5.3 – Travel Demand Projections', PE-PAG-02017-2 May 2019.

The following sources of information were used in the completion of this assessment:

- Smarter Travel A Sustainable Future (2009-2020).
- Greater Dublin Area Transport Strategy, 2016-2023
- Making Residential Travel Plans Work: Guidelines for New Development - UK Department of Transport, 2005
- Travel Plans – A Good Practice Guide foe developers - Surrey County Council, UK, 2018
- Fingal County Council Development Plan 2017-2023

- Standard Assessment Methodology (SAM) - TRICS Good Practice Guide, 2016
- Travel Plans for New Residential Developments: Insights from Theory and Practice (De Gruyter, 2015)
- 'Traffic and Transport Assessment Guidelines' (May 2014) National Road Authority;
- 'Traffic Management Guidelines' Dublin Transportation Office & Department of the Environment and Local Government (May 2003); and
- 'Guidelines for Traffic Impact Assessments' The Institution of Highways and Transportation.

The methodology included a number of key inter related stages;

- Background Review: This background review is broken down as follows:

(i) An examination of the local regulatory and development management documentation.

(ii) An analysis of previous 'transport' related, strategic and site-specific studies of development and transport infrastructure proposals across the Howth area.

(iii) A review of planning applications to establish the legal status of various third-party development schemes that were either considered within the strategic 'transport' studies or which have emerged and received full planning permission.

- Traffic Counts: Classified junction automatic traffic counts were undertaken and analysed with the objective of establishing local traffic characteristics in the immediate area of the proposed residential development.

- Trip Generation: A trip generation exercise has been carried out to establish the potential level of vehicle trips generated by the proposed residential development.

- Trip Distribution: Based upon both the existing and future (for the adopted assessment horizon years) network characteristics, a distribution exercise has been undertaken to assign site generated vehicle trips across the local road network using the following software:

    - TRL OSCADY Junction 9 software - Signalised Junction
    - TRL PICADY Junction 9 software - Priority Junction
- Consultation with local authority traffic engineer, Niall Thornton in November 2018, and May 2019 where the issues to be considered in this assessment were agreed as well as the scope of baseline surveys to be carried out were agreed.
- Assessment of Impacts.

In line with the EPA Draft Guidelines (EPA, 2017), seven generalised degrees of impact significance are used to describe impacts: imperceptible, not significant, slight moderate, significant, very significant or profound.

Please refer to the Table 3.3 of the draft EPA EIAR Guidelines as set out in Chapter 1 of this EIAR.

6.3 Description of Development

6.3.1 Existing

The site is bounded to the north by Howth Road (R105) and to the east, by the access road to Howth Castle. The west of the site is bounded by garden boundary walls/hedgerows to existing houses. The south is bounded by the Deer Park Golf Club. There will be one permanent road access point to the site on Howth Road to the north west of the site, a separate pedestrian/cyclist entrance will also be provided, located at the centre of the existing demesne northern boundary wall. The development will have no through route. The proposed entrance will serve the respective apartment blocks, (blocks A-C). The site is currently an unoccupied greenfield site incorporating a small area of the golf club lands to the south.

Figure 6.1 shows the Ariel view indicating the location of the Proposed Development.

Figure 6.1 Site Location (red line indicative)

6.3.2 Proposed

The full description of the proposed development is outlined in Chapter 2 – Development Description, of this Environmental Impact Assessment Report.

The design rationale is to create and deliver a high quality, sustainable, strategic housing development which respects its setting and maximises the site's natural attributes while achieving maximum efficiency of existing infrastructure. The Proposed Site Layout is illustrated on **Drawing No. 1101** contained within the architectural suite of drawings.

The development will consist of;

i. 162 no. residential units distributed across 3 no. blocks (A, B & C) ranging in height from 5-6 storeys, with a cumulative gross floor area (GFA) of 13,337.10 sq.m comprising;
    a. 29 no. 1-bedroom units, - 17.9%
    b. 104 no. 2-bedroom units and – 64.2%
    c. 29 no. 3-bedroom units – 17.9%
ii. 3 no. resident services and amenity rooms (1 no. in each block A-C) to accommodate co-working space, a community room and a meeting room (combined GFA 108 sq.m)
iii. 132 no. car parking spaces at basement level (underlying Blocks A & B) including 6 no. accessible spaces, 13 no. electric vehicle spaces and 4 no. car sharing spaces;
iv. 325 no. residents bicycle parking spaces (long-stay) at basement level, and 30 no. visitor bicycle parking spaces (short-stay) at surface level;
v. communal amenity space in the form of courtyards and roof gardens (combined 2,192 sq.m)
vi. public open space of 1,161 sq.m including a botanic garden and pocket park;
vii. a single storey ESB sub-station and switch room (45.5 sq.m);
viii. demolition of 2 no. sections of the existing demesne northern boundary wall to provide, a primary access (vehicular/pedestrian/cyclist) to the northwest and a separate pedestrian/cyclist access at the centre;
ix. restoration and refurbishment of the remaining extant northern and eastern demesne boundary wall;
x. change of use and regrading of part of the Deer Park Golf Course from active recreation use to passive amenity parkland and planting of a woodland belt on the southern boundary;
xi. undergrounding of existing ESB overhead lines, and, relocation of the existing gas main; and,
xii. all ancillary site development works including waste storage and plant rooms at basement level, drainage, landscaping/boundary treatment and lighting.

6.4 Characteristics of Development

Development type	Area / units	Proposed Car Parking Ratio	Parking proposed
Apartments 1-bed	29 No.	0.81 per unit	24
Apartments 2-bed	104 No.	0.81 per unit	84
Apartments 3-bed	29 No.	0.81 per unit	24
TOTAL Residential	162 No.		132
Total Spaces			132
		Bike parking standards (Fingal)	Parking proposed
Apartments	162 No.	1 plus 1 No. visitor space per 5 units	355
Total Spaces			355

Table 6.1 Proposed Parking at Proposed Development

The development will have 1 No. access point onto Howth Road. All car parking will be located within the basement level as per **Figure 6.2** below.

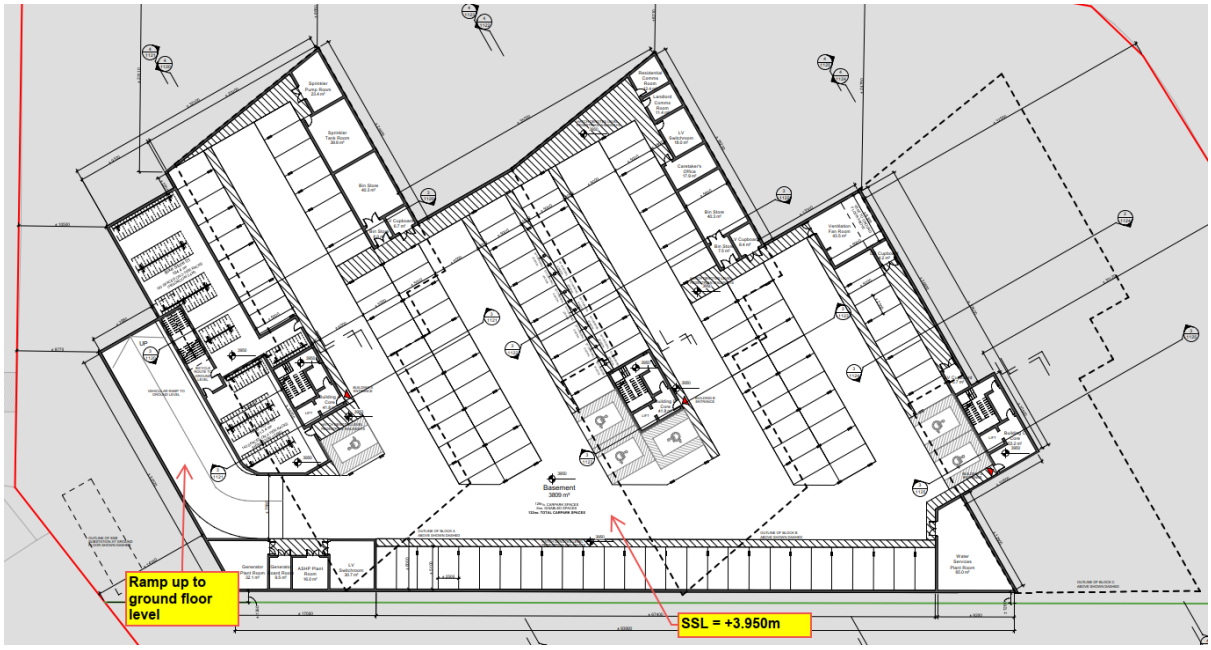

Figure 6.2 Proposed Development – Basement Level

Sightlines for the development will be 70 metres from a 2 metre set-back within a 60 km/h speed zone, as shown in **Figure 6.3**.

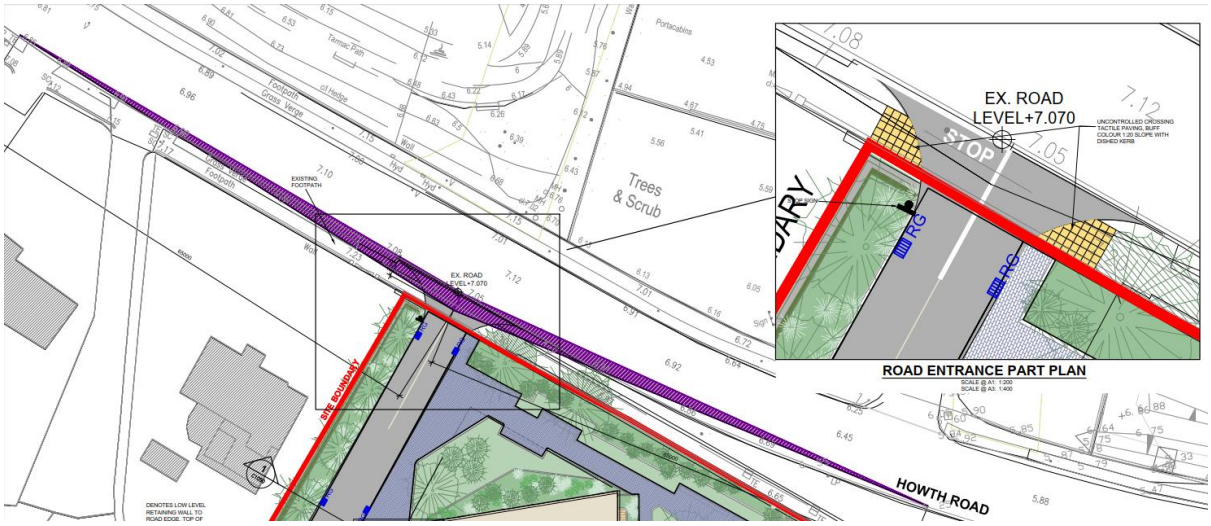

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Figure 6.3 Proposed Development - Sightlines

All cycle parking will be located at basement level with the exception of visitor cycle parking, which will be provided for at ground floor (location shown on Architectural site plan).

6.5 Baseline Environment

6.5.1 Road Network

Traffic surveys were carried on Tuesday 22nd October 2019 over a 12-hour period between 0700 and 1900 in order to ascertain the peak hour flows for all traffic movements at 4 No. critical junctions close to the Proposed Development:

- Sutton Cross Signalised junction
- Church Road / Howth Road priority junction
- Offington Park / Howth Road priority junction
- Harbour Road / Church Street priority junction

Figure 6.4 Traffic Survey Locations

Based on the results of both the surveys and assumptions regarding when peak flows from the generated traffic will occur, the morning peak hour has been taken as 0800 to 0900, with the evening peak taken to occur between 1700 and 1800.

The survey data is detailed for the morning and evening peak hours in Error! Reference source n ot found. and Error! Reference source not found. respectively:

Figure 6.5 Existing morning peak hour flows on local road network

Figure 6.6 Existing evening peak hour flows on local road network

The existing Sutton crossroads junction is at capacity and is dealt with separately below.

(The existing capacity on the remaining 3 junctions is significantly below capacity, so are only evaluated with the proposed development in place)

Regarding the Sutton cross junction, an Analysis for the existing AM and PM peak hour flows has been carried out and the result is tabulated below:

	EXISTING AM PEAK FLOWS				**EXISTING PM PEAK FLOWS**			
	Flow (veh/TS)	**Cap.** (veh/TS)	**RFC** **(-)**	**Avg. queue** (vehicles)	**Flow** (veh/TS)	**Cap.** (veh/TS)	**RFC** **(-)**	**Avg. queue** (vehicles)
Howth Rd (Arm A)	63	79.58	0.79	25	64	104.23	0.61	17
Carrickrock Rd (Arm B)	118	167.41	0.71	14	119	147.25	0.81	17
Dublin Rd (Arm C)	90	95.02	0.95	24	50	87.42	0.57	16
Station Road (Arm D)	83	184.21	0.45	15	67	229.76	0.29	10

Table 6.2 Existing capacities, ratios of flow to capacity and queue lengths for the morning and evening peak hours at Sutton Cross

One can see that the junction is at present heavily loaded, with between 15 and 25 vehicles queuing on major approaches during both peak hours. The maximum ratio of flow to capacity is estimated at 79% in the morning peak and 81% in the evening peak.

6.5.2 Pedestrians

The Proposed Development is within 400 metres of the Howth DART Station and within 1km of the centre of Howth Village, with excellent pedestrian links in place in all cases.

The pedestrian links to all transport, retail, and employment centres in the vicinity of the Proposed Development are of high standard see **Figure 6.7**.

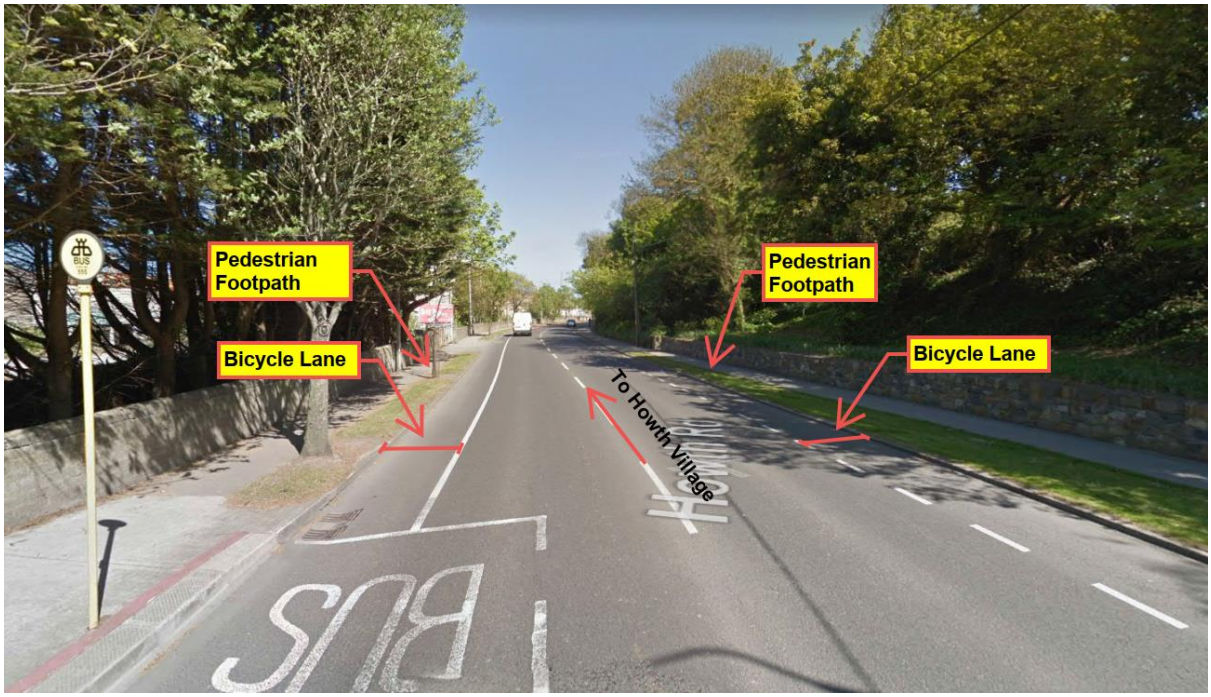

Figure 6.7 Existing Cyclist/Pedestrian Facilities on Howth Road

The existing footpaths and cycle lanes, shown in **Figure 6.7**, continue on Howth Road to the existing dart station and Howth Village.

6.5.3 Cyclists

The "Greater Dublin Area Cycle Network Plan" has produced an overall plan for providing safe cycle routes both within the city and in the suburbs. Dublin City Council has an overall target of increasing journeys by cyclists in the city by 25% by the year 2020. Permeability and direct safe routes are therefore critical in achieving this goal.

Figure 6.8 contains the map of existing cycle facilities for the area close to the Proposed Development, as detailed within the Greater Dublin Area Cycle Plan.

Figure 6.8 Existing cycle facilities close to the proposed development (GDA cycle plan)

It can be seen that, at present, the major cycle lane is along the bus corridor on the Howth Road, linking the site to Sutton Cross and onwards towards the city centre.

6.5.4 Public Transport

Existing Bus Services

The Dublin Bus services in the area provide direct linkage to the city, the Route 31/a along Howth Road towards the city centre, and the 31b Route along Carrickbrack Road towards the city centre.

The frequency of each route during the morning peak is detailed within **Table 6.3.**

Route	Origin	Destination	Frequency (08:00-09:00)
Route 31/a	Howth Road / Carrickbrack Road	Talbot Street	2 per hour
Route 31b	Carrickbrack Road	Talbot Street	1 per hour

Table 6.3 Dublin Bus Route Frequencies

Figure 6.9 details the existing bus routes serving the Proposed Development, emphasising the proximity of the routes 31 and 31a to the Proposed Development.

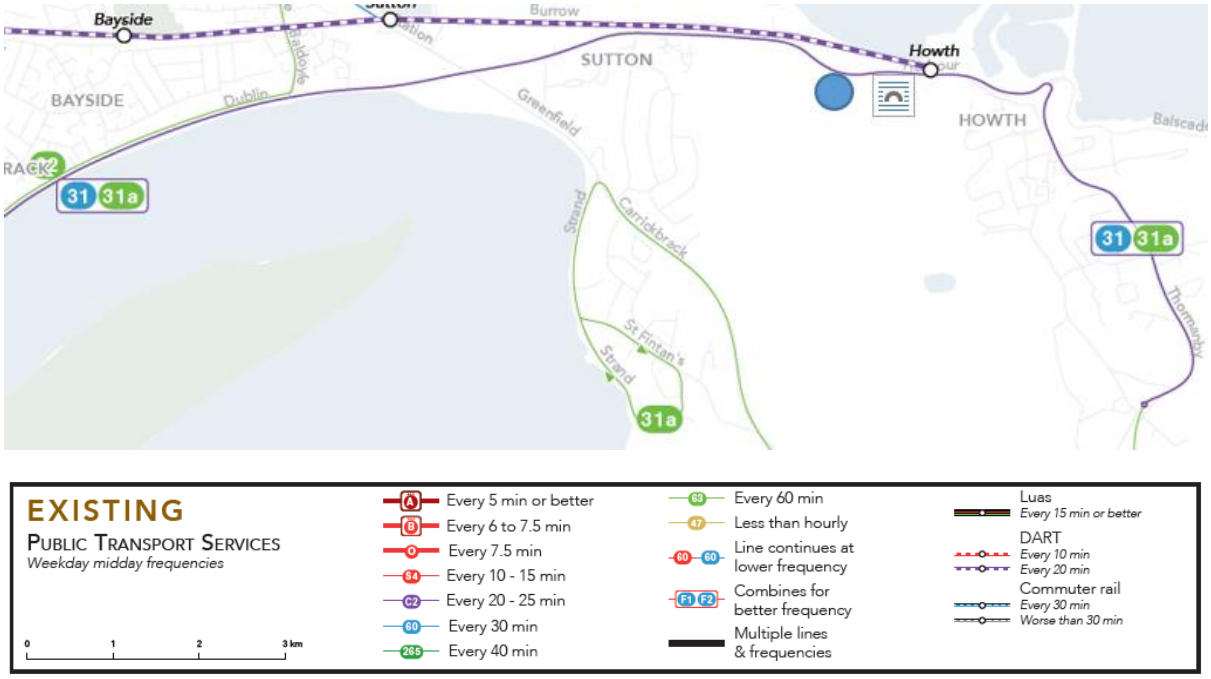

Figure 6.9 Existing bus services (31 31a) close to Proposed Development

Existing DART Service

The DART extends along the coastline of the South Dublin area, extending from the centre of Howth to Ballsbridge, Sandymount, Merrion, Booterstown, Blackrock, Monkstown, Dun Laoghaire, Dalkey, Ballybrack, Shankhill, Bray and Greystones, and along the coastline of the north Dublin area extending from Howth to Clontarf, Sutton, Howth and Malahide.

The Howth DART Station is within 400 metres (4 minutes' walk) of the Proposed Development. From the centre of the site this would equate to 10-minute walk.

The DART operates a service to the city centre every 12 to 15 minutes during the morning and evening peak time.

Figure 6.10 contains diagrammatic representations of the DART system serving the site and its connectivity to the regional / national rail network.

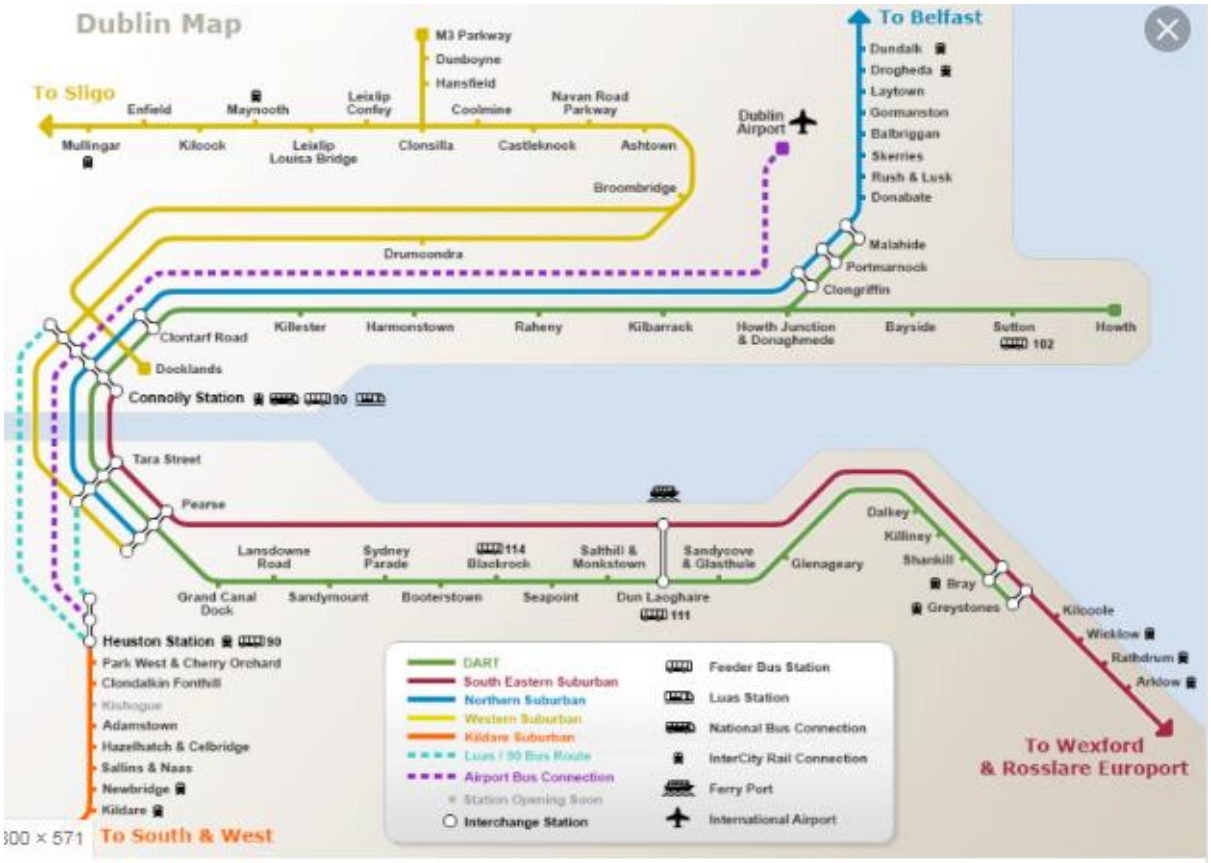

Figure 6.10 Diagrammatic representation of DART line and its connectivity to regional / national rail network

Existing Modal Splits:

MODE	CAR DRIVER (%)	CAR PASSENGER (%)	BUS (%)	DART/TRAIN (%)	CYCLING (%)	WALKING (%)	NOT STATED / WORK AT HOME / ETC.
Howth	54	2	4	20	2	5	13
Sutton	47	2	4	29	5	3	10
Baldoyle	48	2	5	26	4	4	11
Average	50	2	4	25	4	4	11

Table 6.4 Modal splits for electoral districts in vicinity of Proposed Development (2016 census – SAPMAP data source)

6.6 Impact of Proposed Development – Construction Phase

6.6.1 Road Network

Direct/Indirect Impact

The total construction period is estimated at 22 months, this is to be broken down as follows;

- Site set up / Excavation - 3 months
- Construction – 19 months

This is an indicative figure and subject to planning and compliance approvals.

The following estimates for weekday traffic have been made with respect to a proposed construction programme and activities on site:

- No of private vehicles per day from staff and site visitors – 15
- No. of light good vehicles per day from subcontract staff - 10
- No. of heavy goods vehicles per day during excavation process - 70
- No heavy goods vehicles per day outside of the excavation periods – 5

The above results in an estimate of 100 vehicles accessing the site daily during the excavation phase and will reduce to 30 vehicles outside of the excavation period.

Over a 10-hour working day, this equates to 1 vehicle entering and leaving the site on average every 6 minutes during excavation and 20 minutes entering and leaving the site all times outside the excavation period.

The 70 number of excavation vehicles is based on a predicted maximum 8 vehicles per hour based on a realistic availability and assignment of resources. This equates to an average of 1 No. HGV vehicle movement every 7.5 minutes during excavation.

Traffic surveys carried out as part of the Traffic Impact Assessment for this project defined the peak traffic hours as 08:00 - 09:00 and 17:00 – 18:00. However, the surveys indicated that the morning peak was more extreme, with flows approximately 15% greater than the evening peak.

Construction operation time between Monday - Friday is predicted to be between 7:00 and 19:00, subject to planning conditions. Given that the site workforce will be arriving at site before 7AM and leaving after 7PM, the traffic movements generated by the site workers will take place outside the peak times for network flows. Site workers will also be encouraged to use public transport.

We have discussed the intended construction programme with the development team for the adjacent SHD Claremont Residential Development (former Techcrete site located on the opposite side of Howth Road). We understand that the bulk excavation for all blocks and phases was completed on site in mid-April 2021.

With regard the subject site, the potential site start date, advised by GLL PRS HOLDCO LTD (subject to a commercial review), is mid-2022 at which time the bulk dig for the adjacent Claremont SHD will be complete and it would be expected that the super-structure for that development will be well advanced. It is therefore noted that there will be no overlap between the bulk excavation dig and the associated HGV movements between the sites.

The permanent site access location will be used initially for construction access and HGV's will enter site via this entrance.

During the construction phase, HGV's entering the site will be guided by signs to a waiting area before being directed to their location and on departure enter a cleaning area prior to leaving site. Difficulties entering Howth road, is not seen as an issue, however a banksman will be assigned to the proposed vehicular entrance to ensure vehicles can safely enter Howth Road.

All HGV's during the construction phase will travel to and from Sutton Cross using Howth road, Route 1, as shown in **Figure 6.11.** This route was chosen as it is the shortest and minimises the effect the development has during the construction phase on Howth Village.

Therefore, the impact of the development during the construction phase will have a slight impact on the road network with short term temporary slight effects.

During the excavation phase (highest volume of HGV's) this will equate to 10 additional vehicles during the rush hour period. This is a 0.02% increase on the current traffic at Sutton Cross and therefore the additional vehicles are likely to have an imperceptible impact of neutral and temporary effect on the current traffic situation at this junction. All other junctions assessed are less than 5% impacted and perform well within capacity, therefore, the impact will be an imperceptible impact of neutral and temporary effect during the construction phase.

Cumulative - Construction Impact of potential Balscadden Development

A previous application was granted on the Balscadden site (164 units located as per **Figure 6.11**) which has been subsequently quashed. Nevertheless, to assess the potential for a future development to occur on this site, the potential construction impact of this site has also been considered. We deem that taking account of this potential site results in a very robust analysis of this site.

The previous planning permission for the Balscadden development involved construction traffic using route 2 as per **Figure 6.11** below, and it is expected that any future planning application on this site will be required to follow the same route.

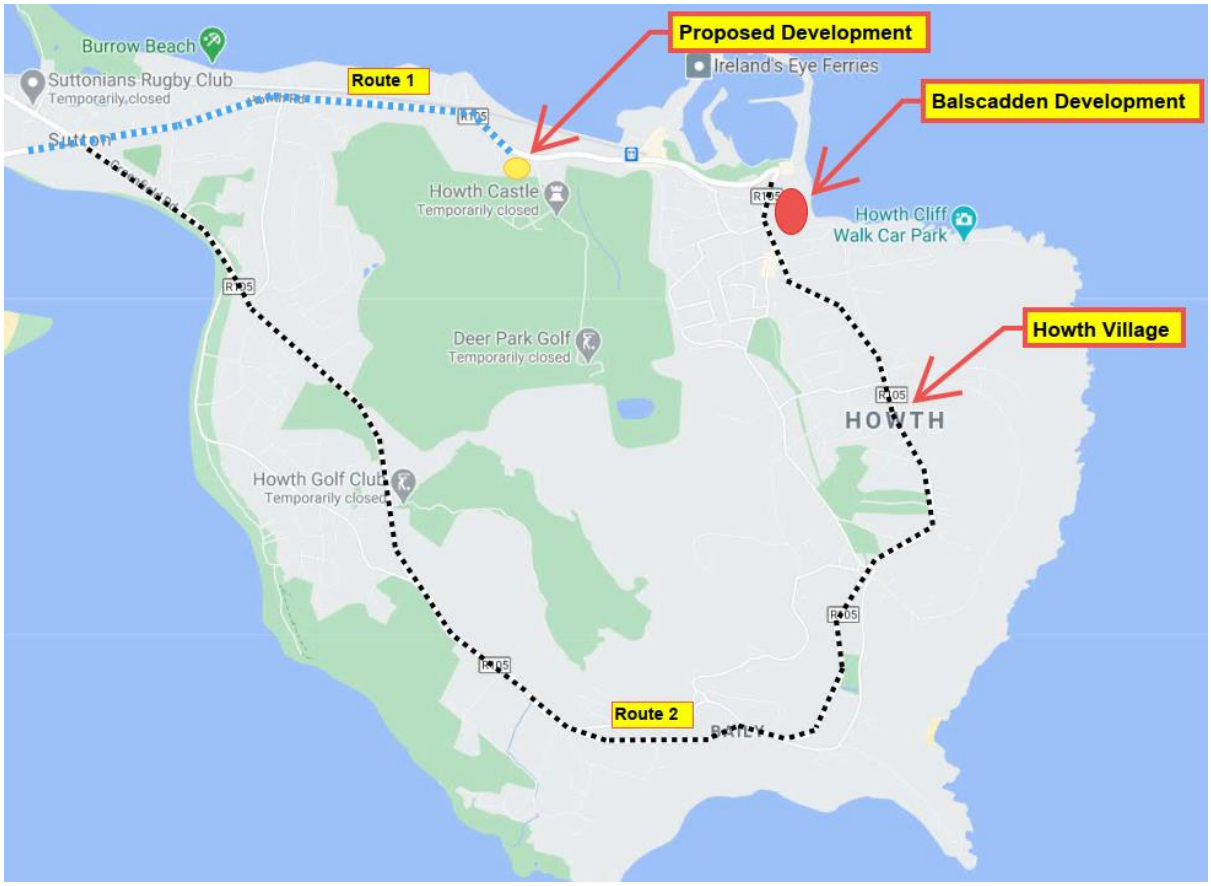

Figure 6.11 Separate construction traffic routes for proposed Claremont development and potential Balscadden site

It is important in relation to this proposed development that they the most appropriate construction routes be identified in order to bring materials to and from the site in the most efficient and environmentally sensitive manner in order to minimise potential conflict. There are two possible constructions routes into Howth as shown in **Figure 6.11**.

The Proposed Development plans to use Route 1 to limit the potential impacts on Howth Village This will be the haul route for excavated materials from the site. Upon reaching Sutton Cross, traffic will take the most direct route to the nearest major roads infrastructure, i.e. the M50/M1.

The previous application submission for Balscadden included a Construction Management Plan which proposed that all traffic from the Balscadden development will use the Carrickbrack road and would not influence traffic movements on the Howth Road (Route 2). Therefore, the impact of using route 1 to service the excavation phase during the construction phase as a haul road will have a slight impact with a short-term temporary effect.

6.6.2 Pedestrian

The site is currently impermeable to pedestrians. Appropriate hoarding will be erected around the site perimeter in order to protect the works and members of the public. The boundary to

the site will be maintained and site security will be provided throughout the contract period. Pedestrian access will be strictly controlled via manned turnstile system, via Howth Road.

Appropriate segregation will be employed on site to separate pedestrians from heavy equipment. Fenced off pedestrian walkways will be provided close to the site offices. There is to be limited parking on site for staff members. Staff will be encouraged to use public transport or cycle.

The existing footpath outside the Proposed Development will be maintained during the works except for periods where service connections and new drain lines to be constructed along existing footpath lines, for limited periods within the overall construction programme (2 months). Pedestrians at such times will be provided with either an alternative pedestrian lane on the development side subject to local authority approval or temporary pedestrian activated signalised crossings to divert pedestrians to the footpath on the other side of the road. Therefore, the potential impact of the proposed development on the local pedestrian routes will be slight with a temporary neutral effect.

For further information regarding drainage works and utility installation refer to

- Chapter 7 – Material Assets Built Services; and
- The Construction Environmental Management Plan, submitted under separate cover.

6.6.3 Cycling

Direct/Indirect Impact

The use of cycle lanes will not significantly be impacted during the construction phase other than the increase traffic usage from vehicles entering and exiting the site.

In relation to drainage upgrades and utility connections which will be carried out over a limited period as set out above the cycle lanes will be suspended for these periods. The cyclists will be diverted similar to normal road services installation works with the approval of the Fingal County Council road department.

The impact in relation to cyclist is not significant, of negative, local and temporary effect as defined in Table 3.3.

Cumulative Impact

As outlined above, the potential development of the Balscadden site has been considered here and we deem this results in a very robust analysis. In the event of the development of the Balscadden site, haulage route 2, has no designated cycle lanes. With the haulage vehicles coming from the Balscadden development cyclists may opt to use Howth Road instead. However, in reality the number of cyclist using route 2 would be minimal as it is a steep climb (117m) out of Howth village and considerably longer than the Howth road route to Sutton Cross, estimated 11 minutes virus 30 minutes.

Therefore, the majority of cyclists are using Howth road, the impact of the additional cyclists as a result of the potential Balscadden development will be not significant and will have no negative temporary effect on the cycling network.

6.6.4 Public Transport

Direct/Indirect Impact

Pedestrians can cycle or walk to the construction site or alternatively can avail of the following public transport:

Dublin Bus

Route	Origin	Destination	Frequency
Route 31/a	Howth Road / Carrickbrack Road	Talbot Street	2 per hour
Route 31b	Carrickbrack Road	Talbot Street	1 per hour

Table 6.5 Dublin Bus Routes 31/A/B details

DART

Howth DART Station is within 400 metres (4 minutes' walk) of the Proposed Development and operates a service to the city centre every 12 to 15 minutes during the morning and evening peak time.

There will be an increase of public transport usage during the construction phase. Due to the proximity and frequency of the DART and Dublin Bus services to the site, it would be expected that site staff will utilise these services to attend site. It would be expected that the majority of site staff will be commuting to the site from outside the Howth area and in the evening commuting from the site. These trip journeys are the opposite of the public transport usage at these times and thus there will be an imperceptible impact, neutral and temporary effect.

Cumulative Impact

The site staff going to the Balscadden and Claremont sites will be going against peak hour flows. Therefore, the potential impact will be imperceptible with local, neutral and temporary effect.

6.7 Impact of Proposed Development – Operational Phase

6.7.1 Road Network

The traffic impact of the proposed development is derived by assessing the trips generated by the proposal, taking the existing, day of opening and design year flows on the network, gauging the extent to which the superimposed flows from the proposed and adjacent committed developments will affect the efficiency of future network flows.

Direct/Indirect Impact

The analysis of traffic growth volumes on the traffic network plus traffic generated by proposed and adjacent development constitutes a robust assessment of the likely direct impacts of the Proposed Development.

The impact of the Proposed Development on the following 4 No. junctions is assessed.

- Sutton Cross Signalised junction
- Church Road / Howth Road priority junction
- Offington Park / Howth Road priority junction
- Harbour Road / Church Street priority junction

Flows Generated By Proposed Development

The planned quantum of the development consists of 162 No. apartment units.

TRICS typically gives the following weekday morning and evening peak trip rates as detailed within **Tables 6.6** and **6.7** for apartments using Irish sites only where parking provision is not greater than 1.2 spaces per dwelling unit:

(These trip rates were used for the Claremont site at the former Techcrete factory):

		Weekday AM		Weekday PM	
		IN	OUT	IN	OUT
Apartments	Trips/Unit	0.04	0.19	0.16	0.06

Table 6.6 Peak hour trip rates for apartments within development site

The above TRICS trip rates give rise to the following weekday morning and evening peak trip rates for apartments:

		Weekday AM		Weekday PM	
	Units (No.)	IN	OUT	IN	OUT
Apartments	162	7	31	26	10

Table 6.7 Peak hour flows generated by proposed apartments within development site

Thus, the proposal will result in a 2-way flow of 38 vehicles per hour in the morning peak, decreasing to 36 vehicles per hour in the evening peak (0.63 vehicles entering or exiting every minute during the morning peak, rising to 0.6 vehicles entering or exiting per minute during the evening peak).

Distribution of Flows Generated by Proposed Development

The incident flows along the R105 / Howth Road are relatively well balanced during both the morning and evening peaks.

In the interests of robustness in the analysis within this report, the morning peak exiting the site (peak direction of flow), however, a 2:1 ratio will be assumed in favour of traffic exiting towards Sutton Cross. Of the one-third exiting towards Howth Village, 50% of trips are assumed to terminate in the local area, with the remaining 50% accessing Sutton Cross via Greenfield Road.

For traffic entering the development (non-peak direction of flow), 50% is assumed to enter from the Howth Village direction, with 50% from Sutton Cross via Howth Road.

At Sutton Cross, for exiting traffic (peak direction of flow) from Howth Road / Greenfield Road, 60% is assumed to exit to the Dublin Road, with 40% exiting to Station Road, while for traffic entering (non-peak direction of flow) from Sutton Cross, 50% will enter form Dublin Road and 50% from Station Road. 50% of this entering traffic will exit onto Howth Road, with 50% exiting onto Greenfield Road.

In the evening peak, for exiting traffic (non-peak direction of flow), a 50:50 split will be assumed between traffic exiting towards Sutton Cross and Howth Village. Of the 50% exiting towards Howth Village, again 50% of trips are assumed to terminate in the local area, with the remaining 50% accessing Sutton Cross via Greenfield Road.

For traffic entering the development (peak direction of flow), one-third are assumed to enter from the Howth Village direction, with two-thirds from Sutton Cross via Howth Road.

At Sutton Cross, for exiting traffic (non-peak direction of flow) from Howth Road / Greenfield Road, 60% is assumed to exit to the Dublin Road, with 40% exiting to Station Road, while for traffic entering (peak direction of flow) from Sutton Cross, 60% will enter form Dublin Road and 40% from Station Road. 60% of this entering traffic will exit onto Howth Road, with 40% exiting onto Greenfield Road.

Figure 6.12 and **Figure 6.13** details the assumed distributions for the AM and PM peak hour generated flows respectively.

Figure 6.12 Distribution of morning peak hour flows generated by Proposed Development

Figure 6.13 Distribution of evening peak hour flows generated by Proposed Development

Assumptions Regarding Traffic Growth Within Local Road Network

The 2014 Traffic and Transport Assessment Guidelines published by the NRA requires that the relevant junctions be analysed for the existing situation, the year of opening (2023) with the proposed and adjacent developments in place, the design year 1 (year of opening plus 5) with the proposed and adjacent developments in place, and the design year 2 (year of opening plus 15) with the proposed and adjacent developments in place. In order to bring focus to the analysis, design year 1 has been omitted from those junctions fully analysed.

An annual growth rate of 1.4% has been assumed for the period 2019 to 2030, decreasing to 0.4% for 2031 to 2037, based on the low growth estimate for Fingal County Council published by TII in 2019 (PE-PAG-02017-2).

The 2023 Do-Nothing ('without development') scenario is derived by factoring the existing surveyed flows up by 4.2% ($(1.014)^3$ - 1 = 0.042). The 2023 Do-Nothing ('with adjacent development') scenario is derived by adding the development flows detailed within Diagrams 3 and 4 to these factored network flows. The 2023 Do-Something ('with proposed and adjacent development') scenario is derived by adding the development flows detailed within Diagrams 3, 4, 5 and 6 to these factored network flows.

The 2038 Do-Nothing ('without development') scenario is derived by factoring the survey results in Diagrams 1 and 2 up by 20.7% ($(1.014)^{11}$ – 1))($(1.005)^7$ – 1) = 0.207). The 2038 Do-Nothing ('with adjacent development') scenario is derived by adding the development flows detailed within Diagrams 3 and 4 to these factored network flows. The 2038 Do-Something ('with proposed and adjacent development') scenario is derived by adding the development flows detailed within Diagrams 3, 4, 5 and 6 to these factored network flows.

The 2038 analysis constitutes a significantly conservative analysis, as given current transport policy in the Greater Dublin Area, where use of the private car for the trip to work is being actively discouraged, and use of public transport and soft modes actively encouraged, it is highly unlikely that an increase in traffic volumes of 21% from now until 2038 will take place.

In reality, it could reasonably be assumed going forward that traffic volume increases during the morning and evening peaks will be marginal over the coming years.

Table 6.8 indicates the total flows incident on all 4 No. junctions during the morning and evening peaks, and compares the values obtained with the results from January 2019 surveys completed for an adjacent proposed development at the former Techrete site:

		JANUARY 2019		OCTOBER 2019		
		8 to 9	5 to 6	8 to 9	5 to 6	
		AM	PM	AM	PM	AVERAGE +/-
Sutton Crossroads	site 1	1949	1694	1944	1602	**-2.8**
Church Road / Howth Road	site 2	983	824	1055	972	**+12.6**
Offington Park / Howth Road	site 3	898	797	945	917	**+10.1**
Harbour Road / Church Street	site 4	658	712	730	719	**+6.0**

Table 6.8 Comparison of January 2019 and October 2019 surveys at 4 No. critical junctions

Thus, the two surveys show slight decreases at the Sutton Crossroads location, with average increases within the three less critical internal junctions of 9%.

<u>Traffic Flows Generated By Adjacent Permitted Development At Claremont and Balscadden (now annulled)</u>

For the Claremont site, the proposed development was predicted to generate 124 No. outbound trips and 64 No. inbound trips during the morning peak hour between 0800 and 0900, with 135 No. inbound trips and 101 No. outbound trips generated during the evening peak between 1700 and 1800.

Thus, the proposal will result in a 2-way flow of 188 vehicles per hour in the morning peak, increasing to 236 vehicles per hour in the evening peak (3 vehicles entering or exiting every minute during the morning peak, rising to 3.9 vehicles entering or exiting per minute during the evening peak

For the Balscadden Road site (now annulled), the proposed development was predicted to generate 41 No. outbound trips and 7 No. inbound trips during the morning peak hour between 0800 and 0900, with 27 No. inbound trips and 9 No. outbound trips generated during the evening peak between 1700 and 1800.

Thus, the proposal will result in a 2-way flow of 48 vehicles per hour in the morning peak, decreasing to 36 vehicles per hour in the evening peak.

Combined, the two proposed developments will generate a 2-way morning peak flow of 236 vehicles per hour and a 2-way evening peak flow of 272 vehicles per hour.

Distribution of Trips Generated By Adjacent Planned Development

The assumed distribution of trips generated by the adjacent planned development are detailed for the morning and evening peak hours in **Figure 6.14** and **Figure 6.15** respectively:

Figure 6.14 Distribution of morning peak hour flows generated by adjacent planned development

Figure 6.15 Distribution of evening peak hour flows generated by adjacent planned development

The following 4 No. priority junctions - Development Entrance, Offington Park, Church Road and Church Street - experience a very limited traffic impact as a result of the Proposed Development. They are analysed for the day of opening with and without development, with results summarised in Error! Reference source not found.**10** and **Table 6.11.**

Traffic Impacts on Offington Park, Church Road, Church Street and Development Entrance junctions resulting from total development flows

Table 6.9 summarises the day of opening maximum ratios of flow to capacity at the junctions with the total development flows assumed to be in place:

	Maximum Ratio of Flow to Capacity (RFC)	
	AM Peak	PM Peak
Offington Park / Howth Road	0.60	0.33
Church Road / Howth Road	0.54	0.21
Harbour Road / Church Street	0.44	0.31
Development Entrance (Howth Road)	0.08	0.03

Table 6.9 Maximum ratios of flow to capacity at Offington Park, Church Road, Church Street and Development Entrance junctions for morning and evening peak hours (2023)

The above results confirm that no congestion at the above 4 No. junctions will result with total development flows incident on them. Therefore, the potential impact of the development on the 4 junctions listed above is not significant with neutral long term effects.

Traffic Impacts on Sutton Cross resulting from total development flows

This is the critical junction, with all traffic leaving Howth peninsula funnelling through Sutton Cross. Therefore, a full analysis of the junction, both on its projected day of opening in 2023 and within its design year, 15 years thereafter, is undertaken in full compliance with the requirements of Transport Infrastructure Ireland's Traffic and Transport Assessment Guidelines.

Table 6.10 analyses the junction for the morning and evening peaks respectively on the assumed day of opening of the proposal in 2023 with total development flows incident included (incident development flows based on the distribution assumptions detailed above).

	2023 AM Peak Flows (Do-Nothing)				2023 PM Peak Flows (Do-Nothing)			
	Flow (veh/TS)	**Cap.** (veh/TS)	**RFC (-)**	**Avg. queue** (vehicles)	**Flow** (veh/TS)	**Cap.** (veh/TS)	**RFC (-)**	**Avg. queue** (vehicles)
Howth Rd (Arm A)	129	149.03	0.87	31	72	101.99	0.71	20
Carrickrock Rd (Arm B)	129	161.87	0.80	17	132	147.06	0.90	20
Dublin Rd (Arm C)	96	92.49	1.04	30	94	141.33	0.67	19
Station Road (Arm D)	89	179.01	0.50	16	80	227.52	0.35	11

Table 6.10 Day of opening (2023) capacities, ratios of flow to capacity and queue lengths for each 15-minute interval during the morning and evening peak hours (total development flows in place)

By 2023, assuming network flow increases of 4.2% per year until the projected day of opening of the proposed development, with both adjacent planned development and the proposed development in place, maximum queuing will increase marginally on the 2023 'without

development scenario to a maximum of 31 No. vehicles over both peaks, with one arm at 105% capacity.

Therefore, the potential impact will be moderate with a negative and long-term effect on the Sutton Cross junction in 2023.

	2038 AM Peak Flows (Do-Proposed + Adjacent)				2038 PM Peak Flows (Do-Proposed + Adjacent)			
	Flow (veh/TS)	**Cap.** (veh/TS)	**RFC (-)**	**Avg. queue** (vehicles)	**Flow** (veh/TS)	**Cap.** (veh/TS)	**RFC (-)**	**Avg. queue** (vehicles)
Howth Rd (Arm A)	151	143.11	1.06	53	83	99.75	0.83	24
Carrickrock Rd (Arm B)	147	163.06	0.91	21	152	147.08	1.03	30
Dublin Rd (Arm C)	111	95.02	1.17	41	108	144.25	0.75	23
Station Road (Arm D)	103	181.61	0.57	19	93	225.28	0.41	13

Table 6.11 - Design Year (2038) capacities, ratios of flow to capacity and queue lengths for each 15-minute interval during the morning and evening peak hours (total development flows in place)

Table 6.11 demonstrates that, 15 years after the projected day of opening of the proposed development in 2038, assuming network flow increases of 21%, with both adjacent planned development and the proposed development in place, maximum queuing will increase marginally by 9.4% to a maximum of 53 No. vehicles over both peaks, with one arm at 117% capacity and one at 106% capacity.

The above analysis is very much a 'worst case' scenario, as an increase of 21% in network flows over the next 17 years is highly unlikely given the aim of existing transport policies within the Greater Dublin area to minimise use of the private car for the journey to work. It should also be stated that the trip distribution assumptions are very robust, with the assumption that 75% of all development flows would be incident on Sutton Cross during both peaks. In reality, vehicle trips with local destinations during the morning peak and with local origins during the evening peak may form a significantly greater cohort than assumed within this analysis. Therefore, in reality the likelihood is that the potential impact in 2038 will be more moderate than significant.

Cumulative Impacts

In order to demonstrate, in overall terms, the level of traffic impact generated by the proposed development and the Techcrete and Balscadden development, flows on the local road network, **Table 6.12** details the increase in traffic at the 4 No. external junctions plus the Proposed Development entrance:

		Network Flows		Committed Flows (as % of network)		Generated Flows (as % of network)	
		AM	PM	AM	PM	AM	PM
Sutton Crossroads	site 1	1944	1602	184 (9.4%)	227 (14.2%)	32 (1.6%)	30 (1.9%)
Church Road / Howth Road	site 2	1055	972	146 (13.8%)	164 (16.8%)	25 (2.4%)	22 (2.3%)
Offington Park / Howth Road	site 3	945	917	146 (15.4%)	164 (17.9%)	25 (2.6%)	22 (2.4%)
Harbour Road / Church Street	site 4	730	719	96 (13.2%)	126 (17.5%)	14 (1.9%)	16 (2.2%)
Development entrance		730	719	146 (20%)	164 (23%)	38 (5.2%)	36 (5%)

Table 6.12 Impact of generated flows on critical junctions

Based on the figures within **Table 6.12**, the potential cumulative impact on the road network for the combined developments is moderate in the medium term and significant in the long term with regards to Sutton Cross Junction. All other junctions are operating well within capacity and the potential impacts are slight, in short, medium and long term.

6.7.2 Pedestrian

Direct/Indirect

To the west of the proposed development site are a series of dwellings on the opposite side of Howth road and on the development side over a dozen dwellings and a block of apartments, Howth Lodges, followed by the DART line towards Sutton Cross. Further west there is a number of housing estates, where their nearest station would be Sutton Cross DART station.

For pedestrian using the Howth road footpath on the northern side of the road, the first crossing point is provided outside the Howth DART Station. This road is very busy and it would be reasonable to assume that most pedestrians using the footpath do not cross until they reach Howth DART station.

Based on the information taken from the Transport for Ireland, 52% of commuters use public transport, 5.7% cycle and 6.2% walk. For the purpose of this analysis, for the worst-case scenario, it is assumed that the people using the public transport and walking are all either walking towards public transport (i.e. Howth DART Station) or Howth Village, this equates to 63.2% of the population using the footpath outside the proposed site. Based on the Permeability Best Practice Guide B published by the Transport for Ireland (TFI), the pedestrian route directness (PRD), needs to be under 10 minutes or 700m to be a desirable walking route. Howth Lodge apartments and 5 of the dwellings are over 1000m from the DART line, therefore it would be fair to assume that half of these would opt to drive or cycle, reducing the pedestrian number to 31.6%.

Table 6.13 below calculates the current number of pedestrians using the public footpath directly outside the development as 116 people, based on 2.7 persons per dwelling unit. Taken from the 2016 census 50% of the population works, this reduces the number of commuters during peak hour to 58 people. This equates to a total movement in and out of Howth village per day of 116 movement. Using the same peak times as traffic,08:00 - 09:00 and 17:00 and 18:00, this equates to currently one person per minute using the footpath during peak hours.

Property	No of Units	Total People	Percentage of Pedestrian %	No. of People walking to Howth Village
Howth Lodge apartments over 700m	102	276	31.6	44
Dwelling Houses over 700m	5	38	31.6	6
Dwelling Houses under 700m distance	9	24.3	63.2	8
Total Number of People using footpath				**58**

Table 6.13 Current Pedestrian Permeability during peak hour

The proposed development is within the 700m zone and therefore it is assumed that 63.2% will be using the public footpath. As shown in **Table 6.14**, this increases the pedestrian usage to 197 people. Therefore, during peak times this will equate to 4 people per minute using the footpath. The proposed footpath is in accordance with DMURs requirements and is enough for this volume of foot traffic.

It should be noted that work place environments are becoming more flexible allowing people to work from home or flexi time, therefore stating that all these people would be going to work between 8:00 and 9:00 and returning home between 17:00 and 18:00 is worst case scenario and would not be the actual case.

Therefore, the potential impact of the proposed development will be relatively significant on the public footpaths with neutral long-term effects.

Property	No of Units	Total People	Percentage of Pedestrian %	No of People walking to Howth Village
Howth Lodge apartments over 700m	102	276	31.6	44
Dwelling Houses over 700m	5	38	31.6	6
Dwelling Houses under 700m distance	9	24.3	63.2	8
Proposed development under 700m	162	438	63.2	139
Total Number of People using footpath				**197**

Table 6.14 Proposed Pedestrian Permeability Activity during peak hour

Cumulative

Pedestrians associated with the permitted development at the Techcrete site will impact the pedestrian facilities west of Howth DART Station. The cumulative effects in respect of the permitted development will be significant, increasing the flow during peak hour by 437 No. pedestrians based on 512 No. apartment units.

6.7.3 Cyclists

Direct/Indirect

Figure 6.16 details the network improvements proposed within the Greater Dublin Area cycle plan.

Figure 6.16 Proposed cycle facilities close to the Proposed Development (GDA cycle plan)

A secondary cycle route is planned along Howth Road. Carrickbrack Road, which will connect the Proposed Development to all parts of Howth, southwards towards the city centre and north-westwards towards Portmarnock, Malahide and Swords.

In addition, the proposed East Coast Greenway will run on the northern edge of the site, connecting Howth to the greenway network in the Greater Dublin area.

Figure 6.17 contains a drawing of the Dublin Greenway network map, indicating the extent of the east Coast Greenway.

Figure 6.17 Dublin Greenway Map, including route of East Coast Greenway

The current population of Howth Peninsula based on the census of 2016 is 8,294 people, based on census on average 50% work. Of those, based on the information taken from the Transport for Ireland website, 52% of people use public transport, 5.7% cycle and 6.2% walk. It is estimated that the development will be completed in late 2023.

An assessment has been carried out to determine the implication of the proposed development on the proposed network. The number of people in the development is based on the 2.7 person per unit, which equates to 438 people. Therefore the commuting population from the development is 219 people.

Table 6.15 - Shows the current number of people cycling to work and anticipated increase in bicycles on network due to the development.

Cycling	Existing	Network Increase
Existing	236	
Proposed Development	13	
Total	249	6%

Table 6.15 Existing and Proposed Cycling Network

Current peak commute hours are between 08:00 to 09:00 and 17:00 to 18:00. There is a 5% increase on the cycling network. The potential impact on the cycling network will be a long-term neutral effect of minor to moderate significance.

Cumulative

The cumulative effect is to assess the cycle network for the proposed development with the Techcrete and Balscadden developments.

The Balscadden development plans to have 164 units, which equates to 443 people and of this 222 commuting for work.

The Techcrete development plans to have 512 units, which equates to 1382 people and of this 691 commuting for work.

Table 6.16 shows that number of cyclists will be increased by 28% on the existing network. Therefore, the potential impact of the combined developments will be a long-term neutral effect of moderate significance.

Cycling	Existing	Network Increase
Existing	236	
Proposed Development	13	
Techcrete	40	
Balscadden	13	
Total	302	28%

Table 6.16 Combined Cycle Network

It should be noted this is a worse-case scenario, this assumes that all cyclists leave for work between 8:00 and 09:00 and return home at 17:00 and 18:00. In realistic terms with modern flexible working hours and working from home options, these figures should be spread over 2 hours in morning and evening, therefore reducing the number of cyclists to one cyclist per minute. Thereby, the likely potential impact of the combined developments will be long term with neutral effect of slight significance.

6.7.4 Public Transport

Direct/Indirect

The major public transport facility available to residents and visitors at the Proposed Development is the DART, which extends along the coastline of the South Dublin area, linking the centre of Dublin city to Ballsbridge, Sandymount , Merrion, Booterstown, Blackrock, Monkstown, Dun Laoghaire, Dalkey, Ballybrack, Shankhill, Bray and Greystones, and along the coastline of the north Dublin area extending from the town centre to Clontarf, Sutton, Howth and Malahide. The Howth DART Station is within 400 metres (4 minutes' walk) of the Proposed Development (10 minute walk from the centre of the site) to the station and operates a service to the city centre every 12 to 15 minutes during the morning peak time.

Bus Network

In the future, the Bus Connects project put forward by the national Transport Agency proposes the N6 orbital route across the north side of Howth, opening up a new service to DCU while maintaining a good connection to the rail or the D spine for travel to the city centre.

On the southern and western sides of Howth, where demand is relatively low, local routes 290 and 291 will operate an hourly service, providing direct service to Sutton and Clongriffin DART Stations, thus providing enhanced connectivity to the local train system.

These proposed improvements are detailed within **Figure 6.18**.

Figure 6.18 Future bus routes envisaged in Bus Connects Report (NTA,

Rail Network

The expansion programme will create a full metropolitan area DART network for Dublin, with all of the lines linked and connected. This will transform the rail system in the Greater Dublin Area, delivering new DART services between the City Centre and Drogheda, Maynooth - M3 Parkway and Hazelhatch - Celbridge. **Figure 6.19** details the DART expansion programme planned 2018 to 2027,

Customer capacity and train service frequency on these lines will be significantly increased as a result of the programme.

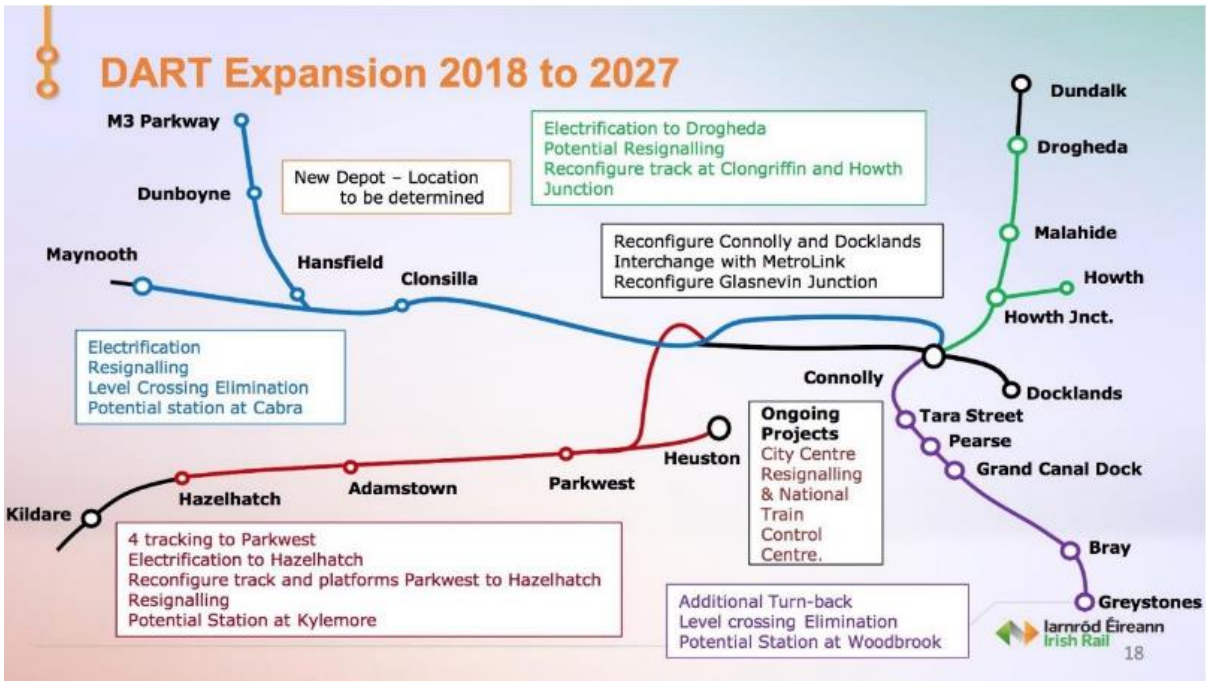

Figure 6.19 DART expansion programme

The current population of Howth Peninsula based on the census of 2016 is 8,294 people. Based on the information taken from the Transport for Ireland, 52% of people use public transport, 5.7% cycle and 6.2% walk. It is estimated that the development will be completed in late 2023. **Table 16.17** taken from the Iarnrod Eireann website shows that the Dart line (Northern Line) will be near completion by 2024 and therefore appropriate to assess the development against the proposed scheme.

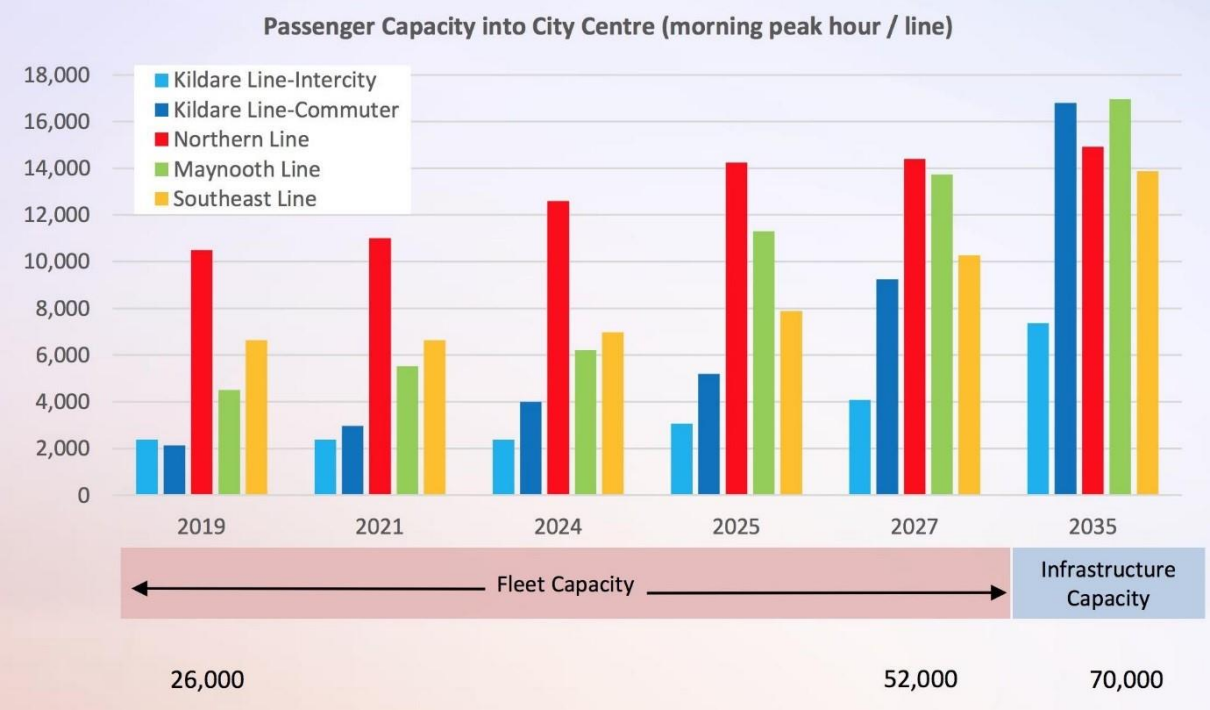

Table 6.17 Improve Network Capacities

In relation to the 15,000 capacity shown in **Table 6.17** above, the capacity from Howth will be in the order of 3,600 people.

An assessment has been carried out to determine the implication of the proposed development on the proposed network. The number of people in the development is based on the 2.7 persons per unit, which equates to 437 people, of which 227 people will commuting.

Table 6.18 illustrates the network utilisation increase for when the development is in operation. It can be seen that the proposed development will have a 5-6% increase in the network demand.

Public Transport	Demand 2023 excluding Development	Development	Total	Network Increase
DART	1,940	101	2,041	5%
Bus	216	13	229	6%
Total	2,156	114	2,270	5%

Table 6.18 Public Transport with and without development

Current peak commute hours are between 08:00 to 09:00 and 17:00 to 18:00. The dart between Howth and Bray now runs every 10 minutes with the new DART timetable. Therefore, this equates to an additional 17 people per train and 4 people per bus from the development. However, this is a worse-case scenario and assumes that everybody in the developments are commuting at a set time. In realistic terms with modern flexible working hours and working

from home options, these figures should be spread over 2 hours in morning and evening, therefore reducing the number for the development to, 8 people per train and 2 people per bus. The likely potential impact on the train and bus service will be very slight with negative long term effects.

Cumulative

A cumulative effect is to assess the Techcrete and Balscadden developments combined with the proposed development. The population data referred to above and taking account of the additional 676 (164+512) units which equates to 443 people in that development, **Table 6.19** can be generated.

Table 6.19 Shows that the combined development will result in an increase in network demand of 28%.

Public Transport	Demand 2023 excluding Development	Development	Balscadden + Techcrete	Total	Network Increase
DART	1,940	101	324+104	2,469	28%
Bus	216	13	36+12	277	28%
Total	2,156	114	360+116	2,746	28%

Table 6.19 Public Transport with Techcrete and Balscadden plus Proposed Development in operation

As discussed, previously current peak commute hours are between 08:00 to 09:00 and 17:00 to 18:00. This equates to an additional 88 people per train and 20 per bus during peak hour from the two developments.

However, this is a worst-case scenario, if we allow to be spread over 2 hours in the morning and evening this will reduce to 44 people per train and 10 people per bus. The potential impact on the train service and bus service will be moderate with negative long term effects.

6.8 'Do Nothing' Impact

The same format will be utilised as in section 6.7.1, with the 3 No. non-critical junctions assessed in summary together (no development entrance junction in 'do-nothing' scenario), and the 'without development' assessment of Sutton Cross analysed in more detail.

Traffic Impacts on Offington Park, Church Road And Church Street Junctions (2023 'Do-Nothing' Scenario)

Due to the low flows at these 3 No. junctions, only the 'with development' scenarios have been analysed. The results would be virtually indistinguishable from the 2023 results with total development flows in place. Therefore the potential impact for the do nothing situation is imperceptible and will have neutral long term effects.

Traffic Impacts on Sutton Cross Arising From Network Increases Only (2024 And 2039 Without Any Proposed Development In Place)

Table 6.20 analyses the junction for the morning and evening peaks respectively on the assumed day of opening of the proposal in 2023 with no development flows incident on it and network flow increases of 4.2% assumed in the 2019 to 2023 period.

Table 6.21 analyses the junction for the morning and evening peaks respectively within the assumed design year in 2039 with no development flows incident on it and network flow increases of 21% assumed in the 2019 to 2038 period.

	2023 AM Peak Flows (Do-Nothing)				2023 PM Peak Flows (Do-Nothing)			
	Flow (veh/TS)	**Cap.** (veh/TS)	**RFC (-)**	**Avg. queue** (vehicles)	**Flow** (veh/TS)	**Cap.** (veh/TS)	**RFC (-)**	**Avg. queue** (vehicles)
Howth Rd (Arm A)	66	79.58	0.83	17	67	104.23	0.64	18
Carrickrock Rd (Arm B)	122	167.44	0.73	15	124	147.29	0.84	18
Dublin Rd (Arm C)	94	95.02	0.99	27	52	87.42	0.59	16
Station Road (Arm D)	86	184.44	0.47	15	70	229.76	0.30	10

Table 6.20 Day of opening (2023) capacities, ratios of flow to capacity and queue lengths for each 15-minute interval during the morning peak hour (development not in place)

By 2023, assuming network flow increases of 4.2%, until the projected day of opening of the proposed development, without any development in place, maximum queuing will increase by up to 3 No. vehicles during both peaks relative to the existing situation

Thus, assuming no development flows, it is predicted that this junction will at capacity on one of its approaches by 2023 assuming network flows increase by 4.2% between 2019 and 2023. Therefore the potential impact for the do nothing situation is slight and will have negative long term effects.

	2038 AM Peak Flows (Do-Nothing)				2038 PM Peak Flows (Do-Nothing)			
	Flow (veh/TS)	**Cap.** (veh/TS)	**RFC (-)**	**Avg. queue** (vehicles)	**Flow** (veh/TS)	**Cap.** (veh/TS)	**RFC (-)**	**Avg. queue** (vehicles)
Howth Rd (Arm A)	76	79.58	0.96	36	77	101.99	0.75	21
Carrickrock Rd (Arm B)	141	164.72	0.86	19	144	150.08	0.96	24
Dublin Rd (Arm C)	109	97.56	1.12	37	60	87.42	0.69	19
Station Road (Arm D)	100	181.43	0.55	18	81	229.76	0.35	12

Table 6.21 Day of opening (2023) capacities, ratios of flow to capacity and queue lengths for each 15-minute interval during the morning peak hour (development not in place)

By 2038, assuming network flow increases of 21%, 15 years after the projected day of opening of the proposed development, without any development in place, maximum queuing will be increasing to a maximum of 37 No. vehicles over both peaks, with one arm at 112% capacity

Assuming network flow increases of 21 % from now until the design year for the Proposed Development in 2038 (day-of-opening plus 15), maximum queuing is significant, even without all proposed / planned development in place.

It should again be stated, however, that an increase of 21% in network flows over the 2019 to 2038 period is highly unlikely given the aim of existing transport policies within the Greater Dublin area to minimise use of the private car for the journey to work.

There is no planned upgrades to the cycle and footpath network, therefore if there is to be no development then the potential impact will be imperceptible with neutral long term effects.

In regard to public transport the planned improvements for the upgrades to the DART service and the new bus orbit route will still happen. Therefore, the potential impact if there was no development is positive with increased carriage capacity and a positive long-term effect.

6.9 Mitigation Measures

This section details the measures which will mitigate the traffic impacts detailed within this section of the EIAR.

In this regard we will detail mitigation measures which will offset any traffic impacts predicted for both the construction and operational phases of the Proposed Development.

Mitigation measures describe any corrective measures that are either practicable or reasonable, having regard to the potential impacts discussed above.

6.9.1 Construction Phase

The following measures to mitigate the impact of the construction phase on the existing environment are proposed with reference to the road network.

Road Network Construction Stage Measures to be implemented:

To ensure the road network will have a slight impact with short term temporary slight effects, the following migration will be incorporated.

- To reduce the potential impact with morning traffic particularly between the hours of 8am and 9am, no HGV's will be allowed to leave site during this period. However, vehicles coming to site will be against morning traffic and will therefore have minimal impact on the local road network. These vehicles will be able to enter site and wait in the waiting area, if necessary, be loaded and ready to leave site after 9am.
- Works in Howth road will be carried out in a strip process, limiting the extent of works at any given time and given the existing width of the road across the site frontage two way traffic will be managed at all times.
- Informing workers and expected visitors regarding access arrangements and parking provision to ensure an appropriate mode of travel is chosen; By enforcing this the potential impacts of road delays will be slight and have short term neutral effect.

- Clear and appropriate signage within the site to advise of permitted routes, speed limits, safety requirements.
- Any recommendations with regard to construction traffic management made by the Local authority will be adhered to.
- All road works will be adequately signposted and enclosed to ensure the safety of all road users and construction personnel.
- Provision of sufficient on-site parking and compounding to ensure no overflow of construction generated traffic onto the local network.
- A dedicated 'construction site' access / egress system will be implemented during the construction phases.
- Site offices and compound will be located within the site boundary.
- A series of 'way-finding' signage will be provided to route staff / deliveries into the site and to designated compound / construction areas.

Pedestrian Construction Stage Measures to be implemented:

To ensure the potential impact of the proposed development on the pedestrian routes will be slight with short term temporary neutral effect the following mitigation measures have been incorporated.

- Promote usage of public transport by site staff by clearly displaying local bus, DART and rail services with a map and timetable indicating routes and travel times.
- Works carried out in Howth Road, pedestrians will be directed via a temporary footpath, which will be clearly marked out and separated from the vehicle users. This will only be for short periods when drainage and utility connections works are being carried out in Howth Road.
- Only Safe-Pass accredited personnel will be permitted on site and daily in-out attendance records will be maintained.
- Hoarding to be set up around the perimeter to prevent pedestrian access.
- Signage to be implemented to clearly indicate navigation routes around the site.
- Provide bike parking locations on site to promote the usage of cycling by site staff.

6.9.2 Operational Phase

The following mitigation measures are proposed for the operational phase of the Proposed Development with reference to the road network:

Road Network Operational Stage Measures to be implemented:

The proposed development will have a significant impact with a negative and long term effect on the Sutton Cross junction, the following mitigation measures have been incorporated into the design to limit the effect.

The above traffic assessment details that Sutton Cross is at present a busy and congested junction during the morning and evening peak hours of travel, and will continue to experience increased congestion going into the future if the required conservative growth estimates are applied to existing surveyed network flow, with estimated total generated traffic from both

proposed and planned adjacent development not adding significantly to existing and future predicted congestion levels at Sutton Cross – the critical junction within this comprehensive traffic analysis.

Given that the critical junction under analysis is congested, it is appropriate that there is mitigation to minimise car usage by residents and visitors to the Proposed Development. This comprises the limited on-site car parking spaces

It is proposed within this development to provide car parking space for 81% of the 162 no. apartment units proposed.

The trip generation estimates for this project outlined within this report are conservative and robust as they are based on sites with greater car parking provision than proposed for the Proposed Development. It is highly likely, therefore, that the actual traffic impact of the proposal will be less than predicted, as the limited car parking provision will require residents to actively seek out alternative modes of travel particularly for their journey to work / college within the morning and evening peak.

Mode	Car Driver (%)	Car Passenger (%)	Bus (%)	DART/Train (%)	Cycling (%)	Walking (%)	Not stated / Work at home / etc.
Howth	54	2	4	20	2	5	13
Sutton	47	2	4	29	5	3	10
Baldoyle	48	2	5	26	4	4	11
Average	50	2	4	25	4	4	11

Table 6.22 Modal splits for electoral districts in vicinity of Proposed Development (2016 census – SAPMAP data source)

The above table demonstrates that, for existing residents close to the Proposed Development, 50%, just half commute by private car as detailed within the 2016 Census, with 29% commuting by bus or train and 8% cycling or walking.

It is expected that residents at the Proposed Development would undertake a similar pattern of mode usage, thus resulting in reduced traffic impact on the local road network relative to that envisaged within the conservatively-framed traffic assessment.

6.10 Residual Impacts

6.10.1 Road Network

Provided that the proposed mitigation measures are implemented, the impact of the Proposed Development during the construction stage will be an imperceptible impact of neutral and temporary effect during the construction phase.

There is an increase of road usage by private vehicles in the operational phase, however given the reduced car parking provisions set out in this development, the consequent model shift will result in the mitigation effect traffic flow on the network set out in section 6.9. The potential

impact of the proposed development without such model shift will have significant impact with a negative and long term effect on the Sutton Cross junction in 2039. An increase in use of public transport will result in a moderate impact with negative and long term effects on Sutton Cross Junction.

6.10.2 Pedestrians/Cyclists

Provided that the proposed mitigation measures are implemented, the impact of the Proposed Development during the construction stage will be of a temporary nature and imperceptible. There will be an increase in pedestrians in the surrounding area in the operational stage, however these pedestrians will predominantly use the proposed green routes. This will have a marginally effect on the pedestrian walkways and cycle networks. Therefore, the impacts of the development will be neutral imperceptible and long term.

6.10.3 Public Transport

Provided that the proposed mitigation measures are implemented, the impact of the Proposed Development during the construction stage will be of a temporary nature and imperceptible. There will be an increase in public transport usage by site staff, but these will be in the opposite direction to commuting traffic. There will be an increase in public transport usage by residents from the proposed development in operation. Without mitigation, the effect is moderate with a negative long-term effect. The effect of the model shift set out above as a result of reduced carparking facilities, will increase public transport usage. Given the increased capacity of the DART proposed, that will be in place when the proposed development is operational, the public transport system will have capacity to accommodate this model shift and the long-term impact will be moderate with negative.

6.11 Interactions

6.11.1 Construction Phase

Increased traffic flows during construction, notwithstanding the mitigation measures outlined, do have temporary impact in respect of air, noise, biodiversity and human health and these impacts are dealt with in the appropriate chapters of this EIAR. Chapter 4- Population and Human Health & Chapter 11 – Biodiversity.

6.11.2 Operational Phase

Increased traffic flows resulting from the development, notwithstanding the mitigation measures outlined, do have an impact in respect of air, noise, biodiversity and human health and these impacts are dealt with in the appropriate chapters of this EIAR. Chapters 4- Population and Human Health & Chapter 11 – Biodiversity.

6.12 Difficulties Encountered in Compiling Required Information

None.

6.13 References:

- National Roads Authority, Traffic and Transport Assessment Guidelines (2014)
- Transport Infrastructure Ireland, Traffic Appraisal Guidelines (PE-PAG-02017). (2017)
- Fingal County Development Plan (2017 - 2023)
- National Transport Authority, Dublin Area Bus Network Redesign Public Consultation Report, June 2018
- National Transport Authority, Greater Dublin Area Cycle Network Plan, December 2013
- Dublin Bus Website; www.dublinbus.ie
- Irish Rail Website; www.irishrail.ie
- Guidelines on the Information to be contained in Environmental Impact Assessment Report (Draft Aug 2017) – www.epa.ie
- Central Statistics Office – www.cso.ie
- TRL Oscady Junction 5 & PICADY Software

CHAPTER 7
MATERIAL ASSETS: BUILT SERVICES

MAY 2021

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7 Material Assets: Built Services

7.1 Introduction

This chapter of the Environmental Impact Assessment Report (EIAR) presents the likely and significant effects associated with the material asset (built services) environment associated with the proposed Strategic Housing Development at the site at Howth Road, Howth, Dublin 13. Relevant mitigation and monitoring measures are also presented in this section.

The EPA's draft 'Guidelines on the information to be contained in an Environmental Impact Assessment Reports' (2017) describes material assets to be taken to mean 'built services' (i.e. utilities networks including electricity, telecommunications, gas, water supply and sewerage), 'waste management' and 'infrastructure' (i.e. roads and traffic).

This chapter will assess the potential effects associated with the Proposed Development, if any, with regards to the following built services:

1. Potable Water Supply Infrastructure
2. Surface Water Drainage Infrastructure
3. Waste Water Drainage Infrastructure
4. Electricity
5. Gas
6. Telecommunications

Impacts on traffic and transport are assessed in **Chapter 6** and waste management is addressed in **Chapter 8**. A separate standalone report for the Construction Environmental Management Plan is included with this application, prepared by Barrett Mahony Consulting Engineers.

7.2 Expertise and Qualifications

The assessment of the proposed built services environment has been prepared by Stephen O'Connor (BSc Eng, Dip Struct Eng, MIEI, MIStructe, FConsEI) Director and Chartered Engineer at Barrett Mahony Civil and Structural Engineers.

Stephen has 22 years' experience across a range of similar type and scale developments including preparation and approval of BMCE produced EIAR's, including Claremont Howth (ABP-306102-19 / FCC) which includes a large mixed use development including 512 residential units and Concorde, Naas Road (ABP-304383-19/DCC) a 492 no. Unit development.

For this chapter, Stephen has prepared the assessment of water supply, wastewater drainage and surface water drainage.

Gavin Murphy (CEng, RConsEI, MCIBSE, MIEI, BE, MSc), Associate Director and Chartered Building Services Engineer at Ethos Engineering with over 14 years' experience in consulting roles for similar type and scale developments including preparation of EIAR's.

Development's for which Gavin prepared the assessment of the section of the EIAR addressing electrical, telecommunications and gas include; 1-4 East Road, Dublin 3 (304710) which includes demolition of existing structures, construction of mixed use development to include 554 no. apartments, commercial/enterprise space, creche and associated site works and Lands at Castleforbes Business Park, Sheriff Street Upper and East Road, Dublin 1 (308827) which includes demolition of all the structures on the site, 702 no. Build to Rent residential units, creche and associated site works.

For this chapter, Gavin prepared the assessment of electricity, gas and telecommunications.

7.3 Proposed Development

The full description of the proposed development is outlined in **Chapter 2 – Development Description**, of this Environmental Impact Assessment Report.

The design rationale is to create and deliver a high quality, sustainable, strategic housing development which respects its setting and maximises the site's natural attributes while achieving maximum efficiency of existing infrastructure. The Proposed Site Layout is illustrated on **Drawing No. 1101** contained within the architectural suite of drawings.

The development will consist of;

i. 162 no. residential units distributed across 3 no. blocks (A, B & C) ranging in height from 5-6 storeys, with a cumulative gross floor area (GFA) of 13,337.10 sq.m comprising;
    a. 29 no. 1-bedroom units, - 17.9%
    b. 104 no. 2-bedroom units and – 64.2%
    c. 29 no. 3-bedroom units – 17.9%
ii. 3 no. resident services and amenity rooms (1 no. in each block A-C) to accommodate co-working space, a community room and a meeting room (combined GFA 108 sq.m)
iii. 132 no. car parking spaces at basement level (underlying Blocks A & B) including 6 no. accessible spaces, 13 no. electric vehicle spaces and 4 no. car sharing spaces;
iv. 325 no. residents bicycle parking spaces (long-stay) at basement level, and 30 no. visitor bicycle parking spaces (short-stay) at surface level;
v. communal amenity space in the form of courtyards and roof gardens (combined 2,192 sq.m)
vi. public open space of 1,161 sq.m including a botanic garden and pocket park;
vii. a single storey ESB sub-station and switch room (45.5 sq.m);
viii. demolition of 2 no. sections of the existing demesne northern boundary wall to provide, a primary access (vehicular/pedestrian/cyclist) to the northwest and a separate pedestrian/cyclist access at the centre;
ix. restoration and refurbishment of the remaining extant northern and eastern demesne boundary wall;

x. change of use and regrading of part of the Deer Park Golf Course from active recreation use to passive amenity parkland and planting of a woodland belt on the southern boundary;
xi. undergrounding of existing ESB overhead lines, and, relocation of the existing gas main; and,
xii. all ancillary site development works including waste storage and plant rooms at basement level, drainage, landscaping/boundary treatment and lighting.

7.3.1 Characteristics Relevant to this Chapter

7.3.1.1 Water Supply

In accordance with the Irish Water (IW) Code of Practice for Water Infrastructure, a new 150mm diameter looped watermain is proposed to service the proposed development with a connection to the existing 160mm MOPVC watermain on Howth Road. Water demand for the proposed development is as follows; Average – 0.949l/s. Peak – 4.746l/s.

Hydrants will be provided on the loop main in accordance with Part B of the Building Regulations and the Fire Safety Certificate's Requirements. Sluice valves will be provided at appropriate locations to facilitate isolation and purging of the system. Twenty-four-hour storage will be provided to cater for possible shutdowns in the system.

The proposed water supply layout (Drawing No. C1010) is included in the engineering drawing suite that accompanies this application and is reproduced in the Figure below.

A Confirmation of Feasibility & Statement of Design Acceptance has been received from IW and is appended to the Infrastructure Report prepared by BMCE.

Figure 7.1 Proposed Potable Water Supply

7.3.1.2 Wastewater Drainage

The foul drainage system for the proposed development site will be served by a gravity foul network and it is proposed to provide 1 no. connection from the site drainage system into the existing 400mm diameter public wastewater network located to the north of the site adjacent to Howth Road.

The foul sewer design has been carried out in accordance with the Irish Water Code of Practice for Wastewater. Foul wastewater discharge from the proposed development will be as follows; Average – 0.835 l/s. Peak – 5.012 l/s.

The proposed wastewater drainage layout (Drawing No. C1020) is included in the engineering drawing suite that accompanies this application and is reproduced in the Figure below.

A Confirmation of Feasibility & Statement of Design Acceptance has been received from IW and is appended to the Infrastructure Report prepared by BMCE.

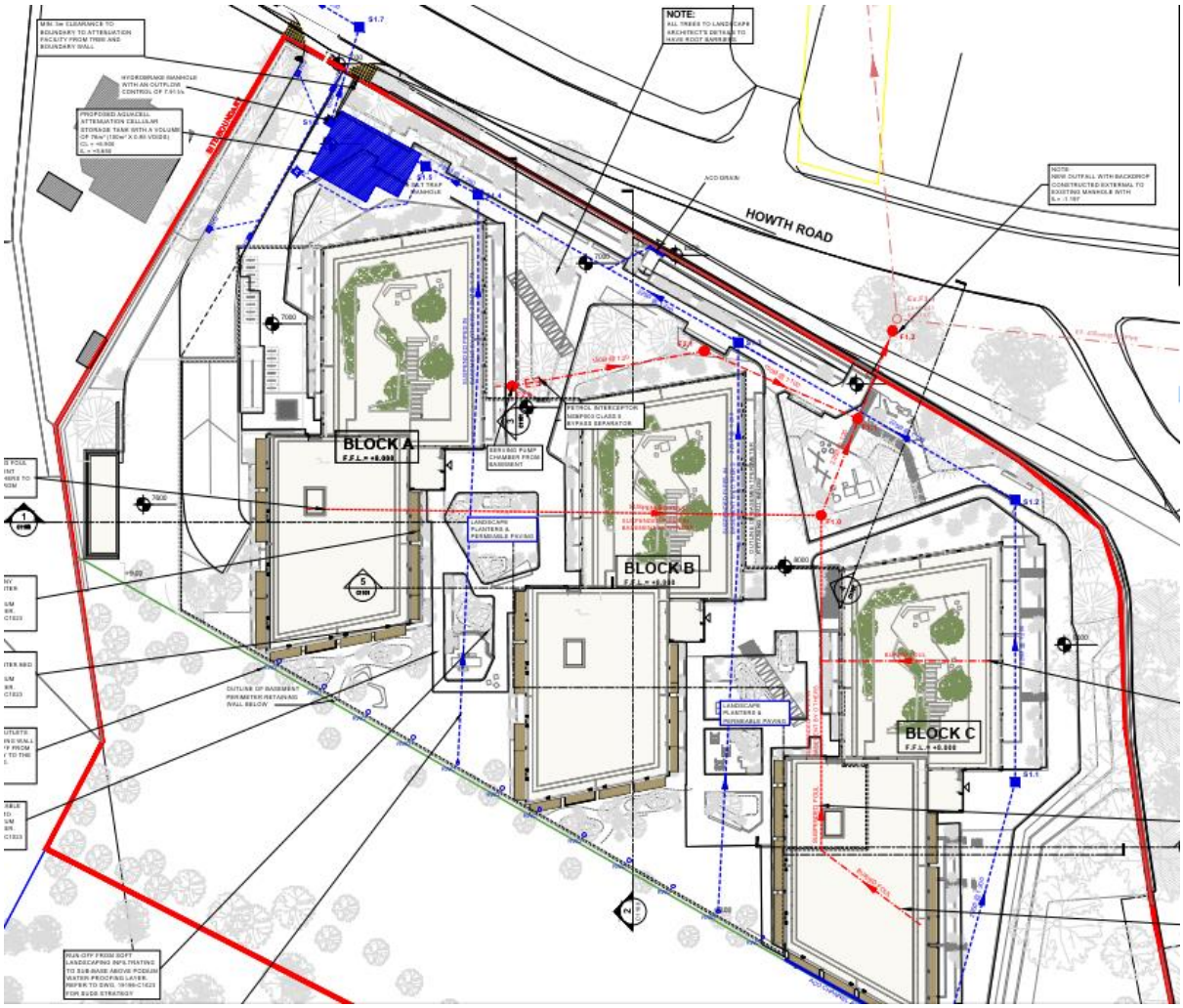


Figure 7.2 Proposed Waste Water Drainage

7.3.1.3 Surface Water Drainage

There is no existing surface water infrastructure within the proposed development site. On Howth Road, to the north west of the site, there is an existing 450mm diameter surface water sewer that discharges north towards the coast and into the Irish Sea. Refer to **Figure 7.5**.

7.3.1.4 Surface Water Drainage System

The proposed development will be designed in accordance with the principles of Sustainable Drainage Systems (SuDS) as embodied in the recommendations of the Greater Dublin Strategic Drainage Study (GDSDS) and will significantly reduce run-off rates and improve storm water quality discharging to the public storm water system. The GDSDS addresses the issue of sustainability by requiring designs to comply with a set of drainage criteria which aim to minimize the impact of urbanization by replicating the run-off characteristics of the greenfield site. The criteria provide a consistent approach to addressing the increase in both rate and volume of run-off, as well as ensuring the environment is protected from any pollution from roads and buildings.

It is proposed to discharge attenuated surface water from the site, following interception and treatment, to the existing 450mm diameter surface water sewer located on Howth Road.

The stormwater management for the site is as follows:

Each individual block shall incorporate green roofs throughout and all hard landscaping at grade within the private space of each block shall be discharged to tree pits or filter strips with overflows which shall finally discharge to an attenuation tank located within the private land of the development and maintained by the developer. The attenuation tank, along with a proprietary flow control device, hydrobrake or similar, shall limit discharge from the site development to 7.91 litres per second before entering the public stormwater network.

Communal amenity spaces between the residential blocks will comprise of permeable paving build ups over the concrete podium slab. From here, the stormwater that filters through the permeable hardcore build-up beneath the paved area will be collected in a drainage board and perforated pipes before overflowing and discharging to the attenuation tank.

7.3.1.5 Sustainable Drainage Systems

7.3.1.5.1 Interception Storage

Green Roofs:

Intensive – All roof terraces and podium terraces over basements shall be provided with a proprietary cellular drainage mat under the hard and soft landscaping to give a minimum interception storage volume of 13.5l/m^2 as well as contributing to filtration and attenuation of surface water.

Extensive – All roofs accessed only for maintenance and repair will be provided with a sedum blanket over a proprietary cellular drainage mat to give a minimum interception storage volume of 13.5l/m^2, as well as contributing to filtration and attenuation of surface water.

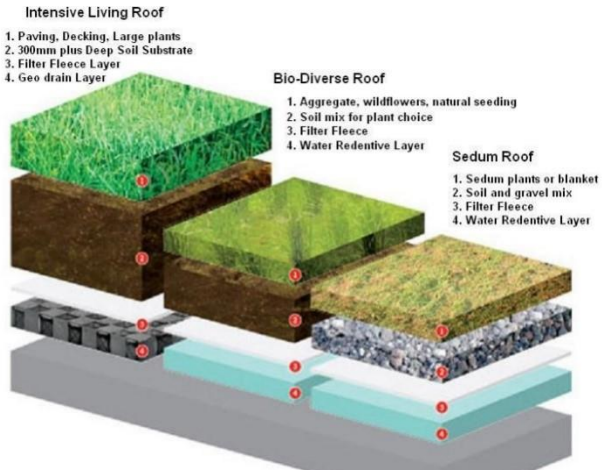


Figure 7.3 Typical Green Roof Interception Storage Details

Paved Areas:

The permeable paving within the communal amenity spaces will comprise of a hardcore build up providing treatment to stormwater before being collected in a drainage tray thus providing

interception storage. When these trays fill with storm water, the overflow will be collected via a series of perforated pipes before discharging to the site's storm water network system.

7.3.1.5.2 Direct Infiltration To Ground

Soakaway tests were completed with the tests carried out in accordance with BRE Special Digest 365. The soakaway test is used to identify possible areas for storm water drainage. All soakaway tests (included in standalone Site Investigation Report carried out by Site Investigations Limited) showed poor infiltration into the underlying soils due to the presence of dense clays. Therefore, it is not proposed to provide soakaway trenches/pits on this site.

7.3.1.5.3 Basement Fuel and Oil Interceptors

All basements shall be constructed as waterproof structures to prevent discharge to ground water. Incidental run-off from the basement entry ramp and cars etc. shall be directed to a suitably sized fuel and oil interceptor, shown on BMCE drawing C1020, prior to discharge via a pumped system to the foul drainage network.

7.3.1.5.4 Attenuation Storage

The GDSDS requires that flood waters be managed within the site for a 1 in 100 year flood + 20% climate change. The surface water system within the catchment has been hydraulically modelled in Microdrainage. The system has been designed to ensure its discharge rate does not exceed the previous greenfield run-off from the site. As outlined in 7.3.1.4, the stormwater discharge from the site development will be directed to a buried attenuation tank adjacent to the new vehicular entrance on the site, which will restrict outflow to the public drainage to 7.91l/s.

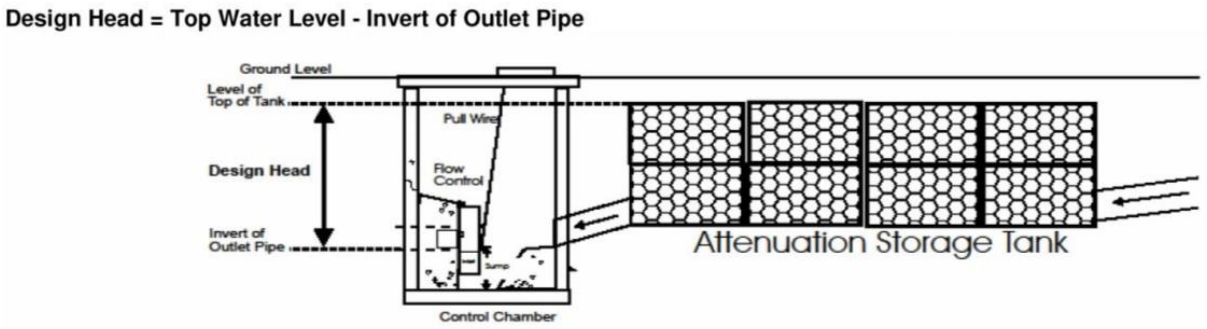


Figure 7.4 Typical Attenuation Storage Tank Detail

Figure 7.5 Proposed Surface Water Drainage

7.3.2 Electrical Supply

A new underground power cable shall connect into the existing network, refer to **Figure 7.6,** and route through the proposed development to serve a new 10KV/20KV MV double sub-station; with the final location to be agreed with ESB Networks. Existing 10KV/20KV overhead power lines traversing the site will be diverted around the site, underground, in accordance with ESB Standards. Discussions have taken place with ESB regarding the undergrounding of the existing overhead ESB line and the most likely alignment is illustrated in this application. As per ESB Networks procedures, this will be agreed post planning.

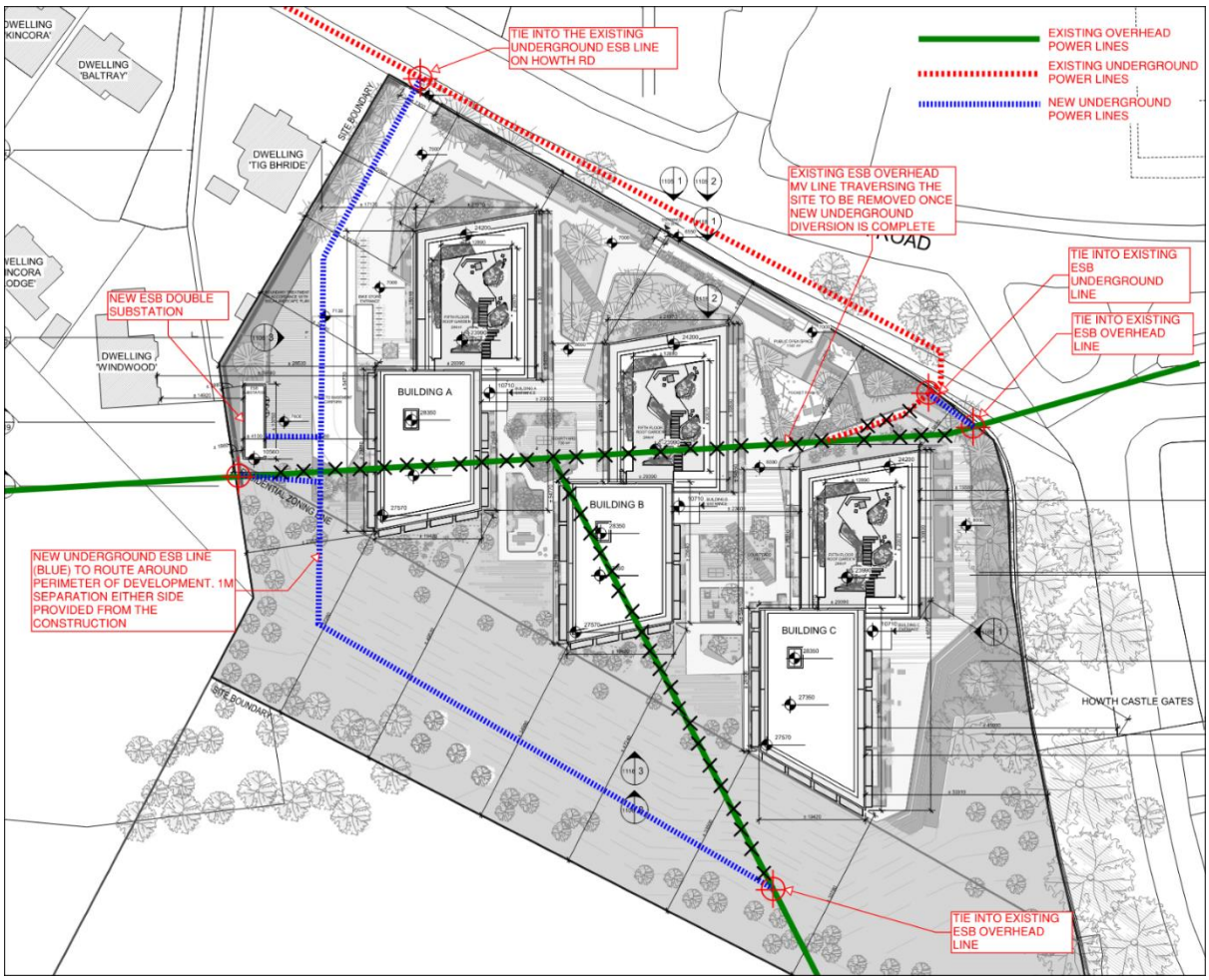


Figure 7.6 Proposed ESB Infrastructure

7.3.3 Gas Supply

Gas is not required for the development as a low carbon, electricity powered heat pump system is proposed. Full details of the proposed system are included in “Howth Road Energy Statement” submitted under separate cover.

An existing medium pressure gas main which traverses the site shall be disconnected by Gas Networks Ireland (GNI) and diverted around the site. **Figure 7.7** shows the proposed gas diversion for the development.

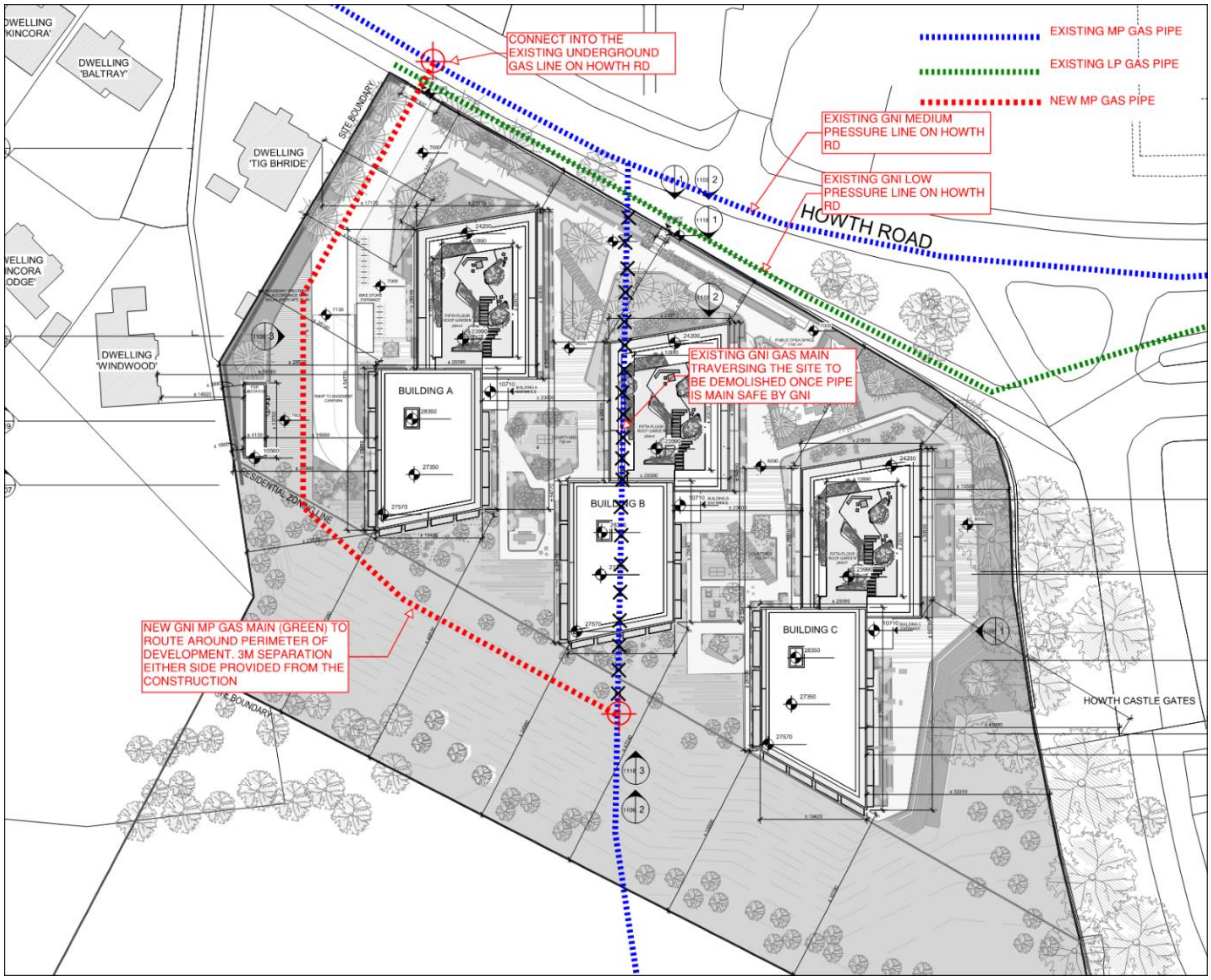


Figure 7.7 Proposed Gas Infrastructure

7.3.4 Telecommunications

The supply of telecommunications infrastructure to the proposed development site will be provided by way of a connection to a telecoms control room from the existing EIR telecommunication networks and new proposed Virgin Media Network on Howth Road. **Figure 7.8** shows the proposed telecommunications infrastructure for the proposed development.

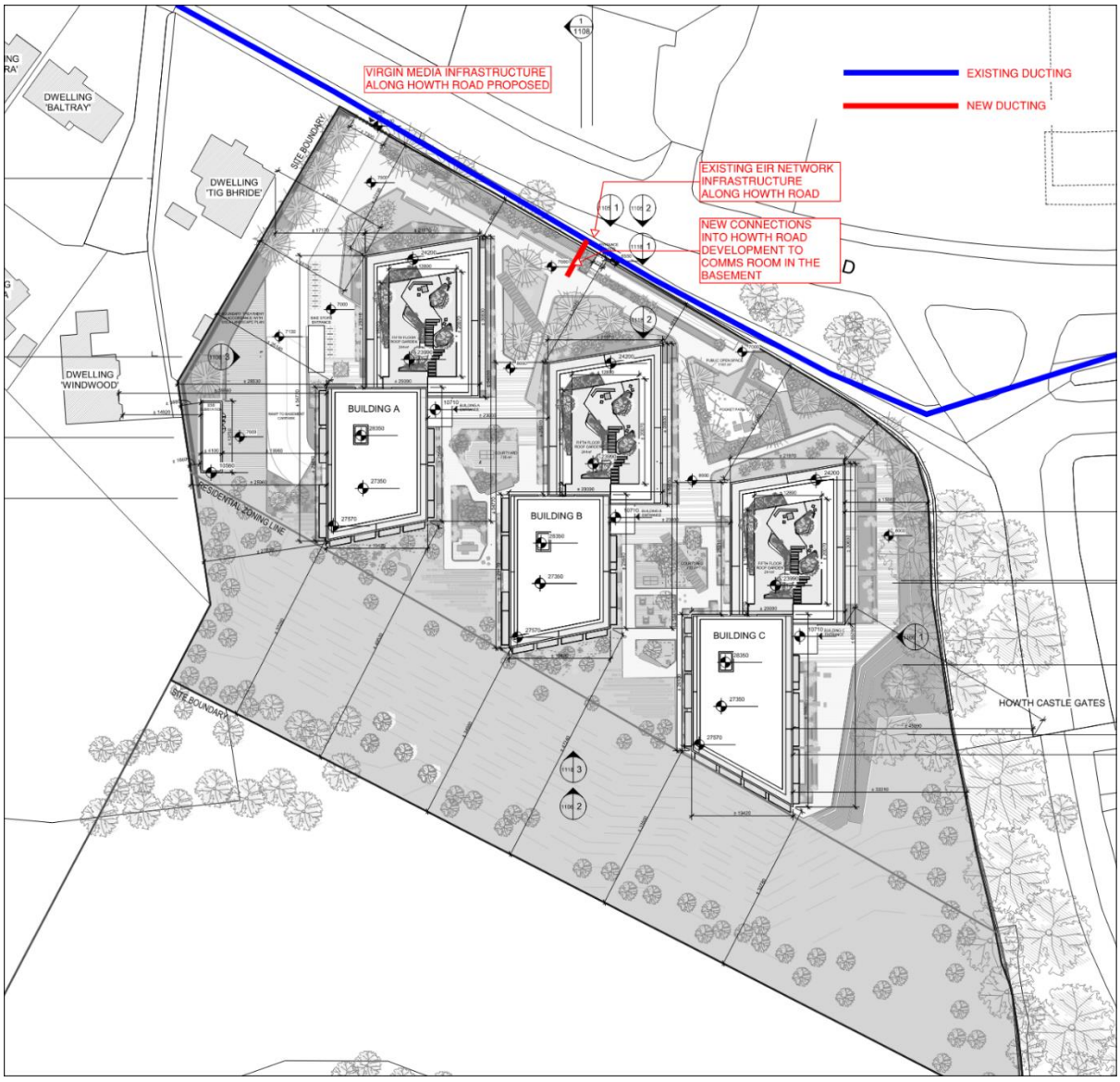


Figure 7.8 Proposed Telecoms Infrastructure

7.4 Methodology

This chapter has been prepared having regard to the following guidelines;

- Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment (Department of Housing, Planning & Local Government, 2018)
- Environmental Impact Assessment of Projects: Guidance on the preparation of the Environmental Impact Assessment Report (European Commission, 2017);
- Guidelines on the Information to be Contained in Environmental Impact Assessment Reports – Draft (EPA, 2017);

7.4.1 Relevant Legislation & Guidance

The following sources of information were in used in completion of this assessment

- Fingal Development Plan 2017-2023
- Greater Dublin Area Regional Code of Practice for Drainage Works
- Greater Dublin Strategic Drainage Study (GDSDS)
- Environmental Protection Agency (EPA)
- Site Investigation Report November 2019 (Ground Investigations Ireland)
- Geological Survey of Ireland (GSI) online maps and databases
- Correspondence and meetings with Fingal County Council.
- Correspondence with Irish Water
- Irish Water Code of Practice for Wastewater Infrastructure
- Irish Water Code of Practice for Water Infrastructure
- Utility Network Maps as follows:
    - Public Water Mains (Irish Water)
    - Public Stormwater Drainage (Fingal County Council)
    - Public Foul Drainage (Irish Water)
    - Electricity Supply Networks (ESB Networks)
    - Gas Supply (Gas Networks Ireland)
    - Telecommunications (eir)

The above information was reviewed to determine how the development site is currently serviced and in conjunction with the advice of the relevant utility providers and authorities, assess its adequacy in terms of the proposed overall mixed-use development.

The assessment of potential impacts on the built services for the Proposed Development were assessed through a desktop study of the information provided in consultation with the relevant utility providers and authorities, as listed above. The details of that consultation are set out below.

The rating of impacts within this chapter is in line with Table 3.3 of EPA Draft Guidelines (EPA, 2017). The rating of impacts is reproduced in **Chapter 1** of this EIAR.

7.4.2 Consultation

7.4.2.1 Drainage and Water Supply

As part of the preparation of this chapter, a pre planning meeting took place with Fingal County Council on the 27th of January 2020. During this meeting representatives from the water

services section of the Fingal County Council (FCC) reviewed the proposed surface water drainage strategy. A representative from the drainage department of FCC agreed in principle with the general drainage strategy for the site. It was requested that the extent of green roofs proposed on Blocks A-C to be clarified.

A Pre-Connection Enquiry (PCE) was submitted to Irish Water on the 23rd October 2019 to determine the feasibility of connecting to the public water and drainage infrastructure. A response to the PCE was received on the 22nd of January 2020 and Irish Water confirmed a connection is feasible. This is appended to the Infrastructure Report prepared by BMCE.

The project is subject to the Strategic Housing Development (SHD) planning process and therefore a Statement of Design Acceptance of the project's water & wastewater proposals is required from Irish Water. BMCE submitted our drawing package on the 29th of April 2020 and received comments from Irish Water on the 30th of April. These comments have been addressed and the drawing package was resubmitted on the 15th of May 2020. A Confirmation of Feasibility & Statement of Design Acceptance has been received from IW and is appended to the Infrastructure Report prepared by BMCE.

7.4.2.2 Electricity

Liaison with ESB took place throughout 2019 and a site meeting was held with ESB on 8th October 2019 to review the strategy and initial network capacity review. No concerns were raised in this meeting.

7.4.2.3 Gas

Consultation has taken place with Gas Networks Ireland (GNI) with regard to disconnection and diversion of the existing services on site and no concerns have been raised by GNI.

Site maps were provided along with network capacity advice from GNI on the 9th September 2019. Liaison with Gas Networks Ireland regarding the diversion took place through October 2019 (25th and 29th October 2019 with GNI).

7.4.2.4 Telecommunications

Telecom records were requested from Eir and Virgin Media. Existing records have been received from Eir for the area adjacent to the site. Virgin Media have no existing infrastructure in the area. From consultation with Virgin Media in March 2021, Virgin Media have emphasised that there are plans in place to extend their network down Howth Road outside the site and into Howth.

7.5 Baseline Environment

The site is a greenfield site and is bounded to the north by Howth Road (R105) and to the east, by the access road to Howth Castle. The west of the site is bounded by garden boundary walls and hedgerows to existing houses. The south is bounded by the Deer Park Golf Club. Refer to **Figure 7.9.**

Figure 7.9 Approximate Site Outline

7.5.1 Water Supply

There are no existing watermain connections into the proposed development site. Located on Howth Road directly adjacent to the site, there are two existing watermains, a 9 inch cast iron watermain and a 160mm MOPVC watermain. Refer to **Figure 7.10.** Under the Howth Water Supply Scheme, Irish Water are working in partnership with Fingal County Council to upgrade the water mains in Howth to secure the water supply for local businesses and residents into the future. Some of these works include upgrade works to Dungriffen Pump Station and pipe laying/chamber building to Dungriffen Reservoir.

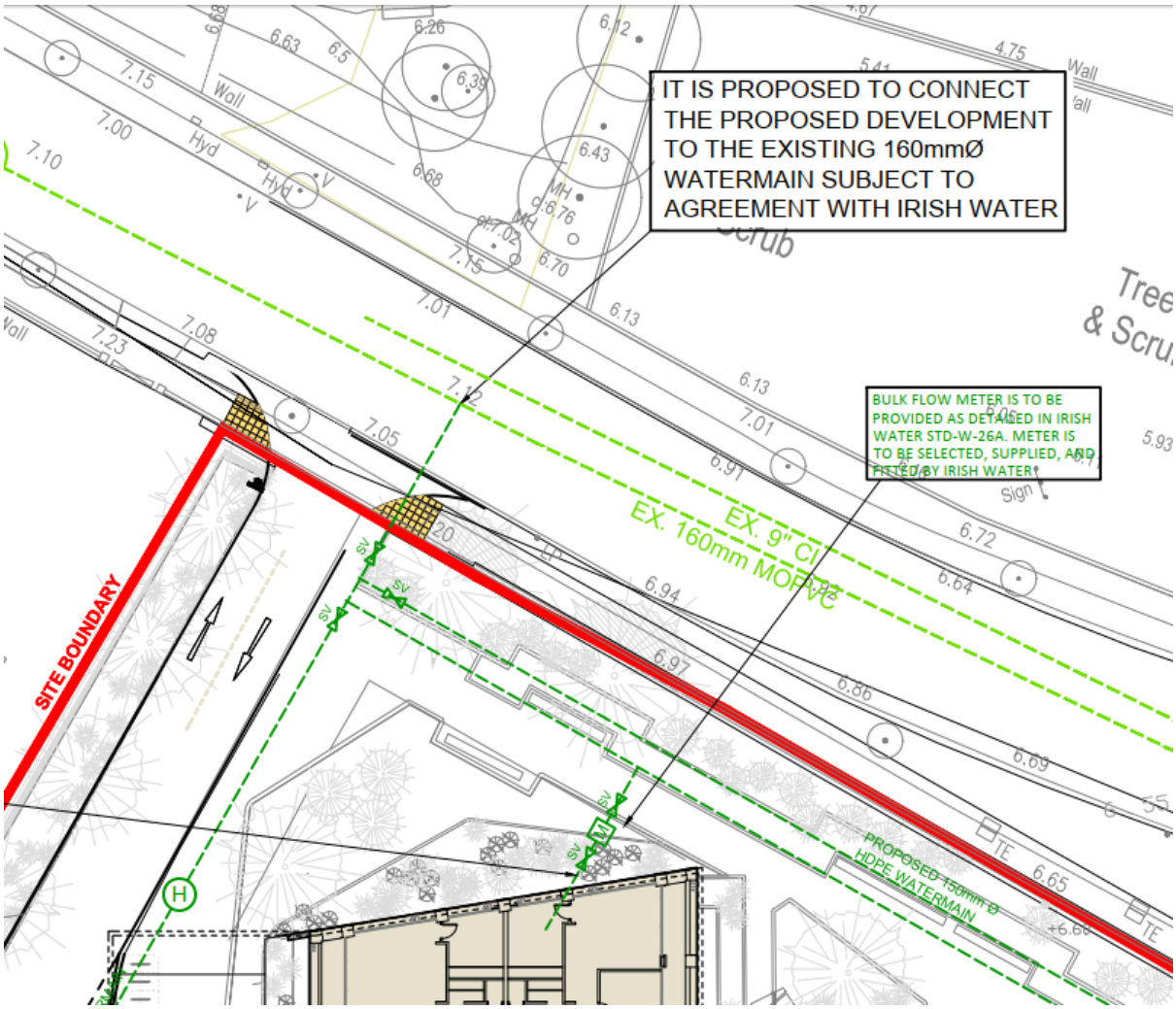
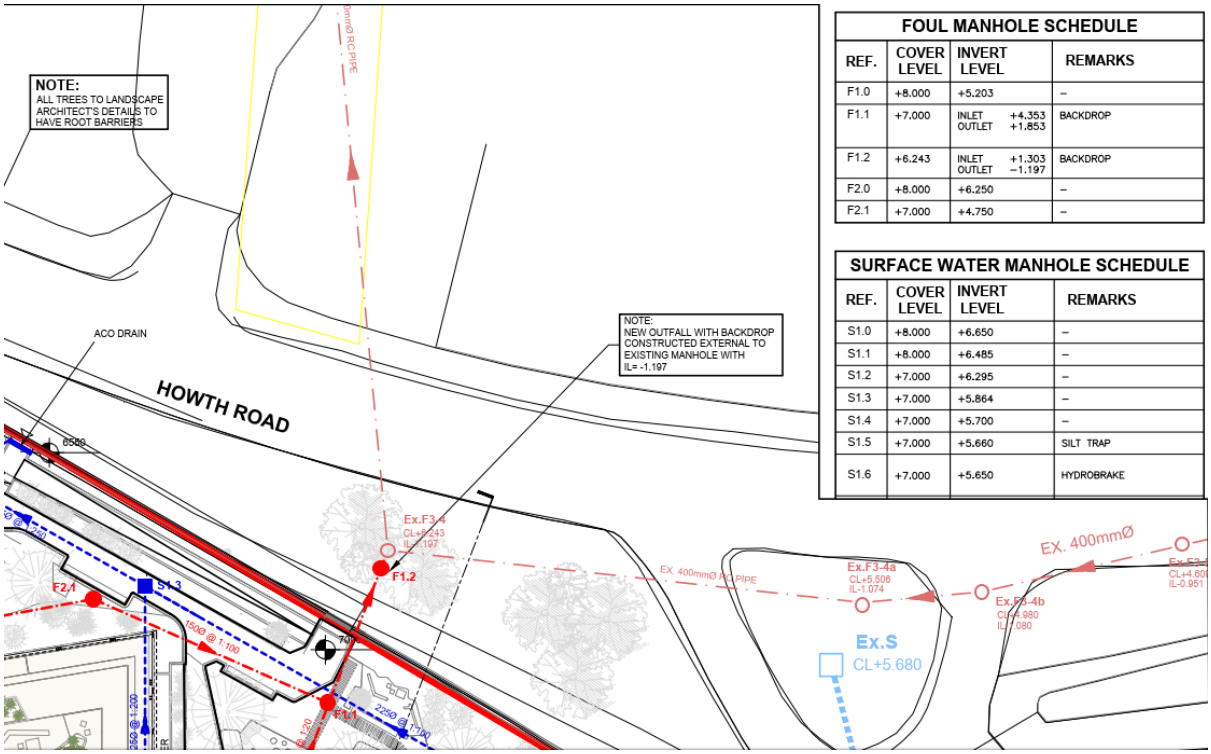


Figure 7.10 Existing Water Supply

7.5.2 Wastewater Drainage

There are no existing wastewater connections to the public sewer that serve the site. There is an existing 400mm diameter concrete wastewater sewer located adjacent to the entrance to Howth Castle. The Howth foul sewer catchment is directed to Ringsend Wastewater Treatment Plant, via a foul pump station in Sutton.



FOUL MANHOLE SCHEDULE			
REF.	COVER LEVEL	INVERT LEVEL	REMARKS
F1.0	+8.000	+5.203	–
F1.1	+7.000	INLET +4.353 OUTLET +1.853	BACKDROP
F1.2	+6.243	INLET +1.303 OUTLET −1.197	BACKDROP
F2.0	+8.000	+6.250	–
F2.1	+7.000	+4.750	–

SURFACE WATER MANHOLE SCHEDULE			
REF.	COVER LEVEL	INVERT LEVEL	REMARKS
S1.0	+8.000	+6.650	–
S1.1	+8.000	+6.485	–
S1.2	+7.000	+6.295	–
S1.3	+7.000	+5.864	–
S1.4	+7.000	+5.700	–
S1.5	+7.000	+5.660	SILT TRAP
S1.6	+7.000	+5.650	HYDROBRAKE

Figure 7.11 Existing Wastewater Connections

7.5.3 Surface water

There are no existing surface water connections to the public sewer that serve the site. There is an existing 450mm diameter surface water sewer located to the north west of the site and discharges north towards the Irish Sea. As per the sites current greenfield condition, there is little run-off from the greenfield site, with the remainder of what falls on the site is lost through infiltration, transpiration and evaporation.

7.5.4 Gas Supply

There is an existing 90mm 4bar gas main within Howth Road which traverses the site. Refer to **Figure 7.12** for the existing infrastructure utility map. Consultation has taken place with GNI with regard to the diversion of the existing medium pressure gas main. No concerns have been raised by GNI during the consultation process about this proposal.

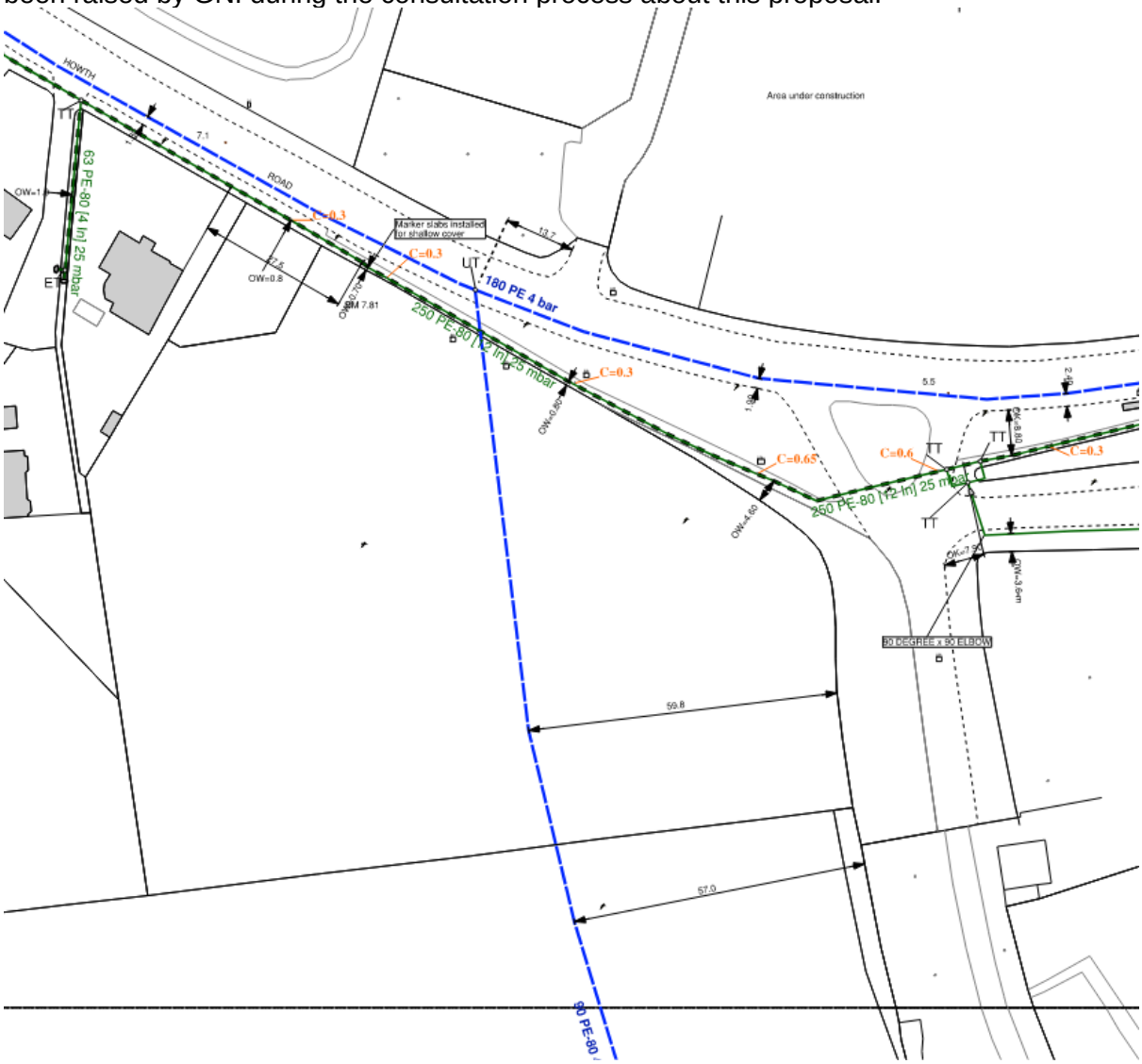


Figure 7.12 Existing Gas Networks Infrastructure

7.5.5 Telecommunications

Eir have confirmed that they have existing infrastructure routing in Howth Road. Refer to **Figure 7.13** for the existing infrastructure utility map. This infrastructure adjacent to the site is sufficient to meet the requirements of the proposed development. Virgin Media have plans in place to bring infrastructure down Howth Road and into Howth.

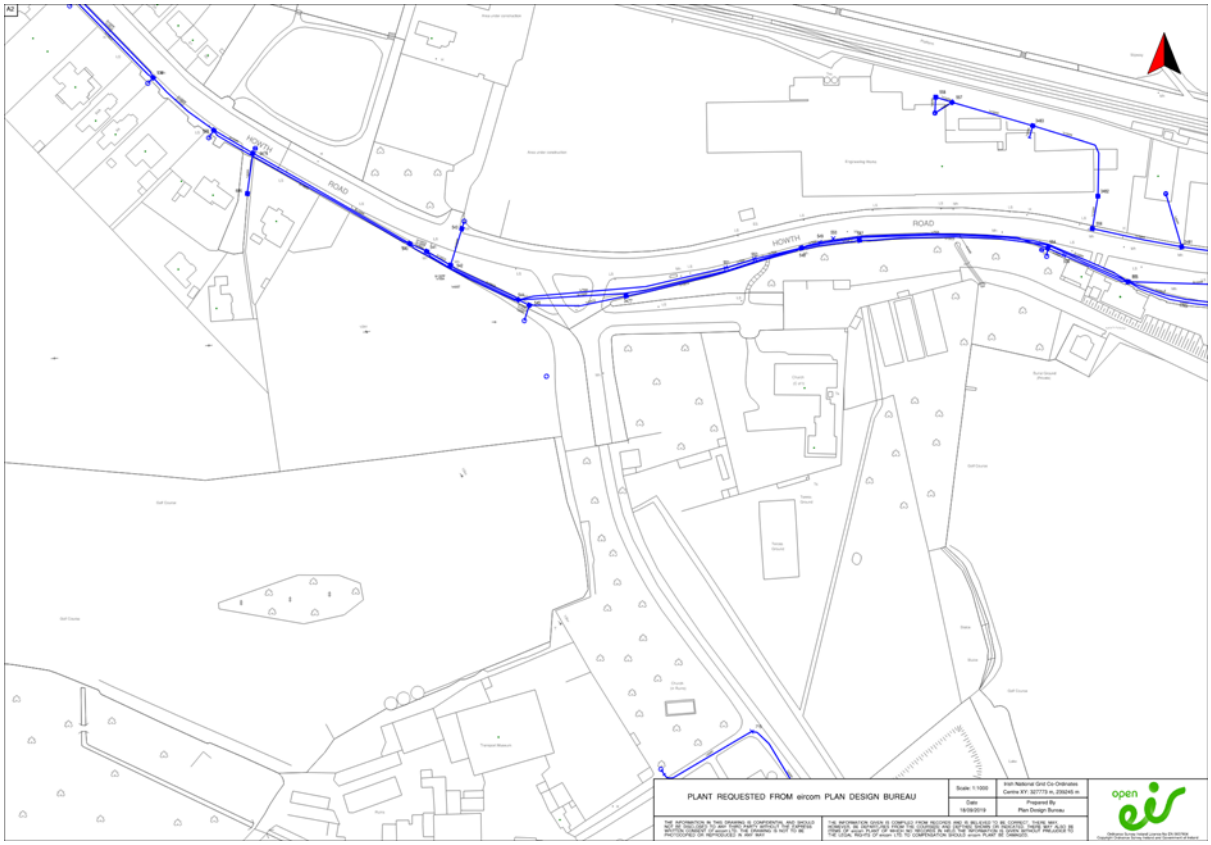


Figure 7.13 Existing eir Telecoms Infrastructure

7.5.6 Electricity Supply

There is no existing ESB supply to the site but there is existing below ground (red) and overhead (green) cabling that traverse the site. Consultation has taken place with ESB with regard to the diversion of the existing overhead lines to below ground and to the provision of a new standalone double substation on the west side of the site. No concerns have been raised by ESB Networks during the consultation process about these proposals.

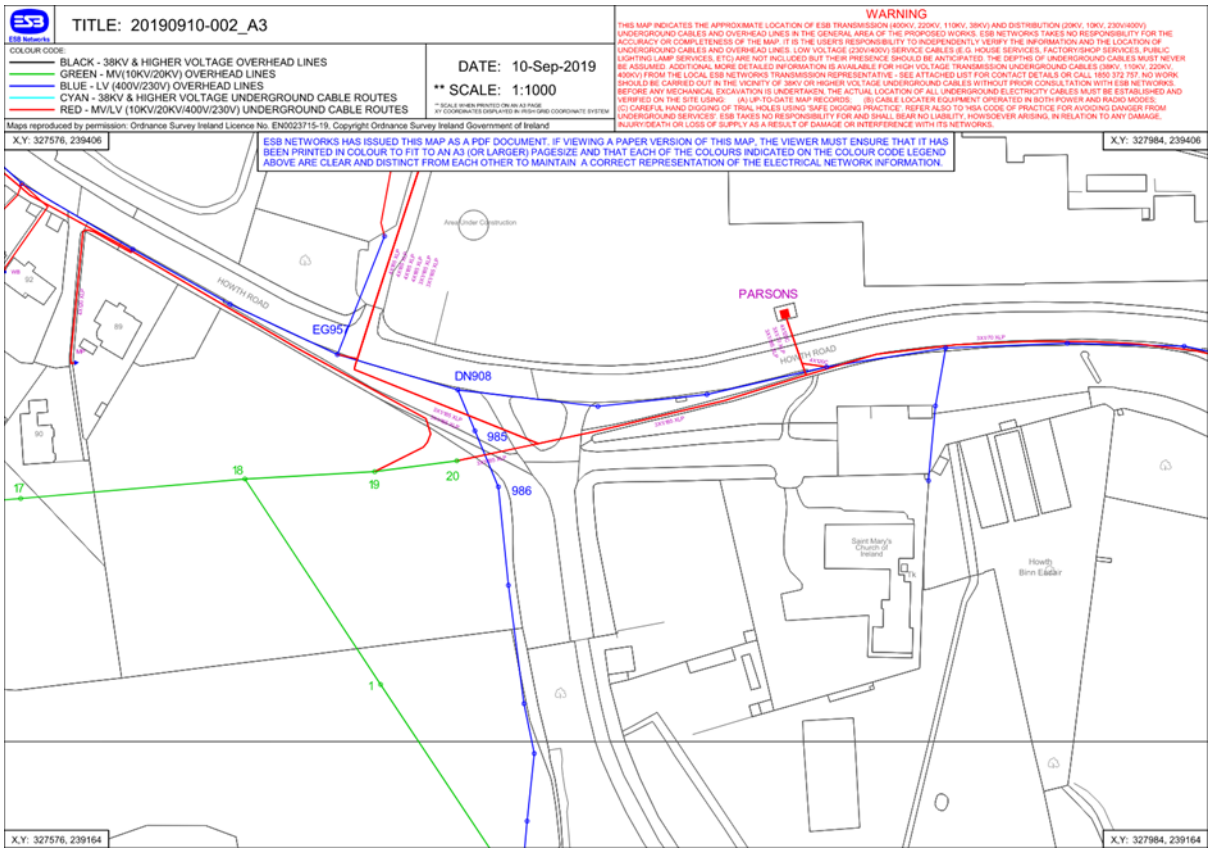


Figure 7.14 Existing ESB Infrastructure

7.5.7 Surface Water Drainage

There are no existing surface water connections to the public sewer. The site is currently a greenfield site, there is little run-off from the greenfield site, with the remainder of what falls on the site is lost through infiltration, transpiration and evaporation. There is an existing 450mm diameter surface water sewer to the north west of the site that discharges north towards the Irish Sea.

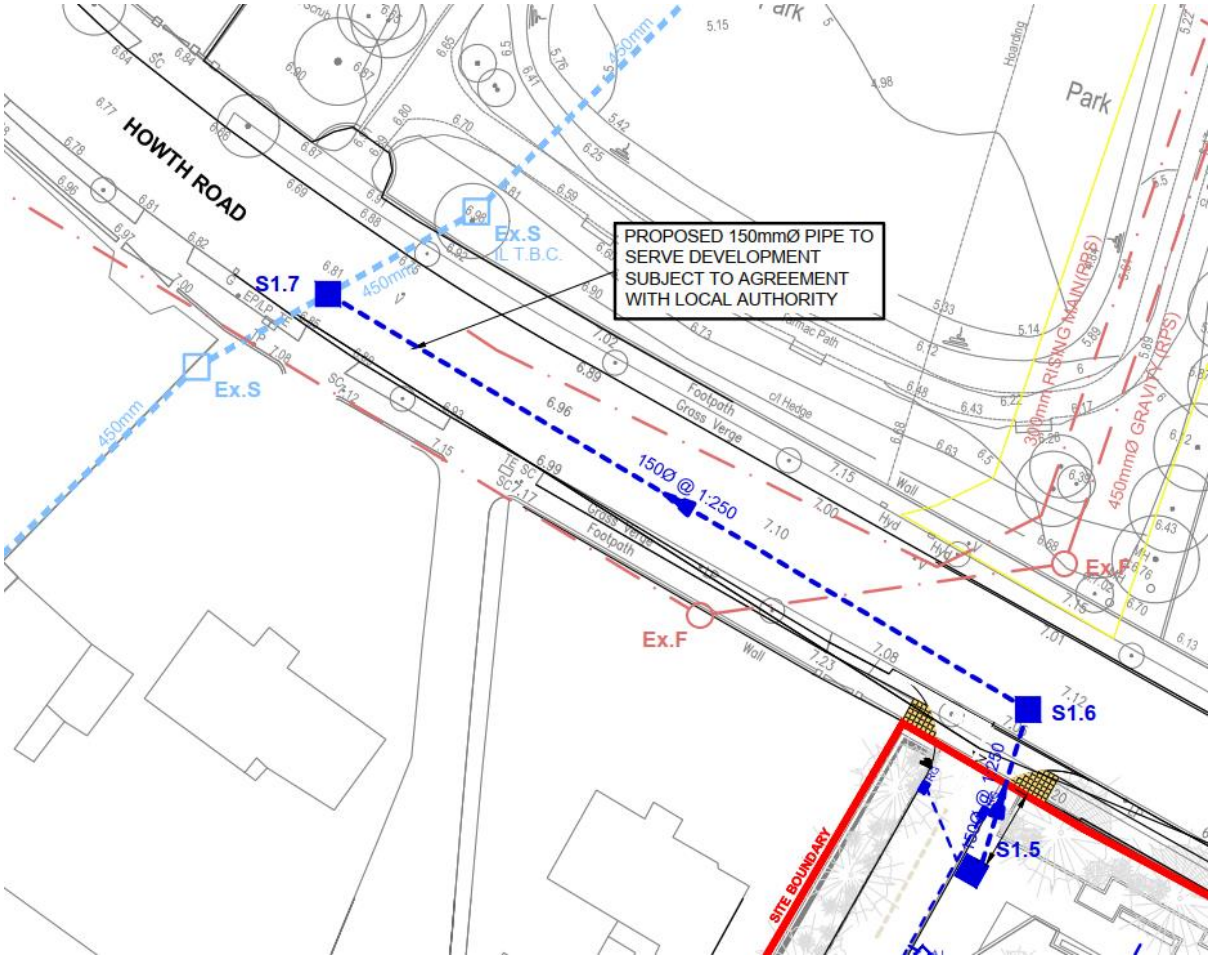


Figure 7.15 Existing Surface Water Network

7.6 Do Nothing Scenario

7.6.1 Water Supply

If the proposed development was not to proceed, there would be no increase in the demand on the existing water supply network and the effect would be neutral.

However, the site is zoned for development and having regard to planning policy that supports consolidation of the built environment and high-density development it is likely that in the absence of this subject proposal that a development of a similar nature, with similar water demand requirements, would be progressed on the site.

7.6.2 Wastewater Drainage

If the proposed development was not to proceed, there would be no increase in the design foul flows to the combined sewer network and the effect would thus be neutral.

The site is zoned for development and it is likely that in the absence of this subject proposal that a development of a similar nature, with a similar wastewater discharge, would be progressed on the site that accords with national policy for compact growth.

7.6.3 Surface Water Drainage

If the proposed development was not to proceed, there would be no increase in the design surface water flows to the existing storm water network and the effect would thus be neutral.

The site is zoned for development and it is likely that in the absence of this subject proposal that a development of a similar nature, with a similar surface water flow, would be progressed on the site that accords with national policy for compact growth.

7.6.4 Electricity / Gas & Telecommunications

If the proposed development was not to proceed, there would be no increase in the demand on the existing networks and the effect would be neutral

However, the site is zoned for development and it is likely that in the absence of this subject proposal that a development of a similar nature, with similar demand requirements, would be progressed on the site that accords with National policy for compact growth.

7.7 Difficulties Encountered

7.7.1 Water Supply

None.

7.7.2 Wastewater Drainage

None.

7.7.3 Surface Water Drainage

Due to the local authority records not being entirely accurate, an extensive amount of surveying was required to establish the exact, size, location, condition and flow paths of the existing Fingal County Council drainage assets. Detailed surveys were completed which provided an informed basis for the assessment of existing assets and design for the proposed new surface water drainage system.

7.7.4 Electricity

Due to the operational procedures of the ESB, they do not confirm if network upgrade works will be required until planning permission is granted and application submitted. We do note that the ESB electrical distribution maps indicate substantial infrastructure in the area with medium voltage (MV) distribution cables both in Howth Road and traversing the site overhead and that the ESB have raised no concerns about availability of power during consultation with them. The exact location and set out of above and below ground power lines will be verified in the next stage through further site investigation and GPR survey.

7.7.5 Gas

The exact location and set out of gas pipework will be verified in the next stage through further site investigation and GPR survey

7.7.6 Telecommunications

None.

7.8 Potential Significant Effects

7.8.1 Demolition and Construction Phase

It is noted that the extent of demolition associated with the proposed development is limited to the development of 2 no. openings in the existing northern boundary wall.

7.8.1.1 Water Supply – Direct/Indirect

The water demand during construction will be significantly less than that required for the development in operational phase. Irish Water have carried out an assessment of the operational phase water demand through the Pre-Connection Enquiry process and confirmed a feasibility of a connection without any upgrade requirements to the public water supply system to facilitate that connection. The letter of Confirmation of Feasibility is appended to the Infrastructure Report prepared by BMCE**.** Therefore, the effect of increased water demand during the operational phase when compared to the demand during construction, while likely, will be neutral, imperceptible and short term.

During the installation works for the new watermain connection to be carried out by Irish Water, there may be a temporary loss of water pressure/supply to the local area as these works are ongoing. The likely affects are local, not significant and temporary in duration.

7.8.1.2 Foul Drainage – Direct/Indirect

During the construction phase, the foul flows generated on site will be discharged into the public sewer through a new temporary foul connection (subject to agreement with Irish Water) to the existing wastewater manhole located just outside the site boundary. The wastewater discharge during the construction phase will be significantly less than the wastewater volumes calculated for the development in the operational phase. Irish Water have carried out an assessment of the operational phase foul discharge rates through the Pre-Connection Enquiry process and confirmed a feasibility of a connection without any upgrade requirements to the public sewage system to facilitate that connection. Thus, the likely effect on the local public combined sewer network would be imperceptible, short term and neutral effect.

There is a risk of the following occurring during the construction stage:

- Mobilisation of sediments and harmful substances during the construction phase, due to exposed soil and earth movement, which may be flushed into the foul drainage system during rainfall events;
- Accidental spills of harmful substances such as petrol or oil during the delivery and storage of harmful substances or by leakages from construction machinery.
- Discharge of untreated ground water to public foul network due to failure of treatment plant.

7.8.1.3 Surface Water Drainage – Direct/Indirect

There is a risk of the following occurring during the construction stage:

- Mobilisation of sediments and harmful substances during the construction phase, due to exposed soil and earth movement, which may be flushed into the surface water drainage system during rainfall events;
- Accidental spills of harmful substances such as petrol or oil during the delivery and storage of harmful substances or by leakages from construction machinery.
- Discharge of untreated ground water to public surface water network due to failure of treatment plant.

7.8.1.4 Electricity

There is a risk of the following occurring during the demolition and construction stage:

- Health and safety risk of accidental damage to overhead and below ground power lines
- Interruption of power supply with accidental damage to overhead and below ground power lines.

7.8.1.5 Gas

There is a risk of the following occurring during the demolition and construction stage:

- Health and safety risk of accidental damage to below ground medium pressure gas pipe
- Interruption of gas supply with accidental damage to underground gas pipe.

7.8.1.6 Telecommunications

As works are not proposed outside the site boundary, and existing services are located under the public road, not significant risk is expected.

7.8.2 Operational Phase

7.8.2.1 Water Supply – Direct/Indirect

The water consumption is a function of the usage of the development. The volume has been calculated based on the Irish Water Code of Practice for Water Infrastructure.

The proposed potable water demand is calculated as follows:

7.8.2.1.1 Residential Component:

Block No.	No. of Units	Population Equivalent Per Unit	Total Population	Daily Demand (L) @150l/p/day	Average Day/ Peak Week Demand (Daily Discharge*1.25/24/60/60) l/s	Peak Discharge (5*Ave Day/Peak Week) l/s
A-C	162	2.7	437.4	65,610	0.95 l/s	4.75 l/s
Total			**437.4**	**65,610**	**0.95 l/s**	**4.75 l/s**

Table 7.1 Residential Water Demand Calculations

A Pre-Connection Enquiry Application was submitted to Irish Water for the proposed development with a proposed connection location to the public watermain on the Howth Road.

Irish Water issued a letter, confirming the feasibility of a connection based on a water demand slightly larger than the final water demand outlined above, without a requirement for network upgrades. Irish Water subsequently reviewed the design documents for the proposed new watermain within the development and issued a Statement of Design Acceptance. Both letters are appended to the Infrastructure Report prepared by BMCE. On the basis of Irish Water's review of the design and confirmation of feasibility of supply for same, there are no likely significant effects anticipated during the operational stage and the effect on water supply is considered to be imperceptible and long-term.

7.8.2.2 Foul Water Drainage – Direct/Indirect

The foul water discharge is a function of the usage of the development. The volume has been calculated based on the Irish Water Code of Practice for Wastewater Infrastructure.

The proposed foul water flows are calculated as follows:

7.8.2.2.1 Residential Component:

Block No.	No. of Units	Population Equivalent Per Unit	Total Population	Daily Discharge Rate (L) @150l/p/day	Average Discharge Rate (Daily Discharge*1.1/24/60/60) l/s	Peak Discharge *
A-C	162	2.7	437.4	65,610	0.84 l/s	5.01 l/s
Total			**437.4**	**65,610**	**0.84 l/s**	**5.01 l/s**

Table 7.2 Residential Foul Flow Calculation

A Pre-Connection Enquiry Application was submitted to Irish Water for the proposed development with a proposed connection location to the public sewer on Howth Road. Irish Water issued a letter confirming the feasibility of a connection based on wastewater flows outlined above, without a requirement for network upgrades. Irish Water subsequently issued a Statement of Design Acceptance which is appended to the Infrastructure Report prepared by BMCE.

On the basis of Irish Water's review of the design and confirmation of feasibility of capacity for same, there are no likely significant effects anticipated during the operational phase of the proposed development and the effect on wastewater infrastructure is considered to be imperceptible and long-term.

7.8.2.3 Surface Water Drainage

Due to the presence of very low permeability clay soils (see Chapter 9 Land, Soil, Geology & Hydrogeology) on this site, all areas outside of soft landscape zones will be positively drained, with all stormwater discharge directed to the stormwater attenuation system before discharging to the existing surface water sewer located on Howth Road.

As noted in the Baseline Environment section, the site is currently a greenfield site and there are no connections to the existing public surface water infrastructure.

New development discharge rates are limited to 2l/s/ha or Qbar, whichever is greater. The reason for this is to replicate pre-development flows. For this site, this equates to 7.91 l/s (reference BMCE Infrastructure Report for calculations). Qbar is the peak rate of flow from a catchment for the mean annual flood (based on a return period of approx. 1:2.3 years). This attenuated flow from the site development is required to protect the downstream catchment. The effect on the public surface water drainage network will be neutral, imperceptible, and long-term.

7.8.2.4 Electricity

The Proposed Development will require a 1300kVA MV electricity supply during the operational phase of the scheme and this will be provided by the installation of new double sub-station within the development, all in agreement with ESB Networks. As the new cables services will be located underground, this will result in a permanent but imperceptible effect. In addition the existing overhead cables, will be diverted below ground, improving resilience of the local network.

The likely impact from the operational phase on the electricity supply network is considered to provide a positive effect as key infrastructure is provided to the neighbourhood and existing cabling infrastructure moved underground.

The indirect impact will allow ESB Networks to provide additional resilience in their network through the provision of a new sub-station which in turn should have a permanent impact of positive effect on the wider area's electrical infrastructure.

7.8.2.5 Gas

As the gas diversion services will be located underground this will result in a permanent but imperceptible effect. The operational impact of the proposed development is considered to be neutral as there is no new gas demand and be imperceptible, and long-term.

7.8.2.6 Telecommunications

The proposed development will require telecommunication connections during the operational phase of the scheme. The end user will have choice of service between Eir and Virgin Media and this will provide the building users with a choice of service and will result in a positive effect for the end users. As the new Eir and Virgin Media services will be located underground this will result in an imperceptible impact of long term and positive effect.

The additional demand on the Eir telecoms network is not deemed to have any material impact on the surrounding area as there is sufficient capacity in the telecoms network system to manage the additional demand created by the development. The likely impact from the operational phase on the telecoms network is likely to be imperceptible impact of long term and neutral effect.

Virgin Media have plans in place to deliver Virgin media network down Howth Road to serve the site as well as providing availability of their fibre network solution to neighbours. Therefore, it is considered that the cumulative impact of the proposed development on the Virgin Media infrastructure will give rise to significant positive long-term effects.

7.8.3 Cumulative

7.8.3.1 Water Supply

The proposed development water demand on the Irish Water supply network has been assessed by Irish Waters' Developer Services and Capital Needs Assessment teams as part of the Pre-Connection Enquiry process. The assessment uses a model of the Dublin area water supply network. Through the pre-connection enquiry process, Irish Water assess the feasibility of a connection for all proposed developments prior to granting a connection to their system or deciding on whether network upgrades are required to facilitate same. Where high demand is placed on the Irish Water network from individual or an accumulation of developments which cannot be catered for by the network, Irish Water will advise this in their pre-connection enquiry response, citing that either network upgrades are necessary to facilitate the water demand of the proposed development, or potentially, that the scale of development cannot be catered for without large scale upgrades to the network. As Irish Water have provided confirmation of feasibility through the Pre-Connection Enquiry process (appended to Infrastructure Report prepared by BMCE). that the proposed development can be catered for within the capacity of the current water supply network, as no network upgrades are required, and that this process includes a review of the effect on the existing water supply network from both existing and all other known consented and proposed developments, it is considered that the cumulative effects are not significant and long term.

7.8.3.2 Foul Water Drainage

This section assesses the potential cumulative effects with Ringsend Wastewater Treatment Plant arising from the Proposed Development and other developments, including future developments.

7.8.3.2.1 The Ringsend Wastewater Treatment Plant

The 2012 Ringsend Wastewater Treatment Plant application for planning permission (Ref. PL.29N.YA0010) was for a population equivalent of 2.04 million and was predicated on the findings of the 2005 Greater Dublin Strategic Drainage Study (GDSDS). The GDSDS set out the drainage requirements for the Greater Dublin Area (GDA) up to 2031. The GDSDS relied on the Regional Planning Guidelines (RPGs) and the National Spatial Strategy (NSS) in order to estimate the future projected population increases for the GDA. The studies indicated a predicted growth in population from 1.2 million in 2002 to just over 2 million in 2031 for the GDA region. The permitted 2019 revised upgrade planning permission (Ref. ABP-301798-18) for Ringsend Wastewater Treatment Plant was for a population equivalent of 2.4 million. The upgrade works are underway, with, according to the latest available information, the first phase which includes a 400,000 PE extension for the plant, to be complete in the first half of 2021. The full upgrade works to cater for a population equivalent of 2.4 million are planned to be completed in 2025.

Both applications were subject to EIA and therefore accompanied by an EIAR. Additionally, both applications were accompanied by an AA screening report and a NIS (though it appears that only parts of the 2012 application were screened out for AA).

Under the heading of "Potential impact – Discharge of treated effluent, impacts on water quality, effects on qualifying interests", the NIS for the Ringsend Wastewater Treatment Plant 2019 revised upgrade provides as follows:

"In the operational phase, the proposed upgrade of the Ringsend WwTP Component will result in an increase in the plant capacity and also an improvement in the final effluent quality. This will result in a reduction in the licensed parameters discharged into the receiving water, with significantly reduced quantities in respect of ammonia and phosphorous."

This NIS goes on to state as follows:

"Overall no significant adverse effects on are foreseen and indeed, a slight positive effect is possible. Effects of discharge during the operational phase of the project from the upgrade project will therefore have imperceptible impact on habitats listed within these European sites."

In respect of this issue, the NIS concludes as follows:

"Thus there is no potential for in-combination impacts of any other plan and project with the Ringsend WwTP Component of the proposed Upgrade Project."

In effect, the impact of the proposed development has already been assessed as part of the application process for the existing planning permissions pertaining to Ringsend Wastewater Treatment Plant.

7.8.3.2.2 The contribution from the Proposed Development

Notwithstanding the above, on an individual basis, the proposed development, contributing less than 0.1% of the population equivalent of the total catchment of the Ringsend WwTP, will have an imperceptible impact on the wastewater capacity, in terms of flows, relative to the total amount of wastewater currently being received at Ringsend Wastewater Treatment Plant.

In support of this view, Irish Water has provided a Confirmation of Feasibility Letter and Statement of Design Acceptance for the foul sewer design of the Proposed Development. Copies are appended to the Infrastructure Report prepared by BMCE. Irish Water is in control of this infrastructure and the purpose of the Confirmation of Feasibility Letter and Statement of Design Acceptance is to confirm the viability of the Proposed Development with respect to its potential effect on the capacity of Ringsend Wastewater Treatment Plant as the receiving infrastructure.

By providing a Confirmation of Feasibility Letter and Statement of Design Acceptance, Irish Water has confirmed that, based on current projected infrastructure, the Proposed Development can be accommodated within the drainage network.

7.8.3.3 Surface Water Drainage

The provision of sustainable drainage systems to treat and attenuate surface water discharge in new developments to replicate pre-development flows, shall ensure that the cumulative effect on the surface water infrastructure is neutral, imperceptible and long term.

7.8.3.4 Electricity

The ESB review the electrical demand requirements for all proposed developments and confirm if the public network has capacity to cater for same, with or without network upgrades, prior to connection to the public network. This review is undertaken following a grant of planning permission. Following initial discussions with ESB, no issues have been raised about capacity for the development being available in the existing local network, however should network upgrades be required these would benefit the local community as it would modernise the network in this area. Therefore, it is considered that the cumulative impact of the proposed development on electricity supply infrastructure will not be significant, with neutral long-term effects.

7.8.3.5 Gas

As the development is not proposed to require natural gas, it is considered that there is no cumulative impact of the proposed development on gas supply infrastructure, with neutral long-term effects.

7.8.3.6 Telecommunications

Eir have been contacted and utility maps received from them. Eir have no raised any concerns about availability of network in the area. Therefore, it is considered that the cumulative impact of the proposed development on the telecom's infrastructure will not be significant, with neutral long-term effects.

Virgin Media have plans in place to deliver Virgin Media network down Howth Road and into Howth. This will be available to serve the site as well as providing availability of their fibre network solution to neighbours. Therefore, it is considered that the cumulative impact of the proposed development on the Virgin Media infrastructure will give rise to significant positive long-term effects.

7.8.4 Summary

The Table below summarises the identified likely significant effects during the construction phase of the proposed development in the absence of mitigation.

Likely Significant Effect	Quality	Significance	Extent	Probability	Duration	Type
Contamination of local water supply from new construction stage connections	Negative	Imperceptible	Local	Unlikely	Brief	Direct
Contamination of local water supply from spills of harmful substances	Negative	Not Significant	Local	Unlikely	Temporary	Direct
Silts in water supply system	Negative	Not Significant	Local	Unlikely	Temporary	Direct
Increased water demand	Neutral	Imperceptible	Local	Likely	Short term	Direct
Increased Foul flows	Neutral	Imperceptible	Local	Likely	Short term	Direct
Contamination of local foul drainage system from spills of harmful substances	Negative	Not Significant	Local	Unlikely	Temporary	Direct
Silts in foul water system	Negative	Not Significant	Local	Unlikely	Temporary	Direct
Untreated ground water discharge to foul drainage system	Negative	Not Significant	Local	Unlikely	Brief	Direct
Contamination of local surface water drainage system from spills of harmful substances	Negative	Not Significant	Local	Unlikely	Temporary	Direct
Silts in surface water system	Negative	Not Significant	Local	Unlikely	Temporary	Direct
Untreated ground water discharge to surface water drainage system	Negative	Not Significant	Local	Unlikely	Brief	Direct
Increased electrical demand over existing	Neutral	Imperceptible	Local	Likely	Short term	Direct
Increased Gas demand over existing	Neutral	Imperceptible	Local	None	Short term	Direct
Increased telecommunication demand over existing	Neutral	Imperceptible	Local	Unlikely	Short term	Direct

Table 7.3 Summary of Construction Phase Likely Significant Effects in the absence of mitigation

The Table below summarises the identified likely significant effects during the operational phase of the proposed development in the absence of mitigation.

Likely Significant Effect	Quality	Significance	Extent	Probability	Duration	Type
Increased Water Demand	Neutral	Imperceptible	Local	Likely	Long-term	Direct
Increased Foul Flows	Neutral	Imperceptible	Local	Likely	Long-term	Direct
Availability of "Sky" telecommunication provider in the area	Neutral	Not significant	Local	Un-Likely	Long-term	Direct
Cumulative increase in water demand from other nearby developments	Neutral	Not significant	Local	Likely	Long-term	Cumulative
Cumulative increase in foul flows from other nearby developments	Neutral	Not significant	Local	Likely	Long-term	Cumulative
Cumulative increase in surface water flows to surface water drains	Neutral	Slight	Local	Likely	Long-term	Cumulative
Increased Electrical Demand	Neutral	Imperceptible	Local	Likely	Long-term	Direct
Increased Gas Demand	Neutral	Imperceptible	Local	None	Long-term	Direct
Increased telecommunication demand	Neutral	Imperceptible	Local	Likely	Long-term	Direct
Cumulative increase in Electrical demand from other nearby developments	Neutral	Not significant	Local	Likely	Long-term	Cumulative
Cumulative increase in Gas Demand other nearby developments	Neutral	Not significant	Local	None	Long-term	Cumulative
Cumulative increase in telecommunication demand from other nearby developments	Neutral	Not significant	Local	Likely	Long-term	Cumulative

Table 7.4 Summary of Operational Phase Likely Significant Effects in the absence of mitigation

7.9 Mitigation

7.9.1 Incorporated Design Mitigation

The design has been prepared based on relevant codes of practice, design guidance and in consultation with relevant local and statutory authorities to ensure best practice design, considering the effect on local and wider network for water supply, foul and surface water drainage, gas supply, electrical network and the telecommunication network.

The development will be constructed to the Part L Near Zero Energy Building (NZEB)[1] standard which will result in an improved thermal performance along with the incorporation of renewable technology, accordingly, the demand on energy infrastructure will be reduced.

7.9.2 Construction Phase Mitigation

Remedial and mitigation measures describe any corrective measures that are either practicable or reasonable, having regard to the potential effects discussed above. This includes avoidance, reduction and remedy measures to reduce or eliminate any significant adverse effects identified.

The **Construction Environmental Management Plan** submitted under separate cover incorporates a range of integrated control measures and associated management activities with the objective of mitigating the effect of the proposed development's on-site construction activities. The mitigation measures relevant to this chapter have been reproduced below.

7.9.2.1 Water Supply

Appropriate construction methodology as outlined in Irish Water – Code of Practice for Water Infrastructure, relating most specifically to quality control in material handling, laying, system testing and record keeping will be employed to ensure against contamination risk of the local water supply and all watermain connection works shall be carried out by the Irish Water accredited regional contractor.

To avoid contamination of the local water supply and leaks in the system, all watermains will be tested in accordance with Irish Water Code of Practice for Water Infrastructure.

7.9.2.2 Wastewater Drainage

To prevent the ingress of ground water, all new sewers shall be tested and surveyed and, where necessary, repaired or replaced in accordance with Irish Water Code of Practice for Wastewater prior to connection to the public system.

Any leakage from foul sewers will be cordoned off and contaminated effluent and soil collected and disposed of by a licenced contractor.

The connection of the new foul sewer to the public wastewater sewer network will be carried out by the Irish Water Regional Contractor.

To prevent untreated ground water discharge to the surface water sewer system during construction of the basement, the Contractor will employ an on-site treatment system to treat ground water as necessary (refer to Construction Environmental Management Plan) to meet Irish Water or Fingal County Council temporary discharge licence requirements. The treatment will incorporate ongoing testing in accordance with the conditions of the licence agreement.

7.9.2.3 Surface Water Drainage

To prevent the ingress of ground water, all new sewers will be tested and surveyed and, where necessary, repaired in accordance with the Greater Dublin Area Regional Code of Practice for Drainage Works prior to connection to the public surface water system. To prevent untreated

[1] Building Regulations 1997 to 2020

ground water discharge to the surface water sewer system, the Contractor will employ an on-site treatment system to treat ground water as necessary to meet Irish Water or Fingal County Council temporary discharge licence requirements. The treatment will incorporate ongoing testing in accordance with the conditions of the licence agreement. Dewatering measures should only be employed where necessary. A method statement for all works to be carried out will be prepared by the Contractor and agreed with Fingal County Council prior to commencement of works to outline what measures are to be taken to ensure there is no loss of service during the works. Road sweeping and/or wheel wash facilities will be provided, as required. All oils/diesel stored on site for construction equipment are to be located in appropriately bunded areas. Filters and silt traps will be used to prevent rain washing silts and other materials into the surface water network and creating blockages.

7.9.2.4 Gas Supply

The exact locations of the gas network infrastructure will be confirmed as part of the Detailed Design Phase. Prior to excavation, the Contractor will carry out additional site investigation, including slit trenches, in order to determine the exact location of the gas network pipes. This will mitigate against risk of underground gas network damage during the excavation phase prior to diverting the gas pipe. The gas diversion shall be carried out by GNI and its new location clearly documented to mitigate the risk of a gas main hit during the construction phase.

The Contractor will be obliged to put measures in place to ensure that there are no interruptions to existing services and all services and utilities are maintained unless this has been agreed in advance with Gas Networks Ireland (GNI).

All works in the vicinity of GNI infrastructure will be carried out in ongoing consultation with GNI and will be in compliance with any requirements or guidelines they may have including procedures to ensure safe working practices are implemented when working near live gas mains.

7.9.2.5 Telecommunication

The locations of the telecommunications network infrastructure relative to the proposed works will be confirmed as part of the Detailed Design Phase to mitigate the risk of damage to the telecoms infrastructure before construction starts. Prior to excavation the Contractor will carry out additional site investigation, including slit trenches, in order to determine the exact location of the telecommunications networks in close proximity to the works area. This will ensure that the underground telecommunications network will not be damaged during the construction phase.

The Contractor will be obliged to put measures in place to ensure that there are no interruptions to existing services and all services and utilities are maintained unless this has been agreed in advance with the relevant telecommunication provider.
All works in the vicinity of the telecommunications providers infrastructure will be carried out in ongoing consultation with the relevant provider and will be in compliance with any requirements or guidelines they may have.

Where new services are required, the Contractor will apply to the relevant provider for a connection permit where appropriate and will adhere to their requirements to ensure safety of installation.

7.9.2.6 Electricity

The exact locations of the below ground ESB Networks infrastructure will be confirmed as part of the Detailed Design Phase. Prior to excavation the Contractor will carry out additional site investigation, including slit trenches, in order to determine the exact location of the below ground network. This will mitigate against the risk of damage to underground electricity network during the excavation phase prior to diverting the ESB network. The ESB diversion shall be carried out by ESB and its new location clearly documented to mitigate the risk of a cable duct damage during the construction phase.

The Contractor will be obliged to put measures in place to ensure that there are no interruptions to existing services and all services and utilities are maintained unless this has been agreed in advance with ESB Networks.

All works in the vicinity of ESB Networks infrastructure will be carried out in ongoing consultation with ESB Networks and will be in compliance with any requirements or guidelines they may have including procedures to ensure safe working practices are implemented when working near live overhead/underground electrical lines.

7.9.3 Operational Phase Mitigation

7.9.3.1 Water Supply

Prior to completion of the defect liability period, a water audit will be carried out by Irish Water to ensure the construction is fully in compliance with Irish Water Code of Practice and standard details prior to taking in charge.

The site watermain system will be metered as directed by Irish Water to facilitate detection of leakage and prevent ongoing water loss.

7.9.3.2 Wastewater Drainage

Prior to completion of the defect liability period, a wastewater audit will be carried out by Irish Water to ensure the construction is fully in compliance with Irish Water Code of Practice and standard details prior to taking in charge.

Areas to remain in the charge of the applicant (private side drainage) will be maintained on a scheduled basis as part of the building management plan.

7.9.3.3 Surface Water Drainage

The development has been designed in accordance with Fingal County Council Drainage Department's guidelines for planning applications, the recommendations of the Greater Dublin Regional Drainage Study (GDSDS) and Ciria Guide C753 – The SuDS Manual, to incorporate best practice Sustainable Drainage Systems. Sustainable Drainage Systems are a collection of water management practices that aim to align modern drainage systems with natural water processes. Integration of SuDS make urban drainage systems more compatible with

components of the natural water cycle such as storm surge overflows, soil percolation, and bio-filtration, mitigating the effect human development may have on the natural water cycle, particularly surface runoff and water pollution trends. In the context of this greenfield site, the provision of the sustainable drainage systems including, green roofs to intercept, filter and attenuate surface water at roof level, tree pits/permeable paving to intercept, filter and attenuate surface water at grade and attenuation storage devices to limit peak discharge rates to the public surface water sewer to pre-development flows.

All sustainable drainage systems will be maintained by the applicant. Regular maintenance of the SuDS systems will maintain their function of treating surface water prior to discharge. This will prevent silt build-up and other contaminant discharge to the surface water network. Regular maintenance of the attenuation storage and flow control device will maintain controlled discharge of stormwater in rainfall events and prevent inundation of the surface water system.

7.9.3.4 Gas Supply

Gas is not proposed for the development.

7.9.3.5 Telecommunication

The design and construction of the required telecommunication services infrastructure in accordance with the relevant guidelines and codes of practice is likely to mitigate any potential service outage impacts during the operational phase of the development, with the exception of any routine maintenance of the site services.

7.9.3.6 Electricity

The power demands during the operational phase on the existing electricity network are considered to be low due to the energy efficient design including LED lighting and high performance heating equipment.

The design and construction of the required electrical services infrastructure in accordance with the relevant guidelines and codes of practice is likely to mitigate any potential impacts during the operational phase of the development, with the exception of any routine maintenance of the site services.

7.10 Residual Impact Assessment

7.10.1 Construction Phase

7.10.1.1 Water Supply

Taking into account the above-mentioned mitigation measures, which are designed to avoid and prevent any adverse issues arising during construction, any residual effects on the built services during the construction phase are considered to be brief in nature and imperceptible, where supply is unavoidably disrupted to facilitate the construction phase.

7.10.1.2 Wastewater Drainage

Taking into account the above-mentioned mitigation measures, which are designed to avoid and prevent any adverse issues arising during construction, any residual effects on the built

services during the construction phase are considered to be brief in nature and imperceptible, where foul drainage services are unavoidably disrupted to facilitate the construction phase.

7.10.1.3 Surface Water Drainage

Taking into account the above-mentioned mitigation measures which are designed to avoid and prevent any adverse issues arising during construction, any residual effects on the built services during the construction phase is considered to be brief in nature and imperceptible, where surface water drainage service is unavoidably disrupted to facilitate the construction phase.

7.10.1.4 Electricity

Taking into account the above-mentioned mitigation measures, which are designed to avoid and prevent any adverse issues arising during construction, any residual impacts on the built services during the construction phase are considered to be temporary in nature and imperceptible except where service is unavoidably disrupted to facilitate the construction phase.

7.10.1.5 Gas Supply

Neutral Impact -Taking into account the above-mentioned mitigation measures, there will be no residual impact to the gas mains following the construction phase. Any residual impacts on the built services during the construction phase are considered to be temporary in nature and imperceptible, where service is unavoidably disrupted to facilitate the construction phase

7.10.1.6 Telecommunications

Neutral Impact - Taking into account the above-mentioned mitigation measures there will be no residual impact to the telecommunications infrastructure following the construction phase. Any residual impacts on the built services during the construction phase are considered to be temporary in nature and imperceptible, where service is unavoidably disrupted to facilitate the construction phase.

7.10.2 Operational Phase

7.10.2.1 Water Supply

Based on the advice of Irish Water that the existing water supply network has capacity to cater for the development water demand without network upgrades and the above-mentioned mitigation measures, the residual effect to the water supply infrastructure from the operational phase will be neutral, imperceptible and long term.

7.10.2.2 Wastewater Drainage

Based on the advice of Irish Water that the existing wastewater sewer network has capacity to cater for the development foul water flows without network upgrades, along with the above-mentioned mitigation measures, the effect on the wastewater sewer network will be long term and imperceptible.

7.10.2.3 Surface Water Drainage

Based on the advice of Fingal County Council Drainage Department that the existing surface water network has capacity to cater for the development surface water flows without network upgrades and the above-mentioned mitigation measures, the residual effect to the surface

water drainage infrastructure from the operational phase will be neutral, imperceptible and long term.

7.10.2.4 Electricity

All excavations will be fully reinstated to the requirements of ESB Networks ensuring there are no residual impacts to the electrical infrastructure remaining on the site.

7.10.2.5 Gas Supply

All excavations will be fully reinstated to the requirements of GNI ensuring there are no residual impacts to the gas infrastructure remaining on the site.

7.10.2.6 Telecommunications

All excavations will be fully reinstated to the requirements of the relevant telecommunications provider ensuring there are no residual impacts to the telecoms infrastructure remaining on the site.

7.10.3 Cumulative

7.10.3.1 Water Supply

Based on the confirmation received from Irish Water that the existing water supply network has capacity to cater for the proposed development water demand without network upgrades, which is based on their assessment of the effect of the proposed development and all other known proposed developments in combination, along with the above-mentioned mitigation measures, the residual cumulative effect to the water supply infrastructure will be neutral, imperceptible and long term.

7.10.3.2 Wastewater Drainage

Irish Water have confirmed that the existing wastewater sewer network has capacity to cater for the proposed development foul flows without network upgrades, which is based on their assessment of the effect of the proposed development and all other known proposed development foul flows in combination. Overall, it is considered there is a cumulative, imperceptible, long term effect.

7.10.3.3 Surface Water Drainage

Fingal County Council Drainage Department have confirmed that the existing surface water network has capacity to cater for the development surface water flows without network upgrades. All future developments are required to incorporate SuDS measure to treat and attenuate surface water discharge rates to 2l/s/ha or QBar. Along with the above-mentioned mitigation measures, the cumulative effect is considered to be neutral, imperceptible and long term.

7.10.3.4 Gas Supply

As there are no demands for gas on site, other than diverting the existing pipe, there should be no residual impact to the gas supply infrastructure.

7.10.3.5 Electrical Supply

Based on ESB raising no concern about existing local network capacity to cater for the developments electrical demand and the above-mentioned mitigation measures, there should be no residual cumulative impact to the electrical supply network.

7.10.3.6 Telecommunication

Based on Eir raising no concern about existing local network capacity to cater for the development's telecommunication demand and the above-mentioned mitigation measures, there should be no residual cumulative impact to the telecommunication supply infrastructure.

In consultation with Virgin Media, they have advised there are plans in place to extend their network down Howth Road in adjacency to the proposed development and have advised there will be capacity for this site as well as neighbours. This will lead to a positive cumulative impact to the local supply infrastructure.

7.10.4 Summary

The Table below summarises the identified likely significant effects during the construction phase of the proposed development following the application of mitigation measures.

Likely Significant Effect	Quality	Significance	Extent	Probability	Duration	Type
Short-term disruption to water supply	Neutral	Imperceptible	Local	Likely	Brief	Direct
Short-term disruption to wastewater or surface water drainage	Neutral	Imperceptible	Local	Unlikely	Brief	Direct
Short-term disruption to ESB	Neutral	Imperceptible	Local	Likely	Brief	Direct
Short-term disruption to Gas Supply	Neutral	Imperceptible	Local	Likely	Brief	Direct

Table 7.5 Summary of Construction Phase Effects Post Mitigation

The Table below summarises the identified likely significant effects during the operational phase of the proposed development post mitigation.

Likely Significant Effect	Quality	Significance	Extent	Probability	Duration	Type
Increase in water demand	Neutral	Imperceptible	Local	Likely	Long Term	Direct
Increase in foul water discharge flows	Neutral	Imperceptible	Local	Likely	Long Term	Direct
Attenuation of surface water discharge to surface water sewers	Neutral	Imperceptible	Local	Likely	Long Term	Direct
Increase in electrical demand	Neutral	Imperceptible	Local	Likely	Long Term	Direct
Increase in gas demand	Neutral	Imperceptible	Local	None	Long Term	Direct

Table 7.6 Summary of Operational Phase Effects Post Mitigation

7.11 Monitoring

7.11.1 Water Supply

All works shall be carried out in accordance with Irish Water Code of Practice for Water Infrastructure. Laying of watermains and testing of same will be in accordance with Irish Water standard details. The works shall be inspected on an ongoing basis during construction by both the applicant's engineers and Irish Waters' Area Engineer. Applicable testing shall be carried out prior to connection to the public watermains.

7.11.2 Wastewater Drainage

All works shall be carried out in accordance with Irish Water Code of Practice for Wastewater Infrastructure. Laying of foul sewers and testing of same will be in accordance with Irish Water standard details. The works shall be inspected on an ongoing basis during construction by both the applicant's engineers and Irish Waters' Area Engineer. Applicable testing shall be carried out prior to connection to the public combined sewer.

7.11.3 Surface Water Drainage

All works shall be carried out in accordance with The Greater Dublin Area Regional Code of Practice for Drainage Works. Laying of surface water sewers and testing of same will be in accordance with the standard details laid out in the same document. The works shall be inspected on an ongoing basis during construction by both the applicant's engineers and Fingal County council's Area Engineer. Applicable testing shall be carried out prior to connection to the public surface water sewer.

For the duration of ground water discharge to the public surface water system, a treatment regime with sample testing shall be employed to treat ground water to achieve acceptable discharge limits as set out in the discharge licence.

7.11.4 Electrical Supply

All works shall be carried out in accordance with ESB code of Practice for electrical Infrastructure. Laying of cables and testing of same will be in accordance with ESB standard details. The works shall be inspected on an ongoing basis during construction by both the applicant's engineers and ESB site engineer. Applicable testing shall be carried out prior to connection to the electrical Grid.

7.11.5 Gas

All works shall be carried out in accordance with the GNI code of Practice documents. Laying of gas main and testing of same will be in accordance with GNI's standard details. The works shall be inspected on an ongoing basis during construction by both the applicant's engineers and the GNI's Area Engineer. Applicable testing shall be carried out prior to connection to the public network.

7.11.6 Telecommunication

All works shall be carried out in accordance with the relevant telecoms providers' code of practice. Laying of ducts and cables and testing of same will be in accordance with their standard details. The works shall be inspected on an ongoing basis during construction by both the applicant's engineers and relevant telecommunication provider. Applicable testing shall be carried out prior to connection to the network.

7.12 Interactions

Interactions are dealt with in **Chapter 16** of this EIAR.

7.13 Summary of Mitigation & Monitoring

The Table below summarises the Construction Phase mitigation and monitoring measures.

Likely Significant Effect	Mitigation	Monitoring
Contamination of local water supply from new connections	Testing Prior to Connection to public network	Ongoing Inspections by IW and Applicants Engineers
Untreated Ground Water Discharge to Sewers	On site treatment system to meet discharge licence requirements.	Ongoing sampling, alarm systems in place for system failures
Silting of sewers	Filters and Silt traps, ground water treatment	Periodic Inspections during construction
Ground water ingress to wastewater sewers	Construction in accordance with IW COP.	Wastewater Audit by IW. Periodic inspections of system.
Harmful substance discharge to sewers from temporary construction connections	Oils/diesels etc stored in bunded areas clear of wash down facilities	Periodic Inspections during construction
Impacting existing utility infrastructure during construction (gas / electrical / water)	Site survey prior to construction to identify below ground services.	Periodic Inspections during construction
Proximity of the medium pressure gas main to the site	Site survey prior to construction to identify below ground services.	Periodic inspections during construction

Table 7.7 Summary of Construction Phase Mitigation and Monitoring

The Table below summarises the Operational Phase mitigation and monitoring measures.

Likely Significant Effect	Mitigation	Monitoring
Leakage and water loss from water supply system	Construction in accordance with IW COP. Metering of supply	Review and assessment of water meter readings. Water Audit by IW
Silting/blocking of SuDS	Regular maintenance regime	Periodic inspections by responsible person/team.
Failure of SW flow control device	Regular maintenance regime	Periodic inspections by responsible person/team.
Future activity impacting the services routes around the development	Detailed as built drawings to be provided on hand over by the contractor	The landlord to review all works that might impact infrastructure in the future and to ensure safe procedures are followed

Table 7.8 Summary of Operational Phase Mitigation and Monitoring

7.14 Conclusion

In relation to surface water drainage, foul drainage and water supply, it has been demonstrated that the proposed development, which is designed in accordance with Irish Water Codes of Practice and the recommendations of the Greater Dublin Strategic Drainage Study, primarily in the provision of separate foul and surface water drainage systems and sustainable design principals to treat and attenuate surface water run-off, will not have significant negative environmental impacts. The relevant authorities have confirmed that the design proposals put forward and associated water demand and discharge rates, can be catered for within the capacity of the existing systems.

From initial discussions with the ESB, it is expected that the proposed development, which is to be designed in accordance with ESB and Irish standards, will not have significant negative environmental impacts. ESB have not identified any risk of insufficient capacity in local area network but will be assessed in detailed design phase as per ESB requirements.

As natural gas is not proposed for the site, the development will have no significant negative environmental impacts.

From initial discussions with Eir, there is capacity for the proposed development and in discussions with Virgin Media, they will deliver Virgin Media fibre network to the area for the proposed development and which can be availed of by neighbours.

Following the application of standard design measures and mitigation as set out in this chapter, there is no likely significant effect anticipated as a result of the proposed development.

7.15 References and Sources

- Irish Water – Code of Practice for Water Infrastructure
- Irish Water – Code of Practice Wastewater Infrastructure
- Irish Water – Wastewater Standard Details
- Irish Water – Water Standard Details
- BS EN 752:2008 “Drain and Sewer Systems outside Buildings”
- The Building Regulations Technical Guidance Document H
- Ciria C753 “The SUDS Manual”
- Sewers for adoption: 6th Edition
- Guidelines on the information to be contained in Environmental Impact Assessment Report (EPA Draft Aug 2017)
- Irish Water Local Area Network Map
- ESB Construction Standards for MV Sub-Station Buildings.
- ESB electrical services handbook for housing schemes.
- GNI – Guidelines for Designers and Builders Domestic Sites
- https://www.esbnetworks.ie/staying-safe/contractor-safety/digging-and-excavation-work
- https://www.gasnetworks.ie/corporate/freedom-of-information/make-a-request/
- https://cbyd.emaps.eircom.ie/Eircom-CBYD/

CHAPTER 8
MATERIAL ASSETS: WASTE MANAGEMENT

MAY 2021

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8 Material Assets: Waste Management

8.1 Introduction

Byrne Environmental Consulting Ltd. have assessed the potential impacts that construction and operational wastes associated which the proposed development may have on the receiving environment and how wastes generated shall be managed in accordance with the Eastern-Midlands Region Waste Management Plan 2015-2021.

The assessment includes a comprehensive description of the types and quantities of wastes that will be generated, how wastes will be managed and how the principals of reduce-reuse and recycle shall be implemented into the design of the development to ensure that the development will be constructed and operated in an environmentally sustainable manner.

The waste management strategies' included in this Chapter of the EIAR present the potential environmental impacts, proposed mitigation and monitoring methodologies, based on the concept of Best Practice. Reference to National and International Standards are also included where relevant.

The projection of material assets of human origin was conducted and resource use and management of wastes generated were assessed for both the constructional and operational phases of the proposed development and their associated impacts assessed. Mitigation and best practice waste management are proposed where appropriate.

Ian Byrne, Principal Consultant, MSc Environmental Protection, Dip. Environmental & Planning Law, Member of the Institute of Acoustics has over 24 years' experience in the preparation of waste management impact assessments for commercial, residential and industrial developments and conducted all aspects of the project works.

Ian Byrne has recently prepared Material Assets -Waste Management EIAR Chapters for Strategic Housing Developments including :

- Glenveagh – Citywest Road Residential Development SHD ABP-306602-20
- Park Developments Group – Clayfarm Carrickmines Residential Development SHD ABP-301522-18
- CAIRN Homes – Farankelly Greystones Residential Development SHD ABP-305476-19
- Park Developments Group Glencairn Leopardstown Residential Development SHD ABP-302580-18

8.2 Proposed Development

The full description of the proposed development is outlined in **Chapter 2 – Development Description**, of this Environmental Impact Assessment Report.

The design rationale is to create and deliver a high quality, sustainable, strategic housing development which respects its setting and maximises the site's natural attributes while

achieving maximum efficiency of existing infrastructure. The Proposed Site Layout is illustrated on **Drawing No. 1101** contained within the architectural suite of drawings.

The development will consist of;

i. 162 no. residential units distributed across 3 no. blocks (A, B & C) ranging in height from 5-6 storeys, with a cumulative gross floor area (GFA) of 13,337.10 sq.m comprising;
    a. 29 no. 1-bedroom units, - 17.9%
    b. 104 no. 2-bedroom units and – 64.2%
    c. 29 no. 3-bedroom units – 17.9%
ii. 3 no. resident services and amenity rooms (1 no. in each block A-C) to accommodate co-working space, a community room and a meeting room (combined GFA 108 sq.m)
iii. 132 no. car parking spaces at basement level (underlying Blocks A & B) including 6 no. accessible spaces, 13 no. electric vehicle spaces and 4 no. car sharing spaces;
iv. 325 no. residents bicycle parking spaces (long-stay) at basement level, and 30 no. visitor bicycle parking spaces (short-stay) at surface level;
v. communal amenity space in the form of courtyards and roof gardens (combined 2,192 sq.m)
vi. public open space of 1,161 sq.m including a botanic garden and pocket park;
vii. a single storey ESB sub-station and switch room (45.5 sq.m);
viii. demolition of 2 no. sections of the existing demesne northern boundary wall to provide, a primary access (vehicular/pedestrian/cyclist) to the northwest and a separate pedestrian/cyclist access at the centre;
ix. restoration and refurbishment of the remaining extant northern and eastern demesne boundary wall;
x. change of use and regrading of part of the Deer Park Golf Course from active recreation use to passive amenity parkland and planting of a woodland belt on the southern boundary;
xi. undergrounding of existing ESB overhead lines, and, relocation of the existing gas main; and,
xii. all ancillary site development works including waste storage and plant rooms at basement level, drainage, landscaping/boundary treatment and lighting.

8.2.1 Aspects Relevant to Assessment

The development will consist of the construction of 162 residential dwellings in 3 blocks over basement and all associated infrastructure. An Operational Waste Management Plan for the development has been prepared by Byrne Environmental Consulting Ltd.

All apartment units will contain a 3-bin domestic waste segregation at source system which will comply with Section's 4.8 and 4.9 Refuse Storage of The Department of Housing, Planning

and Local Government – Sustainable Urban Housing : Design Standards for New Apartments – Guidelines for Planning Authorities, 2018 which require that *"within apartments, there should be adequate provision for the temporary storage of segregated materials prior to the deposition in communal waste storage".*

Communal waste storage areas shall be located at basement level and shall be appropriately sized to accommodate segregated domestic waste generated by the fully occupied development and with provision for extra capacity to store additional waste for contingency purposes in accordance with Fingal Development Plan 2017-2023 Waste Management Objective – OBJ DMS147.

Figure 8.1 identifies the locations of the basement level communal waste storage areas.

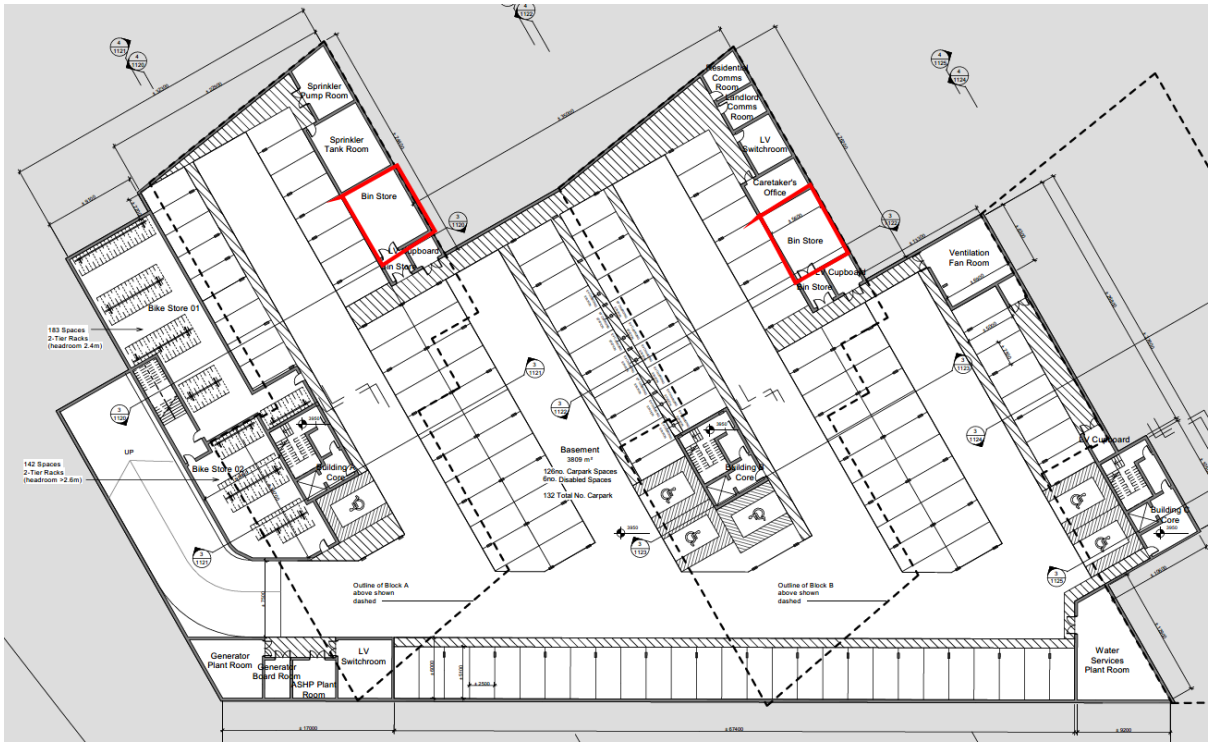

Figure 8.1 Basement Communal Waste Storage Areas

A dedicated appropriately sized bin collection area at grade shall be included at which waste bins shall be brought from the communal bin stores on the morning of bin collection days as shown in **Figure 8.2**. The internal road system has been designed by project Engineers BCME to ensure that bin collection vehicles can safely access the bin collection area. (Autotrack Drawing Ref 19196-HOW)-BMD-00-ZZ-DR-C1043).

Figure 8.2 Bin Collection PointBin Collection Point

The most recent EPA Publication, National Waste Statistics Report 2018 reports that he household waste per person in Ireland has been increasing over the period 2016 to 2018 from 305 kg/person to 315 kg/person per year and suggests increased spending is the cause of increased domestic waste generation.

A value of 0.863Kg of waste generated per person per day has been therefore assumed for the purposes of this report to estimate the volume of waste to be generated at the development as detailed below in **Table 8.1.**

Waste Type	% Waste	Kg/week	Kg/day
Organic waste	30.6	946	135
Paper	12.5	387	55
Cardboard	3.6	111	16
Composites	1	31	4
Textiles	15.5	479	68
Plastics	13.6	421	60
Glass	3.4	105	15
Metals	3.1	96	14
Wood	1.2	37	5
Hazardous municipal waste	0.9	28	4
Unclassified combustibles	1.4	43	6
Unclassified incombustibles	1.2	37	5
Fines	11.7	362	52
Bulky Waste & WEEE	0.3	9	1
Totals	**100**	**3093**	**442**

Table 8.1 Proposed Residential waste generation at full occupancy

The construction of the development of the subject site will initially require the stripping of top and subsoils and the excavation of ground to basement level to depth between 4.5m – 7m. The range of works required for the Construction Phase are summarised in **Table 8.2.** The typical construction waste composition and the predicted construction wastes that will be generated throughout the course of the development are described in **Tables 8.3** and **8.4** respectively.

Construction wastes if not managed and segregated on-site will have the potential to be difficult to separate into different waste streams to allow for further processing, recovery, re-use or to be recycled.

Activity Sequence	General Description
Demolition	Northern boundary stone wall
Infrastructure installation	Drainage, Utility ducts,
Substructure	Piling works
Substructure	Basement excavation Rebar, Formwork
Superstructure	Rebar, Formwork and Pour
Roof	Rebar, Formwork and Pour and Waterproof
External Envelope	Place façade to superstructure
Internal Finishes	Mechanical & Electrical etc.
External Landscaping	Hard and soft landscaping

Table 8.2 Sequence of Construction Works

Description of Waste	%
Soils & Stones	76.7
Mixed C&D	7.0
Metals	3.0
Concrete Bricks Tiles, Gypsum	12.0
Wood, Glass, Plastic	0.3
Bitumen Waste	1.0
Totals	100

Table 8.3 Typical Construction Waste Composition – Source EPA 2018

Waste Type	Predicted tonnage to be produced	Re-Use		Recyclable		Disposal	
		Tonnage	%	Tonnage	%	Tonnage	%
Mixed C&D	1202	-	-	601	50	601	50
Metals	515	-	-	515	100	-	-
Concrete, Blocks, Gypsum	2060	1030	80	-	-	1030	20
Wood Glass Plastic	52	-	-	5.2	10	46.8	90
Bitumen	172			172	100	-	-
Total	4000	1030		1293.2		1676.8	
Soils	45,000	6,750	15	-	-	38,250	85

Table 8.4 Predicted Construction Waste Generation

Waste Soils

The Project Engineers, BMCE, have estimated that c. 30,000m^3 of soils (45,000 tonnes) will be exported from the site. It is predicted that up to 4,500m3 of soils shall be retained for landscaping works.

Various construction waste streams will arise during the construction phase. The principal sources of construction waste will be generated by the stripping of soils and the excavation of the basement which will generate c. 30,000m^3 of soils.

It is predicted that c.4000m^3 of construction wastes including mixed C&D, metals, concrete, wood, glass and plastic and bitumen will be generated during the construction of the development.

8.3 Methodology

This chapter has been prepared having regard to the following Directives and guidelines;

- *Directive 2014/52/EU;*
- *Planning and Development Act 2000 (as amended);*

- *Planning and Development Regulations 2001 (as amended)*
- *Directive 2014/52/EU;*
- *Guidelines on the information to be contained in environmental impact assessment reports, EPA, 2017 (Draft);*
- *Environmental Impact Assessment – Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment (2018; DoHPLG); and*
- *Guidance for Consent Authorities regarding Sub-threshold Development (2003; DoEHLG).*

European Commission Environmental Impact Assessment of Projects Guidance on the preparation of the Environmental Impact Assessment Report (Directive 2011/92/EU as amended by 2014/52/EU)

8.3.1 Construction Waste Assessment Methodology

The classification of soils at the site were established as part of the site investigations conducted in 2020 by Ground Investigations Ireland and included the chemical analysis (WAC) of soil samples obtained from trial pits. The waste classification assessment concluded that on-site soils are classified with LoW Codes 17 05 04 may be classified as non-hazardous and are defined as a Category A Criteria as follows. *"Soil and Stone only which are free from anthropogenic materials such as concrete and timber. Soils must be from "contamination" e.g. PAH's, Hydrocarbons and Asbestos".*

The Site Investigation Report including the analytical results of the WAC testing are presented as an appendix with Construction Waste Management Plan included in the application documentation.

A Site Specific **Construction Waste Management Plan** (CWMP) [prepared by Byrne Environmental Consulting Ltd] demonstrates how the Construction Phase will comply with the following relevant legislation and relevant Best Practice Guidelines. A copy of the CWMP is included with the planning application documentation.

- Waste Management Acts 1996
- Waste Management (Collection Permit) Regulations 2007 (SI No. 820 of 2007)
- Waste Management (Collection Permit) Amendment Regulations 2008 (SI No. 87 of 2008)
- Best Practice Guidelines on the Preparation of Waste Management Plans for Construction and Demolition Projects (Department of the Environment, Heritage and Local Government, 2006).
- Guidance on Soil and Stone By-Products in the context of Article 27 of the European Communities (Waste Directive) Regulations – (EPA, Version 3 June 2019)

The Site-Specific Construction & Demolition Waste Management Plan has been prepared with regard to relevant waste management policies and objectives of the Fingal County Council Development Plan 2017 – 2023, specifically;

OBJ WM18 Ensure that construction and demolition Waste Management Plans meet the relevant recycling/recovery targets for such waste in accordance with the national legislation and regional waste management policy.

8.3.2 Operational Waste Assessment Methodology

The quantities of domestic waste generated by the operational phase of the development were calculated by conducting a waste prediction modelling exercise which considers EPA published statistical domestic waste generation data, the quantum of future occupants of the development and the calculation of waste management storage areas based on the calculated volume of domestic waste to be generated on a weekly basis.

An **Operational Waste Management Plan** (OWMP) [prepared by Byrne Environmental Consulting Ltd] accompanying this application as a standalone report has been prepared to demonstrate how the Operational Phase will comply with the following relevant regulations and Fingal County Council design standards for waste management in residential developments.

- Waste Management Acts 1996.
- Waste Management (Collection Permit) Regulations 2007 (SI No. 820 of 2007).
- Waste Management (Collection Permit) Amendment Regulations 2008 (SI No. 87 of 2008).
- Eastern-Midlands Region Waste Management Plan 2015-2021.
- Sustainable Urban Housing : Design Standards for New Apartments – Guidelines for Planning Authorities(Department of Housing, Planning and Local Government, Section's
- EPA Publication, National Waste Statistics Report 2018

The Operational Waste Management Plan has been prepared with regard to relevant waste management policies and objectives of the Fingal County Council Development Plan 2017 – 2023, including;

OBJ DMS 26 Ensure all new residential schemes include appropriate design measures for refuse storage areas, detail of which should be clearly shown at pre-planning and planning application stage. Ensure refuse storage areas are not situated immediately to the front door or ground floor window, unless adequate screened alcoves or other such mitigation measures are proved.

OBJDMS37 Ensure the maximum distance between the front door to a communal bin area does not exceed 50 meters.

OBJ DMS146 Ensure all new largescale residential and mixed-use developments include appropriate facilities for source segregation and collection of waste.

OBJ DMS147 Ensure all new developments include well designed facilities to accommodate the three bin collection system.

8.3.3 Description of Effects Methodology

The approach to explain the full range of effects in this chapter is based on the terminology set out in Table 3.3 of the 2017 EPA Draft Guidelines, which are reproduced in Chapter 1 of this EIAR. The effect of each likely significant impact arising from the proposed development are first described in the absence of mitigation and then with mitigation in place in the residual effects section of this chapter.

8.4 Difficulties Encountered

No difficulties were encountered during the baseline assessments or during the completion of this Chapter of the EIAR.

8.5 Consultation

This Chapter did not require direct consultation with Statutory or Non-Statutory bodies. Waste management legislation and regulations and National Waste Management Policies and Objectives provide adequate guidance with respect to the preparation of this Chapter of the EIAR.

8.6 Existing Environment

The subject site is located on undeveloped lands in an urban area located off the Howth Road. The only identified use of the site is as part of a race track, Howth Park Racecourse, that ceased in 1842. Since then, the proposed development site exists as a greenfield undeveloped site. Therefore, the risk of existing contaminated land being present is unlikely and this is confirmed by the Site Investigations (SI) undertaken by Ground Investigations Ireland, January 2020. Soils at the site have been classified following WAC testing by Ground Investigations Ireland and the completion of a Waste Classification Assessment. The assessment concludes that on-site soils are classified with LoW Codes 17 05 04 may be classified as non-hazardous and are defined as a Category A Criteria as follows. *"Soil and Stone only which are free from anthropogenic materials such as concrete and timber. Soils must be from "contamination" e.g. PAH's, Hydrocarbons and Asbestos".*

Figure 8.3 shows the Trial Pit Locations from which soil samples were taken as part of the site investigations.

Figure 8.3 Trial Pit Locations

The construction and operation of the proposed residential development will introduce new volumes of waste into the local area in terms of the short-term generation of construction waste and the longer-term generation of domestic waste when the development is occupied.

Local waste management infrastructure has been reviewed and there are a range of local domestic recycling facilities within 10km of the subject site including:

- A clothing bring bank is located at Howth Marina Car-Park
- Civic Amenity Recycling Centres are located at the Estuary Recycling Centre, Swords and at Coolmine Industrial Estate.
- A bottle bank is located at Supervalue at Sutton Cross.

Construction wastes including soils arising from bulk excavation works can be accepted at a range of licenced facilities within 30km of the subject site including:

- Shannon Valley, Summerhill, Co. Meath
- Thorntons Recycling, Killeen Road, Ballyfermot

Excavated soils may be suitable for re-use in other construction sites and may be declared as a by-product in accordance with Article 27 of the European Communities (Waste Directive) Regulations 2011 and the EPA publication “Guidance on Soil and Stone By-Products in the

context of Article 27 of the European Communities (Waste Directive) Regulations – Version 3 June 2019.

8.7 Do Nothing Scenario

Should the subject development not proceed, it is likely that another residential development may be applied for in the future as the subject site is zoned for residential development. It is anticipated that another proposal for residential development would require the excavation of a basement to facilitate car parking and the volume of material to be excavated would be similar to the proposed development, having regard to national planning policies that promote the efficient use of the built environment.

Should the site remain undeveloped there is a likely risk that it could be subject to illegal fly-tipping and the effect would be **locally negative** with a significance ranging from **imperceptible to profound**, depending on the magnitude of fly-tipping, with a **duration of temporary to short-term** depending on the responsiveness of the relevant authorities to any such situation.

8.8 Likely Significant Effects

The construction phase and operational phase of the proposed residential development will introduce new volumes of waste into the local area in terms of the short-term generation of construction waste and the longer-term generation of domestic waste when the development is occupied.

8.8.1 Construction & Demolition Phase

A small volume of waste will be generated during the demolition of sections of the northern boundary wall to facilitate the proposed 2 no. access points, 1 no. combined vehicular and pedestrian entrance located and 1 no. dedicated pedestrian entrance. The stone shall be evaluated during the demolition process to determine if it is suitable to be reused on site for landscaping purposes.

The proposed development will generate waste materials during site excavation, demolition and construction. General housekeeping and packaging will also generate waste materials as well as municipal wastes generated by construction employees including food waste. Waste materials will be required to be temporarily stored on site pending collection by a waste contractor. If waste material is not managed and stored correctly, it is likely to lead to litter or pollution issues. The indirect effect of litter issues is the presence of vermin within the development and the surrounding areas. The effect on the environment is likely to be **local short term**, **significant** and **negative.**

The use of non-permitted waste contractors or unauthorised waste facilities could give rise to inappropriate management of waste and result in indirect negative environmental impacts. All waste arisings must be managed in accordance with regional and national legislation. However, in the absence of mitigation, the effect on the **local** and **regional** environment is likely to be **short term**, **significant** and **negative**.

Correct classification and segregation of the excavated material is required to ensure that any potentially contaminated materials are identified and handled in a way that will not impact negatively on workers as well as on water and soil environments, both on and off-site. However, in the absence of this mitigation, the effect on the local and regional environment is likely to be **short term**, **significant** and **negative**

The minimisation of generated construction waste will be managed by ensuring that materials are appropriately ordered on an “as needed” basis and correctly stored in the site compound to minimise the potential for materials to be damaged thus generating unnecessary volumes of waste.

The segregation of construction waste streams shall be managed within the site waste management area under the supervision of a staff member of the Main Contractor.

8.8.2 Operational Phase

The Operational Phase of the development will result in the generation of mixed domestic waste streams.

If waste infrastructure and appropriate waste management systems are not integrated into the design and the operation of the proposed development, there is the potential that domestic and non-domestic waste will not be segregated at source or appropriately managed on-site and the operation of the development will not function in accordance with the waste management policies of Fingal County Council or comply with the waste reduction and recycling and re-use targets defined in the Eastern-Midlands Region Waste Management Plan 2015-2021.

The potential impacts on the environment of improper, or a lack of, waste management during the operational phase would be a diversion from the priorities of the waste hierarchy which could lead to small volumes of waste being sent unnecessarily to landfill. However, in the absence of mitigation, significant effects are not likely. The effect is likely to be **long term, non-significant** and **negative**.

Waste contractors will be required to service the development on a regular basis to remove waste. The use of non-permitted waste contractors or unauthorised facilities could give rise to inappropriate management of waste and result in an indirect significant negative environmental impact for example pollution of groundwater or surface water arising from leachate leakage. It is essential that all waste materials are dealt with in accordance with regional and national legislation, and that time and resources are dedicated to ensuring efficient waste management practices. However, in the absence of mitigation, the effect on the local environment is likely to be **long term**, **significant** and **negative**

8.8.3 Cumulative Impact

With regard to existing residential development and other locally permitted residential developments most notably the Claremont development (former Techrete site TA06F.306102) and the proposed development, there will be a greater demand on existing local waste management services and on waste acceptance facilities.

In a worst-case scenario, multiple developments in the area could be developed concurrently or overlap in the construction phase. Due to the high number of waste contractors in the Dublin region there would be sufficient contractors available to handle waste generated from a large number of these sites simultaneously, if required. It is expected that similar waste materials would be generated by all the developments. An increased density of development in the area is likely improve the efficiencies of waste collections in the area. As such the effect will be **long-term**, **imperceptible,** and **neutral**.

It is necessary that the subject development in addition to others are operated in a sustainable manner that reduces the generation and disposal of un-segregated domestic mixed waste and that provide the infrastructure and management services to assist residents to segregate domestic waste at source and to maximise recycling of wastes. As such the effect will be **long-term**, **imperceptible** and **neutral**.

8.8.4 Worst-case Scenario

A worst-case scenario would arise if the construction phase and operational phase wastes streams were not managed in accordance with the Construction & Demolition Waste Management Plan or the Operational Waste Management Plan. Unmanaged waste streams will reduce the ability to re-use and recycle waste fractions and result in the generation of unsegregated waste streams which will have an increased impact on the environment as a result of the energy required to dispose of them in landfill or by incineration. In this worst-case scenario the effect would be **short-term to long-term**, **significant** and **negative.**

8.8.5 Summary

The Table below summarises the identified likely significant effects of the proposed development in the absence of mitigation during the construction phase.

Likely Significant Effect	Quality	Significance	Extent	Probability	Duration	Type
Construction Waste	Negative	Significant	Regional	Likely	Short-Term	Worst Case

Table 8.5 Summary of Construction Phase Likely Significant Effects without Mitigation

The Table below summarises the identified likely significant effects of the proposed development in the absence of mitigation during the operational phase.

Likely Significant Effect	Quality	Significance	Extent	Probability	Duration	Type
Operational Waste	Negative	Significant	Regional	Likely	Long-Term	Worst-Case

Table 8.6 Summary of Operational Phase Likely Significant Effects without Mitigation

8.9 Mitigation

The Site Specific Construction & Demolition and Operational Waste Management Plans have been designed to ensure that the construction and operational phases of the proposed development will be managed to reduce the generation of unsegregated wastes, to maximise the potential for recycling, recovery and re-use and to demonstrate how the development will operate in a sustainable manner in terms of waste management and contribute to the achievement of the Regions compliance with the waste reduction targets specified in The Eastern-Midlands Region Waste Management Plan 2015-2021 (and any subsequent future revisions).

Wastes arising will need to be taken to suitably registered/permitted/licenced waste facilities for processing and segregation, reuse, recycling, recovery, and/or disposal as appropriate. There are numerous licensed waste facilities in the Eastern Midlands region which can accept non-hazardous waste materials and acceptance of waste from the proposed development would be in line with daily activities at these facilities. At present, there is sufficient capacity for the acceptance of the likely C&D waste arisings at facilities in the region. The majority of demolition and construction materials are either recyclable or recoverable.

The general principles and key aspects of the Site-Specific Construction and Demolition Waste Management Plan and the Operational Waste Management Plan detail how the potential waste impacts associated with the development shall be mitigated through both design and management.

8.9.1 Incorporated Design Mitigation

8.9.1.1 Construction Phase

A dedicated construction waste compound shall be developed which will include a range of storage skips and bunded storage units to allow inert, non-hazardous or hazardous wastes to be segregated and securely stored prior to off-site disposal.

8.9.1.2 Operational Phase

The apartments which will include a 3-bin waste segregation at source system together with the communal waste storage areas have been designed with regard to Section's 4.8 and 4.9 Refuse Storage of The Department of Housing, Planning and Local Government – Sustainable Urban Housing : Design Standards for New Apartments – Guidelines for Planning Authorities. 2018.

8.9.2 Construction Phase Waste Mitigation

The Site-Specific Construction & Demolition Waste Management Plan prepared by Byrne Environmental (and included with the planning application) specifically addresses the following points:

Waste materials generated by construction activities will be managed according to the Department of the Environment, Heritage and Local Government's 2006 Publication - Best Practice Guidelines on the Preparation of Waste Management Plans for Construction and Demolition Projects. Matters to be considered include;

- Analysis of waste arisings / material surpluses
- Specific Waste Management objectives for the Project including the potential to re-use existing on-site materials for further use in the construction phase.
- Methods proposed for Prevention, Reuse and Recycling
- Waste Handling Procedures
- Waste Storage Procedures
- Waste Disposal Procedures
- Record Keeping

Waste minimisation and prevention shall be the primary responsibilities of the Construction Project Manager who shall ensure the following:

- Materials will be ordered on an "as needed" basis to prevent over supply.
- Materials shall be correctly stored and handled to minimise the generation of damaged materials.
- Materials shall be ordered in appropriate sequence to minimise materials stored on site.
- Sub contractors will be responsible for similarly managing their wastes.

Programme of Waste Management for Construction Works

The construction contractor as part of regular site inspection audits will determine the effectiveness of the waste management statement and will assist the project manager in determining the best methods for waste minimisation, reduction, re-use, recycling and disposal as the construction phase progresses and waste materials are generated.

Construction Waste Disposal Management

From the outset of construction activities, a dedicated and secure compound containing bins, and/or skips, and storage areas, into which all waste materials generated by construction site activities, will be established within the active construction phase of the development site.

In order to ensure that the construction contractor correctly segregate waste materials, it is the responsibility of the site construction manager to ensure all staff are informed by means of clear signage and verbal instruction and made responsible for ensuring site housekeeping and the proper segregation of construction waste materials.

It will be the responsibility of the Project Construction Manager to ensure that a written record of all quantities and natures of wastes exported -off site are maintained on-site in a Waste File at the Project office.

It is the responsibility of the Project Manager or his/her delegate that all contracted waste haulage drivers hold an appropriate Waste Collection Permit for the transport of waste loads and that all waste materials are delivered to an appropriately licenced or permitted waste facility in compliance with the following relevant Regulations:

- Waste Management (Collection Permit) Regulations 2007 (SI No. 820 of 2007)
- Waste Management (Collection Permit) Amendment Regulations 2008 (SI No. 87 of 2008)
- Waste Management (Facility Permit and Registration) Regulations S.I.821 of 2007 and the Waste Facility Permit under the Waste Management (Facility Permit and Registration) Amendment Regulations S.I.86 of 2008.

Prior to the commencement of the Project, the Construction / Project Manager shall identify and nominate a permitted Waste Contractor who shall be employed to collect and dispose of all wastes arising from the project works. In addition, the Construction / Project Manager shall identify and all waste licensed / permitted facilities that will accept all expected waste exported off-site and will maintain copies of all relevant Waste Permits / Licences as required.

On-Site Waste Reuse and Recycling Management

Construction waste material such as soils, damaged or broken concrete slabs, blocks, bricks and tiles generated that is deemed by the Project Engineer to be suitable for reuse on the Project site for ground-fill material and landscaping. This initiative shall provide a positive environmental impact to the construction phase as follows:

- Reduction in the requirement for virgin aggregate materials from quarries;
- Reduction in energy required to extract, process and transport virgin aggregates;
- Reduced HGV movements associated with the delivery of imported aggregates to the site;
- Reduced noise levels associated with reduced HGV movements;

- Reduction in the amount of landfill space required to accept C&D waste; and,
- Reduction in the volume of soils to be exported off-site.

Waste Storage Compound

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.

Waste Soils

Based on the analysis of the samples collected from the on-site excavations the material sampled is free of contamination. The material sampled was comprised of natural subsoils which were free of anthropogenic materials. Following an appraisal of the chemical analysis and the absence of anthropogenic materials the subsoils sampled are suitable for removal from site as a by-product which will not lead to overall adverse environmental or human health impacts.

Based on the WAC analysis, it is intended to declare the excavated soils a by-product to the EPA in accordance with Article 27 of the European Communities (Waste Directive) Regulations 2011 and the EPA publication “Guidance on Soil and Stone By-Products in the context of Article 27 of the European Communities (Waste Directive) Regulations – Version 3 June 2019.

The notification of a potential by-product gives industry an opportunity to demonstrate, with an appropriate level of rigour, that:

- the material can have a further use and no longer be defined as waste;
- the material can be used as a ‘secondary’ resource in place of, and fulfilling the same role as a non-waste derived or virgin ‘primary’ resource; and
- the material can be used without causing overall adverse impacts to the environment or human health.

The by-product test is made up of four conditions, which represent the requirements of Article 27. All four of the following ‘conditions’ must be met for an economic operator to decide that a production residue is a by-product:

1. further use of the material is certain;
2. the material can be used directly without any further processing other than normal industrial practice;
3. the material is produced as an integral part of a production process; and
4. further use is lawful in that the substance or object fulfils all relevant product, environmental and health protection requirements for the specific use and will not lead to overall adverse environmental or human health impacts.

Based on the type of material to be excavated i.e. virgin soils, the fact that it is being excavated to facilitate the proposed development and the results of the WAC analysis, conditions 2-4 above are met.

Regarding Condition 1, at this stage, it is too early to identify a specific site where the material would be used. This is because, it is necessary first to secure planning permission to have certainty regarding the availability of the by-product and only then can a further use be identified. However, having regard to the scale of development taking place in Dublin, it is reasonably expected that there will be projects seeking to avail of this by-product. The selected location will be identified in the notification to the EPA.

Soils at the site have been classified following WAC testing by Ground Investigations Ireland and the completion of a Waste Classification Assessment. The assessment concludes that on-site soils are classified with LoW Codes 17 05 04 may be classified as non-hazardous and are defined as a Category A Criteria as follows. *"Soil and Stone only which are free from anthropogenic materials such as concrete and timber. Soils must be from "contamination" e.g. PAH's, Hydrocarbons and Asbestos.*

The Waste Classification Assessment completed as part of the Site Investigation Report shall be maintained by the main Contractor who shall issue them to facilities selected to export soils to during the construction phase.

Contaminated Soils

Where contaminated soils/materials are discovered or occur as a result of accidental spillages of oils or fuels during the construction phase, these areas of ground will be isolated and tested in accordance with the 2002 Landfill Directive (2003/33/EC) for contamination, and pending the results of laboratory WAC testing, will be excavated and removed to an appropriately licenced waste facility.

Construction Waste Record Keeping

It will be the responsibility of the Construction Project Manager or his/her delegate that a written record of all quantities and natures of all wastes reused / recycled and exported off-site and Article 27 declarations during the project are maintained in a Waste File at the Project office.

The following information shall be recorded for each load of waste exported off-site:

- Waste Type EWC Code and description
- Volume of waste collected
- Waste collection contractor's Waste Collection Permit Number and collection receipt including vehicle registration number
- Destination of waste load including Waste Permit / Licence number of facility
- Description of how waste at facility shall be treated, disposal / recovery / export
- The waste records shall be issued to FCC as required / requested.

8.9.3 Operational Phase Waste Mitigation

An Operational Waste Management Plan (OWMP) has been prepared by Byrne Environmental as a stand-alone report to accompany this application and has been prepared to demonstrate how the required infrastructure will be incorporated into the design and operational management of the development to ensure that domestic wastes will be managed and monitored with the objective of maximizing the quantity of waste segregated at source and maximizing the volume of clean recyclable materials generated by the residents of the development.

The Goal of the OWMP is to achieve a compliance with The Eastern-Midlands Region Waste Management Plan 2015-2021 which defines the following Waste Targets:

- 1% reduction per annum in the quantity of household waste generated per capita over the period of the plan.
- Achieve a recycling rate of 50% of managed municipal waste by 2020.
- Reduce to 0% the direct disposal of unprocessed residual municipal waste to landfill.

Key Aspects of the OWMP to achieve Waste Targets:

- All residential units shall be provided with information on the segregation of waste at source and how to reduce the generation of waste by the Facilities Management Company.
- All waste handling and storage activities shall occur in the dedicated communal apartment waste storage areas located in the basement.
- The development's Facility Management Company shall appoint a dedicated Waste Services Manager to ensure that waste is correctly and efficiently managed throughout the development.

The OWMP is defined by the following stages of waste management for both the residential and commercial aspects of the development:

- Stage 1 Occupier Source Segregation
- Stage 2 Occupier Deposit and Storage
- Stage 3 Bulk Storage and On-Site Management
- Stage 4 On-site treatment and Off-Site Removal
- Stage 5 End Destination of wastes

The OWMP has been prepared with regard to British Standard BS 5906:2005 Waste Management in Buildings-Code of Practice which provides guidance on methods of storage, collection, segregation for recycling and recovery for residential building.

The apartments will include a 3-bin waste segregation at source system together with the communal waste storage areas have been designed with regard to Section's 4.8 and 4.9 Refuse Storage of The Department of Housing, Planning and Local Government – Sustainable Urban Housing : Design Standards for New Apartments – Guidelines for Planning Authorities. 2018.

The proposed development shall be designed and managed to provide residents with the required waste management infrastructure to minimise the generation of un-segregated domestic waste and maximise the potential for segregating and recycling domestic waste fractions.

The Objective of the OWMP is to maximise the quantity of waste recycled by residents by providing sufficient waste recycling infrastructure, waste reduction initiatives and waste collection and waste management information services to the residents of the development.

The Goal of the OWMP is to achieve a residential recycling rate of 50% of managed municipal waste by 2020 (and future targets in subsequent Eastern-Midlands Regional Waste Management Plans).

All apartments will have sufficient space for a 3-bin system (non-recyclable, organic and recyclable) in each kitchen to encourage residents to segregate waste at source.

Apartment residents will be provided with waste recycling and waste disposal information by the development's Facility Management Company who will be responsible for providing clean, safe and mobility impaired accessible communal waste storage areas for the apartment blocks.

The Facility Management Company shall maintain a register of all waste volumes and types collected from the development each year including a break-down of recyclable waste and where necessary, shall introduce initiatives to further encourage residents to maximise waste segregation at source and recycling. They shall also provide an annual bulky waste and WEEE collection service for all residents.

8.10 Residual Impact Assessment

8.10.1 Construction Phase

The management of wastes generated during the construction of the proposed development will be in accordance with a Site-Specific Construction Phase Waste Management Plan. With regard to how it has been demonstrated how construction wastes will be managed through design, management and waste reduction and recycling initiatives at the proposed development, it is predicted that the impact of the construction phase of the development will not have an adverse impact on the receiving environment, existing material assets and local and regional waste management services.

The predicted construction phase residual impacts on regional waste management infrastructure will be neutral, not-significant and short-term.

8.10.2 Operational Phase

The development shall be designed to provide adequate domestic waste infrastructure and storage areas for all apartments. This will promote the appropriate segregation at source of domestic generated waste from all residential units at the development and thus reduce the potential for the generation of mixed un-recyclable domestic waste streams.

The predicted operational phase residual impacts on regional waste management infrastructure will be neutral, not-significant and long-term.

8.10.3 Cumulative

The cumulative impact on regional waste management infrastructure of the proposed development together with permitted development locally, most notably the Claremont SHD on the former Techrete site development and existing residential development in the local area is assessed with regard to available waste management capacity.

The residual cumulative impacts on regional waste management infrastructure associated with the construction phase of the proposed development and the former Techrete site development will be neutral, not-significant and short-term.

The residual cumulative impacts on regional waste management infrastructure associated with the operational phase of the proposed the proposed development and the former Techrete site development will be neutral, not-significant and long-term.

8.10.4 Summary

The Table below summarises the identified likely significant effects of the proposed development during the construction phase post application of mitigation measures.

Likely Significant Effect	Quality	Significance	Extent	Probability	Duration	Type
Regional Construction Waste Infrastructure	Negative	Not Significant	Regional	Likely	Short-Term	Residual

Table 8.7 Summary of Construction Phase Likely Significant Effects with Mitigation

The Table below summarises the identified likely significant effects of the proposed development during the operational phase post application of mitigation measures.

Likely Significant Effect	Quality	Significance	Extent	Probability	Duration	Type
Regional Domestic Waste Infrastructure	Negative	Not Significant	Regional	Likely	Long-Term	Residual

Table 8.8 Summary of Operational Phase Likely Significant Effects with Mitigation

8.11 Interactions

Chapter 16 of this EIAR is dedicated to Interactions. The identified interactions between the management of waste arisings during both the construction and operational stages are as follows;

- Population & Human Health, management of waste in the construction and operational phase to mitigate nuisance.
- Land & Soils, excavation to facilitate the development.
- Traffic, specifically movement of waste associated with the construction stage.

Consideration of the interaction is dealt with in the individual chapters that deal with these subjects in the EIAR.

8.12 Monitoring

8.12.1 Construction Phase Waste Monitoring

The Construction Manager will maintain a written record of all quantities and types of construction wastes generated, reused / recycled and exported off-site during the construction phase.

The following information shall be recorded for each load of waste exported off-site:

- Waste Type EWC Code and description.
- Volume of waste collected.
- Waste collection contractor's Waste Collection Permit Number and collection receipt including vehicle registration number.
- Destination of waste load including Waste Permit / Licence number of facility.
- Description of how waste at facility shall be treated i.e. disposal / recovery / export

Waste Management Auditing

In order to ensure that construction wastes generated during the course of the development are being effectively managed and recorded, a waste management audit shall be conducted on a routine basis to determine compliance with the Construction Waste Management Plan.

8.12.2 Operational Phase Waste Monitoring

The Facility Management Company shall prepare an annual report for the Local Authority and residents of the development on the quantities of waste generated within the development to

demonstrate how waste reduction and recycling targets are being achieved with regard to the targets defined in The Eastern-Midlands Region Waste Management Plan 2015-2021.

8.13 Summary of Mitigation & Monitoring

The Table below summarises the proposed construction phase mitigation and monitoring measures.

Likely Significant Effect	Mitigation	Monitoring
Additional construction Waste generation	Implementation of Site-Specific Construction & Demolition Waste Management Plan	Recording of all waste generated and exported off-site Waste auditing

Table 8.9 Summary of Construction Phase Mitigation and Monitoring

The Table below summarises the proposed operational phase mitigation and monitoring measures.

Likely Significant Effect	Mitigation	Monitoring
Additional domestic waste generation	Implementation of Site-Specific Operational Waste Management Plan	Recording of all waste generated.

Table 8.10 Summary of Operational Phase Mitigation and Monitoring

8.14 References and Sources

- Waste Management Act 1996;
- Waste Management (Collection Permit) Regulations 2007 (SI No. 820 of 2007);
- Waste Management (Collection Permit) Amendment Regulations 2008 (SI No. 87 of 2008);
- Eastern-Midlands Region Waste Management Plan 2015-2021;
- European Communities (Waste Directive) Regulations 2011;
- Fingal Development Plan 2017 – 2023;
- Department of the Environment, Heritage and Local Government – Best Practice Guidelines on the Preparation of Waste Management Plans for Construction and Demolition Projects – July 2006;
- Sustainable Urban Housing : Design Standards for New Apartments – Guidelines for Planning Authorities(2018 Department of Housing, Planning and Local Government, Sections 4.8 and 4.9 Refuse Storage;
- British Standard BS 5906:2005 Waste Management in Buildings-Code of Practice which provides guidance on methods of storage, collection, segregation for recycling and recovery for residential building.

CHAPTER 9
LAND, SOILS, GEOLOGY & HYDROGEOLOGY

MAY 2021

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9 Land, Soils, Geology and Hydrogeology

9.1 Introduction

AWN Consulting Ltd (AWN) has prepared this chapter of the Environmental Impact Assessment Report (EIAR) which assesses and evaluates the potential impacts of the development on the land, soil, geological and hydrogeological aspects of the proposed development site and surrounding area during the construction and operational phases. In assessing likely potential and predicted effects, account is taken of both the importance of the attributes and the predicted scale and duration of the likely effects.

This report was prepared by Marcelo Allende (BEng), and Teri Hayes (BSc MSc PGeol EurGeol). Marcelo is a Water Resources Engineer with over 15 years of experience in environmental consultancy and water resources studies. Marcelo is an Environmental Consultant with AWN Consulting and a member of the International Association of Hydrogeologists (Irish Group). Teri is a hydrogeologist with over 25 years of experience in water resource management and impact assessment. She has a Masters in Hydrogeology and is a former President of the Irish Group of the Association of Hydrogeologists (IAH) and has provided advisory services on water related environmental and planning issues to both public and private sector bodies. She is qualified as a competent person as recognised by the EPA in relation to contaminated land assessment (IGI Register of competent persons www.igi.ie). Her specialist area of expertise is water resource management eco-hydrogeology, hydrological assessment and environmental impact assessment.

9.2 Proposed Development

The full description of the proposed development is outlined in **Chapter 2 – Development Description**, of this Environmental Impact Assessment Report.

The design rationale is to create and deliver a high quality, sustainable, strategic housing development which respects its setting and maximises the site's natural attributes while achieving maximum efficiency of existing infrastructure. The Proposed Site Layout is illustrated on **Drawing No. 1101** contained within the architectural suite of drawings.

The development will consist of;

i. 162 no. residential units distributed across 3 no. blocks (A, B & C) ranging in height from 5-6 storeys, with a cumulative gross floor area (GFA) of 13,337.10 sq.m comprising;
    a. 29 no. 1-bedroom units, - 17.9%
    b. 104 no. 2-bedroom units and – 64.2%
    c. 29 no. 3-bedroom units – 17.9%

ii. 3 no. resident services and amenity rooms (1 no. in each block A-C) to accommodate co-working space, a community room and a meeting room (combined GFA 108 sq.m)
iii. 132 no. car parking spaces at basement level (underlying Blocks A & B) including 6 no. accessible spaces, 13 no. electric vehicle spaces and 4 no. car sharing spaces;
iv. 325 no. residents bicycle parking spaces (long-stay) at basement level, and 30 no. visitor bicycle parking spaces (short-stay) at surface level;
v. communal amenity space in the form of courtyards and roof gardens (combined 2,192 sq.m)
vi. public open space of 1,161 sq.m including a botanic garden and pocket park;
vii. a single storey ESB sub-station and switch room (45.5 sq.m);
viii. demolition of 2 no. sections of the existing demesne northern boundary wall to provide, a primary access (vehicular/pedestrian/cyclist) to the northwest and a separate pedestrian/cyclist access at the centre;
ix. restoration and refurbishment of the remaining extant northern and eastern demesne boundary wall;
x. change of use and regrading of part of the Deer Park Golf Course from active recreation use to passive amenity parkland and planting of a woodland belt on the southern boundary;
xi. undergrounding of existing ESB overhead lines, and, relocation of the existing gas main; and,
xii. all ancillary site development works including waste storage and plant rooms at basement level, drainage, landscaping/boundary treatment and lighting.

9.2.1 Aspects Relevant to Assessment

The full description of the proposed development is outlined in Chapter 2 – Project Description, of this Environmental Impact Assessment Report.

The proposed development site is bounded to the south by the Deer Park Golf Course, to the east by a road that leads to Howth Castle, to the north by the Howth Road, R105, and to the west by private dwellings.

The proposed development site currently comprises a greenfield site and part of the Deer Park golf course to the south. In brief, the proposed development will comprise residential units set out in 3 no. apartment blocks, with blocks A and B over a basement for parking. Blocks A, B and C will have a height up to a maximum of six storeys, 19.57m, of apartments over a basement, excavated from 4.5m to max 7m in depth, for car parking. The development will consist of a total of 162 no. residential units, which includes 29 no. one bed, 104 no. two bed and 29 no. three bed apartments. The units will be served by balconies or terraces on the west and east elevations.

The proposed development will include a basement level car park which will be provided beneath blocks A-B. The excavation level for the projected basement and foundations will be at an average level of +3.500 mAOD (i.e., construction depth c. 4-6 mbgl).

The proposed development will require the removal of part the hedgerow to the south and the reprofiling of lands identified as Howth Special Amenity Area Order buffer to the south to facilitate the proposed development. It is proposed to make two openings in the existing boundary wall to the north of the proposed site, one to the north- west and one to the north-east.

The design of the surface water drainage network has taken cognisance of the objectives and guidance contained in the Greater Dublin Strategic Drainage Study (GDSDS). A series of SuDS elements are incorporated in the design, which will comprise treatment via the use of a green roofs, permeable paving, rain gardens, bioretention tree-pits, attenuation tank and petrol interceptors. The new development will be connected to an existing 450mm diameter surface water sewer that discharges north towards the Baldoyle Bay c. 170m to the subject site.

The proposed development will be served by a gravity foul network and it is proposed to provide 1no. connection from the site drainage system into the existing public 400mm diameter wastewater network.

A new 225mm diameter foul sewer will connect into the existing foul manhole to the north of the site. This connection will serve as the developments foul connection to the I.W wastewater network which eventually discharge to the Ringsend Waste Water Treatment Plant (WWTP), where it is treated and ultimately discharges into Dublin Bay. The WWTP operates under the EPA licence D0034-01.

9.3 Methodology

This chapter evaluates the effects, if any, which the development has had or will have on Land, Soils, Geology and Hydrogeology as defined in the Environmental Protection Agency (EPA) 'Draft Guidelines on the Information to be contained in Environmental Impact Assessment Reports' (EPA, 2017) and specifically its Table 3.3 (refer to Chapter 1 of this EIAR for further details). The Draft EPA document entitled 'Advice Notes for Preparing Environmental Impact Statements' (EPA, 2015) is also followed in this geological and hydrogeological assessment and classification of environmental effects.

Due consideration is also given to the guidelines provided by the Institute of Geologists of Ireland (IGI) in the document entitled Guidelines for the Preparation of Soils, Geology and Hydrogeology Chapters of Environmental Impact Statements' (IGI 2013). In addition, the document entitled 'Guidelines on Procedures for Assessment and Treatment of Geology, Hydrology and Hydrogeology for National Road Schemes' by the National Roads Authority (NRA/TII, 2009) is referenced where the methodology for assessment of impact is appropriate.

The rating of potential environmental effects on the land, soil, geological and hydrogeological environment is based on the matrix presented in Table 1 in **Appendix 9.1** (Volume III) which takes account of the quality, significance, duration and type of effect characteristic identified (in accordance with impact assessment criteria provided in the Draft EPA Guidelines (2017) publication).

The duration of each effect is considered to be either momentary, brief, temporary, short-term, medium term, long-term, or permanent. Momentary effects are considered to be those that last from seconds to minutes. Brief effects are those that last less than a day. Temporary effects are considered to be those which are construction related and last less than one year. Short term effects are seen as effects lasting one to seven years; medium-term effects lasting seven to fifteen years; long-term effects lasting fifteen to sixty years; and permanent effects lasting over sixty years.

The NRA/TII criteria for rating the magnitude and significance of impacts on the geological related attributes and the importance of hydrogeological attributes at the site during the EIA stage are also relevant in assessing the impact and are presented in Tables 1-5 in Appendix 9.2.

The principal attributes (and effects) to be assessed include the following:

- Geological heritage sites in the vicinity of the perimeter of the subject site;
- Landfills, industrial sites in the vicinity of the site and the potential risk of encountering contaminated ground;
- The quality, drainage characteristics and range of agricultural uses of soil around the site;
- Quarries or mines in the vicinity, the potential implications (if any) for existing activities and extractable reserves;
- The extent of topsoil and subsoil cover and the potential use of this material on site as well or requirement to remove it off-site as waste for disposal or recovery;
- High-yielding water supply springs/ wells in the vicinity of the site to within a 2km radius and the potential for increased risk presented by the proposed development;
- Classification (regionally important, locally important etc.) and extent of aquifers underlying the site perimeter area and increased risks presented to them by the proposed development associated with aspects such as for example removal of subsoil cover, removal of aquifer (in whole or part), drawdown in water levels, alteration in established flow regimes, change in groundwater quality;
- Natural hydrogeological/karst features in the area and potential for increased risk presented by the activities at the site; and
- Groundwater-fed ecosystems and the increased risk presented by operations both spatially and temporally.

Desk-based geological information on the substrata (both Quaternary deposits and bedrock geology) underlying the extent of the site was obtained through accessing databases and other archives where available. Data was sourced from the following:

- Geological Survey of Ireland (GSI) - on-line mapping, Geo-hazard Database, Geological Heritage Sites & Sites of Special Scientific Interest, Bedrock Memoirs and 1: 100,000 mapping;
- Teagasc soil and subsoil database;
- Ordnance Survey Ireland - aerial photographs and historical mapping;
- Environmental Protection Agency (EPA) – website mapping and database information; and
- National Parks and Wildlife Services (NPWS) – Protected Site Register

Site specific data was derived from the following sources:

- Infrastructure Report. Residential Development at Howth Road, Howth. BMCE Consulting Engineers. 2021;
- Flood Risk Assessment Report. Residential Development at Howth Road, Howth. BMCE Consulting Engineers. 2021;
- Site Investigation Report, Howth Road, Howth Co. Dublin. Site Investigation Ltd. November 2019;
- Construction and Environmental Management Plan, Howth Road. BMCE Consulting Engineers. March 2021;
- Various design site plans and drawings; and
- Consultation with site engineers.

9.4 Difficulties Encountered

No difficulties were encountered during the preparation of this chapter.

9.5 Consultation

Consultation with Fingal County Council (James Wall – FCC Water Pollution & Waste Management) on 13rd April 2021 confirmed that there are no known illegal/historic landfills within 500 metres of the site.

9.6 Existing Environment

9.6.1 Site Area Description and Land Use

The subject site is located in lands at Deer Park, Howth Road, Howth Co. Dublin and is 1.74 Hectares and currently greenfield. Howth is located to the East of Dublin city and forms a peninsula into the Irish Sea.

The site is bounded to the west by residential dwellings. Howth Castle and St. Marys Church to the south and east have a separate access road from Howth Road (R105). The proposed vehicular entrance to the site is located to the north west of the site adjacent to Howth Road, this entrance location provides the required sightlines for vehicles exiting the site. It is intended to use this entrance during the construction phase. The south is bounded by the Deer Park Golf Club. The land surrounding the site is a mixture of residential, commercial and recreative use.

Adjacent to the Howth Road to the north, the site is at a level of approximately +6.500m and gradually rises to a level of +14.000m towards the Deer Park golf course. The site, therefore, slopes towards the Irish Sea (Baldoyle Bay).

There is no existing surface water infrastructure within the greenfield site. On Howth Road, to the north west of the site, there is an existing 450mm diameter surface water sewer that discharges north towards the coast. In addition, there is no existing foul sewer infrastructure within the site boundary. There is an existing 400mm diameter concrete foul sewer and manhole to the north of the site adjacent to Howth Road.

The Baldoyle Bay is located c.170 to the north of the subject site. This bay is a protected Natura European Site (Special Area of Conservation [SAC, site code IE0000199] and a proposed Natural Heritage Area (pNHA, site code 000199). (refer to **Figure 9.1** below).

There are a number of local streams in the vicinity of the site that form part of the Bloody Stream catchment (refer to Chapter 10). The Bloody Stream flows towards the bay c. 180 m east of the site (i.e., to the east side of St. Mary's Church). There is also a local stream which drains the lands of Howth Castle and flows to the bay c. 50 east of the subject site.

Figure 9.1 Site Location and Environmental Context

9.6.2 Soils

The EPA soil map of Ireland shows that at the location and surrounding area, the soil types found are predominantly BminPD (basic deep poorly drained mineral) and BMinDW (basic deep well drained mineral) which is to be expected considering the greenfield location of the site. There is also Made (Made Ground) in the vicinity of the subject site associated with the Howth road and the urban area. See **Figure 9.2** below.

Figure 9.2 Soils Map (Source: EPA, 2021)

9.6.3 Quaternary Deposits

The Quaternary Period is the final stage of the geological time scale. This period includes the start of the Ice Age (approximately 1.6 million years ago), known as the Pleistocene Epoch right through to the postglacial period, known as the Holocene Epoch, which began 10,000 years ago and extends from the Pleistocene to the present day.

The Pleistocene Epoch in Ireland began when there was a significant cooling of the Earth's climate, and was characterised by alternating extended periods of very cold conditions, during which time much of the country was covered by an ice sheet. These colder periods were interspaced with warmer periods, known as interglacial, which lasted for approximately 10,000 years at a time.

A subsoil map, produced by the GSI, indicates that the majority of the site and surrounding area is underlain by Till (TLs) and Gravels (GLs) derived from limestones. **Figure 9.3** below shows the subsoils underlying the site.

Figure 9.3 Subsoils Map (Source: EPA, 2021)

Site investigation carried out in 2019 (refer to Section 9.6.5 below) show that the subsoil underlying the subject site is mainly sandy gravelly Clay (i.e., no gravels were detected).

9.6.4 Bedrock Geology

Inspection of available GSI data shows that the bedrock geology underlying the site and surrounding area is dominated by limestones of Carboniferous Age. The site and local area is underlain by Massive, unbedded lime mudstones of the Waulsortian Formation (refer to **Figure 9.4** below).

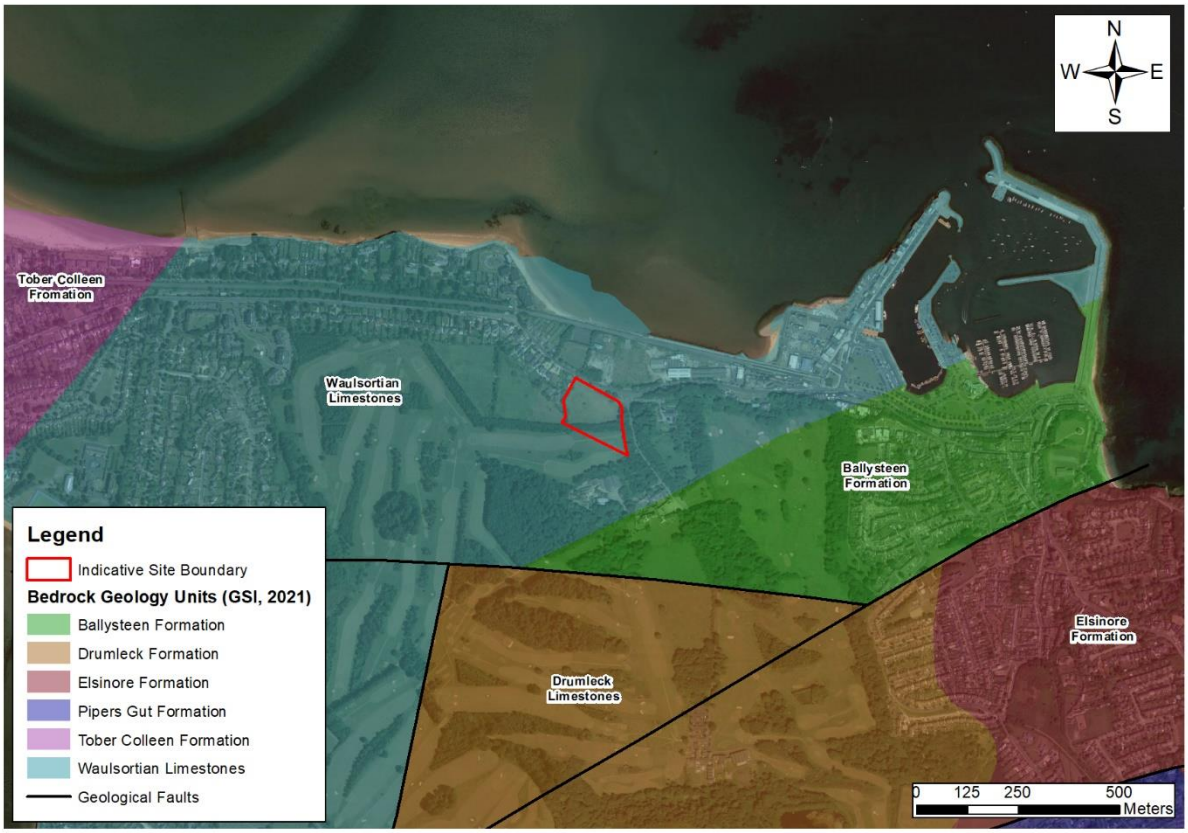

Figure 9.4 Bedrock Geology Map (Source: EPA, 2021)

9.6.5 Site Investigations

During October and November 2019 ground investigations at the subject site were carried out by Site Investigations Ltd (SIL). These investigations consist of 7 no. cable percussive boreholes and 7 no. soakaway tests.

Cable percussion boring was undertaken at 7 No. locations using a Dando 150 rig and constructed 200mm diameter boreholes. The borehole depths were consistent in depth from 6.6mbgl (BH06, see **Figure 9.5** below) to 7.3mbgl (BH03) where bedrock was apparently encountered. The site ground conditions in the boreholes are consistent with cohesive soils dominating the site with sandy gravelly silty Clay encountered at most locations. Perched water was recorded in all of the boreholes ranging from 4.20mbgl to 4.70mbgl.

All soakaway tests across the site showed that infiltration stormwater drainage would not be physically feasible due to the low permeability of overburden.

Figure 9.5 Site Investigations Boreholes (Source: SIL, 2019)

In addition, a waste classification report and subsoil assessment was carried out by Ground Investigations Ireland (GII) in January 2020. This work comprised the following scope: excavation of 12 no. trial pits throughout the subject site, collection of subsoil samples at different depths, environmental laboratory testing and waste classification. The analysis included the RILTA suite, leachate analysis for metals and physic-chemicals parameters and asbestos.

Location of trial pits is presented in **Figure 9.6** below. Trial pits were excavated to depths of up to 3.0 mbgl. 30 no. samples were taken and analysed as mentioned above.

The SII reports are provided separately as part of the overall submission.

Figure 9.6 Trial Pit Locations (Source: GII, 2021)

9.6.6 Soil Quality Monitoring

According to the analysis undertaken on the soil samples aforementioned, all soil samples were classified as Non-hazardous and all samples were verified to be representative of a soil free from anthropogenic contamination (i.e., no PAHs, TPH, asbestos, etc. were detected). Refer to GII (2020) report for further details.

9.6.7 Aquifer Classification and Groundwater Status

Groundwater can be defined as water that is stored in, or moves through, pores and cracks in sub-soils. Aquifers are rocks or granular deposits that contain sufficient void spaces, and which are permeable enough, to allow water to flow through them in significant quantities. The potential of rock or deposits to store and transport water is governed by permeability of which there are two types, intergranular and fissure permeability.

The GSI classifies the principal bedrock aquifer types as:

- Lk - Locally Important Aquifer – Karstified.
- Ll - Locally Important Aquifer - Bedrock which is Moderately Productive only in Local Zones.

- Lm - Locally Important Aquifer - Bedrock which is Generally Moderately Productive.
- Pl - Poor Aquifer - Bedrock which is Generally Unproductive except for Local Zones.
- Pu - Poor Aquifer - Bedrock which is Generally Unproductive.
- Rkd - Regionally Important Aquifer (karstified diffuse).

Reference to the GSI National Draft Bedrock Aquifer Map for the site (refer to **Figure 9.7** below) indicates that the planning site is underlain by a Locally Important Aquifer (Ll), which is described by the GSI as bedrock as 'moderately productive only in local zones' and is related to the Waulsortian Formation above described.

Figure 9.7 Bedrock Aquifer Classification Map (Source: GSI, 2021)

The Water Framework Directive (WFD) Directive 2000/60/EC, was adopted in 2000 as a single piece of legislation covering rivers, lakes, groundwater and transitional (estuarine) and coastal waters. In addition to protecting said waters, its objectives include the attainment of 'Good Status' in water bodies that are of lesser status at present and retaining 'Good Status' or better where such status exists at present.

The WFD requires 'Good Water Status' for all European waters to be achieved through a system of river basin management planning and extensive monitoring. 'Good status' means both 'good ecological status' and 'good chemical status'.

The proposed development is located over the 'Dublin' (EU Code IE_EA_G_008) WFD groundwater body (GWB). The most recent WFD groundwater status (2013-2018) is 'Good' for this GWBs and the WFD environmental risk score is under review.

9.6.8 Aquifer Vulnerability

Aquifer vulnerability is a term used to represent the intrinsic geological and hydrological characteristics that determine the ease with which groundwater may be contaminated generally by human activities. Due to the nature of the flow of groundwater through bedrock in Ireland, which is almost completely through fissures, the main feature that protects groundwater from contamination, and therefore the most important feature in protection of groundwater, is the subsoil (which can consist solely or of mixtures of peat, sand, gravel, glacial till, clays or silts).

The GSI, EPA, and the Department of Environment, Heritage and Local Government (DoEHLG) have developed a programme of Groundwater Protection Schemes, with the aim of maintaining the quantity and quality of groundwater in Ireland, and in some cases improving groundwater quality, by applying a risk assessment approach to groundwater protection and sustainable development.

As part of this scheme, the GSI have mapped the vulnerability of the country's aquifers. Reference to the GSI Vulnerability data indicates that the Proposed Development site is classified as having a 'High' aquifer vulnerability which indicates that the soil cover is 3-5m of low permeability soil at the site, given by the Tills deposits underlying the site (Refer to **Figure 9.8** and **Table 9.1** below).

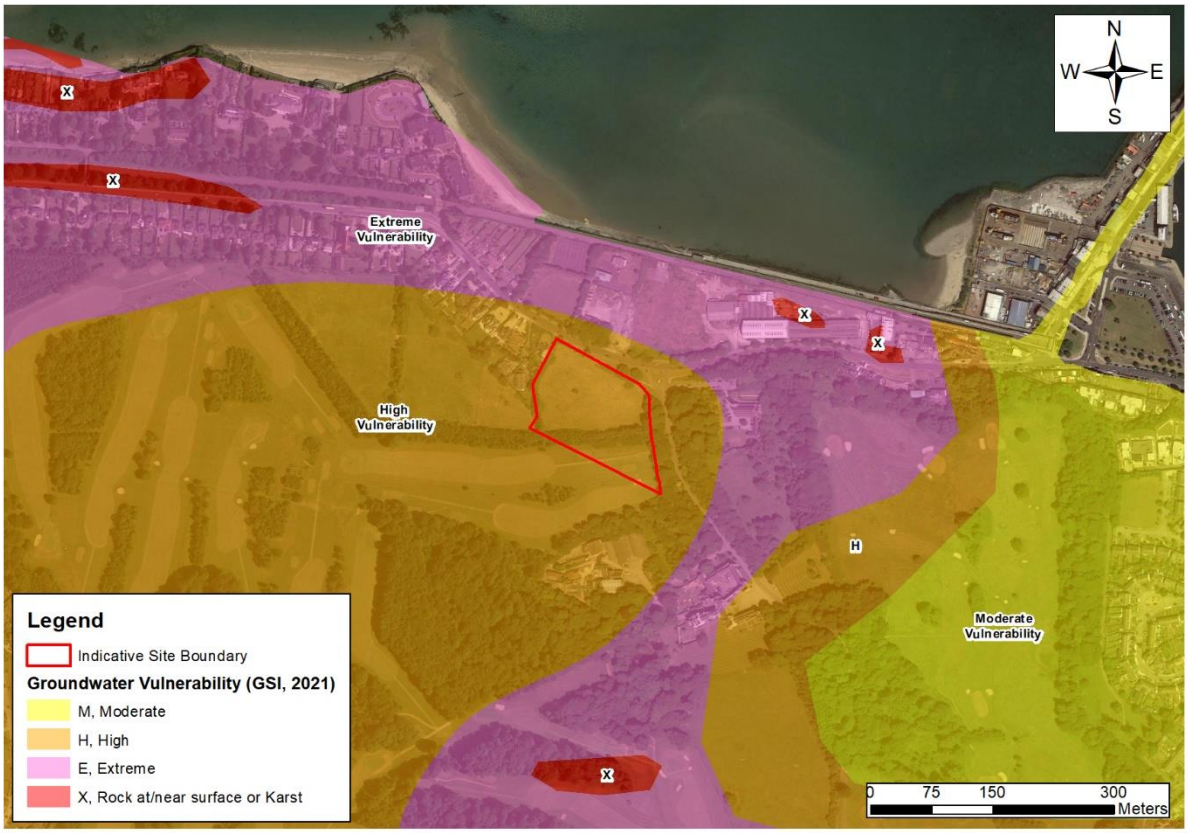

Figure 9.8 Groundwater Vulnerability Map (Source: GSI, 2021)

Vulnerability Rating	Hydrogeological Condition				
	Subsoil Permeability (type) and Thickness			Unsaturated Zone	Karst Features
	High Permeability (sand/gravel)	Moderate Permeability (e.g. sandy subsoil)	Low Permeability (e.g. clayey subsoil, clay, peat)	(Sand/ gravel aquifers only)	(<30 m radius)
Extreme (E)	0 - 3 m	0 - 3 m	0 - 3 m	0 - 3 m	-
High (H)	> 3 m	3 - 10 m	3 - 5 m	> 3 m	n/a
Moderate (M)	n/a	> 10 m	5 - 10 m	n/a	n/a
Low (L)	n/a	n/a	> 10 m	n/a	n/a
Notes: (1) n/a: Not applicable					
(2) Precise permeability values cannot be given at present					
(3) Release point of contaminants is assumed to be 1-2 below ground surface					

Table 9.1 Vulnerability Mapping Guidelines (Source: GSI, 2021)

Site investigations carried out in 2019 (refer to section 9.6.5 above) show that the bedrock was encountered at depths of 6.6-7.3 mbgl. Therefore, the actual vulnerability at the subject site would be 'Moderate' according to **Table 9.1** above.

9.6.9 Groundwater Wells

There is no licensing system for wells in Ireland at present and as such no complete data set. The GSI Well Card Index is a record of wells drilled in Ireland, kept by the Geological Survey of Ireland. It is noted that this record is not comprehensive as licensing of wells is not currently a requirement in Ireland and therefore it requires individual drillers to submit details of wells in each area. This current index indicates there are no groundwater wells, boreholes or dug wells within the subject site boundary within a 2 Km radius if the site area (i.e., throughout the Howth peninsula). However, 2 no. springs can be observed in the south of the peninsula (c. 1.6 and 2.3 km from the subject site), named St. Fintans and Balsaggart wells (see **Figure 9.9** below for locations). There would not be hydraulic connection between the subject site and these springs.

Figure 9.9 GSI Well Search Map (Source: GSI, 2021)

The site is not located near any public groundwater supplies or group schemes. There are no groundwater drinking water protection areas within 20km of the site.

9.6.10 Geological Heritage

The Geological Survey of Ireland (GSI) Public Viewer www.gsi.ie/mapping was reviewed to identify sites of geological heritage for the site and surrounding area. There is a recorded geological heritage site (county geological site) in the vicinity of the development site located

approximately 300 m to the north: Claremont Strand (IGH8), which is a coastal and foreshore section and is described as a 'Coastal exposures of fossiliferous Lower Carboniferous limestone' by the GSI (see **Figure 9.10** below). There will be no direct or indirect impact on these exposures.

Figure 9.10 Geological Heritage Map (Source: GSI, 2021)

9.6.11 Economic Geology

The Extractive Industry Register (www.epa.ie) and the GSI mineral database was consulted to determine whether there were any mineral sites close to the proposed development. There are no active quarries located in the immediate vicinity. A mineral locality can be observed on the GSI maps at Howth Harbour (c. 800 to the east of the site) which in turn is referred to the OSi historical 6 inch maps (1837-1842); therefore, it is believed that this location is currently inactive.

9.6.12 Geo-Hazards

There are no expected geohazards at this location. In general, Ireland suffers few landslides. Landslides are more common in unconsolidated material than in bedrock, and where the sea constantly erodes the material at the base of a cliff landslides and falls lead to recession of the cliffs. Landslides have also occurred in Ireland in recent years in upland peat areas due to disturbance of peat associated with construction activities. The GSI landslide database was

consulted and the nearest landslide to the proposed development was 14km to the south, referred to as the Killiney event which occurred on 12 August 2000 in South Dublin. There have been no recorded landslide events at the site. Due to the local topography and the underlying strata there is a negligible risk of a landslide event occurring at the site.

In Ireland, seismic activity is recorded by the Irish National Seismic Network. The Geophysics Section of the School of Cosmic Physics at the Dublin Institute for Advanced Studies (DIAS) has been recording seismic events in Ireland since 1978. The station configuration has varied over the years. However, currently there are five permanent broadband seismic recording stations in Ireland and operated by DIAS. The seismic data from the stations comes into DIAS in real-time and are studied for local and regional events. Records since 1980 show that the nearest seismic activity to the proposed location was in the Irish sea (1.0 – 2.0 Ml magnitude) and ~55 km to the south in the Wicklow Mountains. There is a very low risk of seismic activity to the proposed development site.

9.6.13 Areas of Conservation

The lands in which the proposed development is located have no formal designations. However, as mentioned above, the Baldoyle Bay SAC/pNHA is located c.170m to the north of the subject site.

There is no direct hydrological connection from the subject site to the bay due to the absence of a surface water feature. However, an indirect connection will exist as the proposed surface water drainage will be connected to the existing public network which ultimately discharges into the Baldoyle Bay.

There would also be an indirect hydrogeological connection with the site, as local groundwater would eventually outfall into the Baldoyle Bay. However, as the site is underlain by very low permeability subsoil, this hydraulic connectivity can be considered as negligible.

In addition, the proposed development would have an indirect connection with the South Dublin Bay SAC/SPA/pNHA (located c. 7 km to the southwest of the site) through the proposed foul water drainage, which eventually discharge to the Ringsend Waste Water Treatment Plant (WWTP), where it is treated and ultimately discharges into Dublin Bay.

9.6.14 Conceptual Model

According to the site investigations, cohesive deposits composed of sandy gravelly Clay were encountered across the site at all locations beneath the Topsoil/Surfacing and were present to a depth of between 6.5 and 7.1 mbgl in the subject site. No evidence of contamination was encountered in the subsoil underlying the site.

Perched water was recorded in all of the boreholes ranging from 4.20 mbgl to 4.70mbgl. As this is a Clay it is likely to be a discontinuous water table but overall groundwater flow direction will be towards Baldoyle Bay, following the surface topography.

A cross section of the site geology can be seen in **Figure 9.11** below.

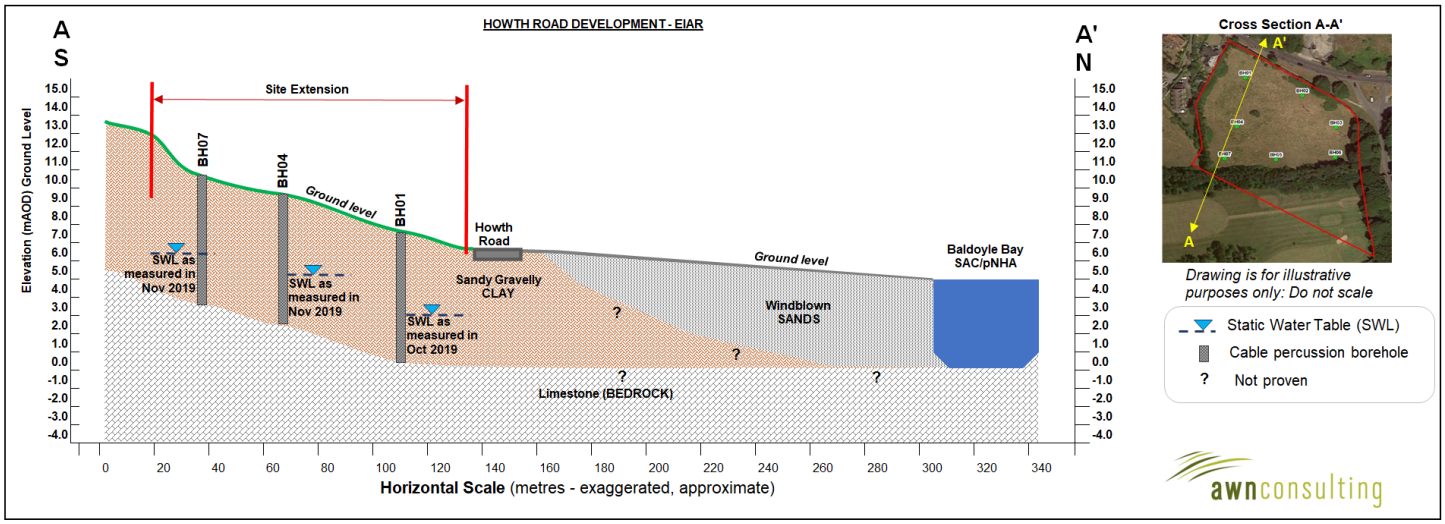

Figure 9.11 Local Cross Section A-A'

9.6.15 Rating of Site Importance of the Geological and Hydrogeological Features

Based on the TII methodology (2009) (See Appendix 9.2), the criteria for rating the importance of geological features, the importance of the geological features at this site is rated as ***Moderate Importance***. This is based on the presence of a county geological site in the vicinity of the subject site (Claremont Strand) but considering that the site is underlain by very low permeability subsoil and therefore there would be poor hydraulic connectivity with Claremont Strand.

Based on the TII methodology (2009) (See Appendix 9.2), the criteria for rating the importance of hydrogeological features, the importance of the hydrogeological features at this site is rated as ***Moderate Importance***. This is based on the close distance between the local aquifer and the Baldoyle Bay SAC/pNHA EU Natura site which is located c. 170m to the north of the site. However, as the site is underlain by very low permeability subsoil, there would be poor hydraulic connectivity between the site and the Baldoyle Bay.

The aquifer is a Locally Important Aquifer but is not widely used for public water supply or generally for potable use.

9.7 Do Nothing Scenario

In the event that the site is not developed it would remain in its current condition, a greenfield site. This scenario would not have any likely significant impact on land use or the soils and geology beneath the site.

However, the site is zoned for development and it is likely that in the absence of this subject proposal that a development of a similar nature would be progressed on the site that accords

with National policy for compact growth within the existing built environment. It is likely that another development would also require excavation to facilitate development and the impact would thus be similar to this subject development.

9.8 Likely Significant Effects

9.8.1 Construction Phase

9.8.1.1 Excavation

Excavation within the proposed site will be required as part of the basement construction. Excavated material will be reused on site for infilling and landscaping works where possible, as there would not be contaminated soil underlying the subject site. A considerable excavation volume for regrading of the topography is expected to the south of the development site.

Following the completion of site clearance and levelling, all structures will require foundations to structural engineer specifications. It is anticipated that foundations will require moderate scale excavations, since the excavation level for the projected basement and foundations will is expected to be at an average level of 3.5 mAOD. Based on site conditions, no rock breaking will be necessary. It is expected during the excavation works that localised dewatering of the subsoils will be required to address perched groundwater.

It can be expected minor ingress of rainfall in the excavation during construction phase.

9.8.1.2 Accidental Spills and Leaks

During construction of the development, there is a risk of accidental pollution incidences from the following sources if not adequately mitigated:

- Spillage or leakage of oils and fuels stored on site.
- Spillage or leakage of oils and fuels from construction machinery or site vehicles.
- The use of concrete and cement during pad foundation construction.

9.8.2 Operational Phase

The change of land use from greenfield to residential is the main effect on the land environment. Potential for negative impacts on subsoils, geology and hydrogeology during operation are low. The storage volume of any liquid hazards is low and there will be no direct discharges to the water or soil environment during the operational phase.

Leakage of petrol/ diesel fuel may occur from car park/road areas. However, given the petrol/ oil interceptor system considered in the design (SuDS elements), this effect is considered unlikely.

The implementation of the SuDS elements and the increasing of hard standing areas in 6,972 m^2 decrease the potential vulnerability of the subsoils and groundwater regime. Therefore, these design measures are considered a positive effect on this component.

9.8.3 Cumulative

The surrounding lands are largely zoned as 'HA – High Amenity', 'RS – Residential', 'OS – Open Space' and 'TC - Town and District Centre' under the Fingal Development Plan 2017-2023 (Fingal County Council, 2017). There is a Special Amenity Area (SAA) buffer zone towards the south of the proposed development site.

There are a number of granted planning permissions for activities/plans/projects which may be in construction at the same time as the proposed development:

- PL06F.306102 (Atlas GP Ltd) – Strategic Housing Development application for 512 apartments, 2 shops, a crèche, a café and a restaurant on lands at the former Techrete manufacturing facility, former Beshoff's car showroom, and former Howth Garden Centre, Claremont, Howth Road, Howth, County Dublin.
- F20A/0294 (Marine Engineering Division) - Construction of a workshop with Offices and Canteen facilities and a gross internal area of 374sqm. The proposed development is an amendment to a previous granted Planning Ref; F18A/0633.
- F20A/0412 (Downey) - Permission to replace entrance lobby with a two storey pitched roof extension; kitchen to rear to be extended by 1.3.m; hips to be replaced with gables and east gable to extend to roadside boundary; east and central chimney stacks to be removed and west stack to be increased in height; front and rear monopitch dormers to be replaced; roof over sunroom to be replaced with monopitch roof extending back to rear pitch with 3 roof lights and, timber leaf pattern added to all gables.
- F18A/0267 (Dept. of Agriculture, Food & Marine) – Construction of two number ground level industrial buildings (5 number units each) and associated site works at Claremont, West Pier, Howth, Co. Dublin.
- F18A/0074 (Minister for Agriculture, Food & Marine) - The provision of 130m long quay wall; associated deck area, road access, hard standing; localised dredging to facilitate works, dredging to -4m Chart Datum along the front of new quay wall to provide berthing depth and land reclamation of approximate 0.30 Ha on the east side of middle pier at Middle Pier, Howth Fishery Harbour Centre, Howth, Co Dublin.

Contractors for the proposed scheme will be contractually required to operate in compliance with the CEMP which includes the mitigation measures outlined in this EIAR. The other developments aforementioned will also have to incorporate measures to protect soil and water quality in compliance with legislative standards for receiving water quality (European Communities Environmental Objectives (Groundwater) Regulations (S.I. 9 of 2010 and S.I. 266 of 2016).

During operational phase, all developments are required to manage groundwater discharges in accordance with S.I. 9 of 2010 and S.I. 266 of 2016 amendments. As such there is no likely cumulative impact on the natural groundwater regime.

9.8.4 Worst-case Scenario

The worst case scenario would be an accidental spill of contaminant during the construction phase into the subsoil which potentially could affect the bedrock aquifer. However, there would be low risk of migration off site through poorly connected fracturing within the limestones rock mass and c. 7m thickness - low permeability overburden.

9.8.5 Summary

The Table below summarises the identified likely significant effects of the proposed development in the absence of mitigation during the construction phase.

Likely Significant Effect	Quality	Significance	Extent	Probability	Duration	Type
Excavation	Negative	Moderate	Local	Unlikely	Short-term	Worst case
Dewatering of perched water	Neutral	Imperceptible	Site specific	Likely	Brief	Worst case
Spillage of fuels stored on site	Negative	Moderate	Site specific	Unlikely	Brief	Worst case
Spillage of fuels from construction vehicles	Negative	Moderate	Site specific	Unlikely	Brief	Worst case
Spillage of concrete	Negative	Moderate	Site specific	Unlikely	Brief	Worst case

Table 9.2 Summary of Construction Phase Likely Significant Effects without Mitigation

The Table below summarises the identified likely significant effects of the proposed development in the absence of mitigation during the operational phase.

Likely Significant Effect	Quality	Significance	Extent	Probability	Duration	Type
Change in land use (greenfield to residential)	Positive	Significant	Local	Likely	Long-term	Direct
Implementation of SuDS measures and increase of hardstanding areas	Positive	Slight	Site specific	Likely	Long-term	Direct
Leakage of fuel from car park areas	Negative	Slight	Site specific	Unlikely	Brief	Worst case

Table 9.3 Summary of Operational Phase Likely Significant Effects without Mitigation

9.9 Mitigation

9.9.1 Incorporated Design Mitigation

The proposed development will be designed in accordance with the principles of Sustainable Drainage Systems (SuDS) as embodied in the recommendations of the Greater Dublin Strategic Drainage Study (GDSDS) and will maintain run-off rates at the existing greenfield condition and improve storm water quality discharging to the public storm water system.

The SuDS will be addressed by the provision of the following elements:

- Interception storage: Green roofs, permeable paving, rain gardens, oil/petrol interceptors and bioretention tree-pits
- Attenuation storage: It is proposed to provide an attenuation tank within the site. This will be designed for the 1 in 100 year storm + 20% climate change, and will form the last part of the SuDS management train. A Hydrobrake will be fitted downstream the tank in order to restrict the flow to the greenfield equivalent runoff for the catchment area.

The basement car park is covered by a podium slab and does not receive direct rainfall. There will be very limited outflow from the basement, rainfall coming off cars & rainwater coming in through car park vents. The car park drainage is pumped to the nearest foul manhole and is not at risk of any backflow from the surface water system during storm conditions.

The main source of pollutant is potentially from surface water run-off from the basement car park & access roads.

The SuDS measures proposed are linked in series, and this is commonly known as a SuDS Management Train, (SMT). The SMT ensures that rainwater falling on a site is captured, conveyed, stored, intercepted and removed of pollutants correctly and efficiently before it is discharged back into the surrounding water course or network.

9.9.2 Construction Phase Mitigation

A Construction Environmental Management Plan (CEMP) is included with this application under separate cover. It will be adopted by the construction contractor prior to commencement of construction. The CEMP will incorporate the mitigation measures outlined below as they relate to the construction phase. The CEMP will include emergency response procedures in the event of a spill, leak, fire or other environmental incident related to construction. This is an active document which is continuously updated to manage risk during the construction programme. All relevant personnel working on the site will be trained in the implementation of the procedures.

As a minimum, the manual will be formulated in consideration of the standard best international practice including but not limited to:

- CIRIA, (2001), Control of Water Pollution from Construction Sites, Guidance for Consultants and Contractors.

- Construction Industry Research and Information Association (CIRIA) Environmental Good Practice on Site (C650), 2005.
- BPGCS005, Oil Storage Guidelines.
- Eastern Regional Fisheries Board, (2006), Fisheries Protection Guidelines: Requirements for the Protection of Fisheries Habitat during Construction and Development Works at River Sites..
- CIRIA 697, The SUDS Manual, 2007.
- UK Pollution Prevention Guidelines (PPG) UK Environment Agency, 2004.

9.9.2.1 Excavations

The excavation will require soil and excavation and infill. The re-use of topsoil for completion of the main site works and landscaping will be evaluated. If it is adequate, topsoil will be stored and protected in an appropriate manner on site for the duration of the construction works.

Previous uses of the site and site testing has not indicated any evidence of soil contamination at the site. However, where any excavated material is found to be contaminated, an appropriate disposal method shall be selected depending on the type of contaminant found. Testing will be carried out in pre-construction works by the contractor to determine the soil classification; i.e. inert, non-hazardous or hazardous (WAC testing).

During the construction phase, all excavations and exposed sub-soils in open cuts will be blinded and protected with clean broken stone as soon as possible after exposing the subsoil in order to prevent erosion. Silt and sediment barriers will be installed at the perimeter of earthworks construction areas to limit transport of erodible soils outside of the site.

An appropriate dewatering system and groundwater management system specific to the site conditions will be designed and maintained. These will include measures to minimise any surface water inflow into the excavation, where possible, and the prolonged exposure of groundwater to the atmosphere will be avoided. The pumping of water will be carried out under the conditions of a Trade Effluent Discharge License issued to the construction contractor by Irish Water.

Qualitative and quantitative monitoring will be adopted to ensure that the water is of sufficient quality to discharge. The use of silt traps will be adopted if the monitoring indicates the requirement for same with no silt or contaminated water permitted to discharge to the receiving water environment.

Any discharge of construction surface water or groundwater from excavations shall pass through appropriate filtration and sedimentation system, designed in accordance with “Control of Water Pollution from Construction Sites, Guidance for Consultants and Contractors (CIRIA C532)”.

9.9.2.2 Accidental Spills and Leaks

To minimise any impact on the underlying subsurface strata from material spillages, all oils, solvents and paints used during construction will be stored within temporary bunded areas.

Leakages of oil from oil stores will be prevented by storing these oils in bunded tanks which have a capacity of 110% of the total volume of the stored oil. Ancillary equipment such as hoses and pipes will be contained within the bunded storage container. Drainage from the bunded area(s) shall be diverted for collection and safe disposal.

Refuelling of construction machinery and vehicles and the addition of hydraulic oils or lubricants to vehicles will take place in designated refuelling areas using a prescribed re-fuelling procedure. Plant nappies or absorbent mats to be place under refuelling point during all refuelling to absorb drips. All relevant personnel will be fully trained in the use of this equipment. Guidelines such as "Control of Water Pollution from Construction Sites, Guidance for Consultants and Contractors" (CIRIA 532, 2001) will be complied with.

Should there be an oil leak or spill, the leak or spill will be contained immediately using oil spill kits; the nearby dirty water drain outlet will be blocked with an oil absorbent boom until the fuel/oil spill has been cleaned up and all oil and any contaminated material removed from the area. This contaminated material will be properly disposed of in a licensed facility

All ready-mixed concrete will be brought to site by truck. 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. The pouring of concrete will take place within a designated area using a geosynthetic material to prevent concrete runoff into the soil/groundwater media. Pours will not take place during forecasted heavy rainfall. Washout of concrete transporting vehicles will not take place on site. Concrete trucks will be washed out off site at the source quarry.

To reduce the volume of cementitious water, only concrete truck chutes will be washed down on site. The concrete trucks will wash down their chutes at a designated chute wash down area in the site compound. The location of the chute washdown area will be appropriately located. The system is sealed with no overflow discharge to the drainage system.

In the event of a spillage on site, the dirty water drains in the immediate area will temporarily be blocked and the pH levels of the water in the associated settlement ponds will be monitored and if necessary will adjust the pH levels using CO2 entrainment. Any spillage will be cleared immediately and deposited in the Chute wash down area.

In the case of drummed fuel or other chemical which may be used during construction containers will be stored in a dedicated internally bunded chemical storage cabinet and labelled clearly to allow appropriate remedial action in the event of a spillage.

9.9.3 Operational Phase Mitigation

No mitigation measures have been considered during the operational phase as the SuDS elements incorporated in the design, and presented in section 9.9.1 above, address any potential leakage from car parks. As stated above, these measures ensure that any potential pollutants associated with car park areas will be captured, conveyed, stored, intercepted and removed.

9.10 Residual Impact Assessment

9.10.1 Construction Phase

There are no likely significant negative impacts on the status of the local aquifer and on the land, geological or hydrogeological environment associated with construction activities with mitigation measures aforementioned in place. No perceptible effects on the Baldoyle Bay Natura Site are expected.

9.10.2 Operational Phase

There are no likely significant negative impacts on the status of the local aquifer and on the land, geological or hydrogeological environment associated with construction activities with mitigation measures aforementioned in place. No perceptible effects on the Baldoyle Bay Natura Site are expected.

9.10.3 Cumulative

There are no likely cumulative impacts on the land, geological or hydrogeological environment associated with construction activities.

The Table below summarises the identified likely significant effects of the proposed development during the construction phase post application of mitigation measures.

Likely Significant Effect	Quality	Significance	Extent	Probability	Duration	Type
Excavation/ Disposition of Contaminated Soils	Negative	Imperceptible	Local	Unlikely	Short-Term	Residual
Dewatering of perched water	Neutral	Imperceptible	Site specific	Likely	Brief	Residual
Spillage of fuels stored on site	Negative	Imperceptible	Site specific	Unlikely	Brief	Residual
Spillage of fuels from construction vehicles	Negative	Imperceptible	Site specific	Unlikely	Brief	Residual
Spillage of concrete	Negative	Imperceptible	Site specific	Unlikely	Brief	Residual

Table 9.4 Summary of Construction Phase Likely Significant Effects with Mitigation

The Table below summarises the identified likely significant effects of the proposed development during the operational phase post application of mitigation measures.

Likely Significant Effect	Quality	Significance	Extent	Probability	Duration	Type
Change in land use (greenfield to residential)	Positive	Significant	Local	Likely	Long-term	Residual
Implementation of SuDS measures and increase of hardstanding areas	Positive	Slight	Site specific	Likely	Long-term	Residual
Leakage of fuel from car park areas	Negative	Imperceptible	Site specific	Unlikely	Brief	Residual

Table 9.5 Summary of Operational Phase Likely Significant Effects with Mitigation

9.11 Interactions

Due to the inter-relationship between land, soils, geology and hydrogeology and surface water (water & hydrology chapter) the discussed impacts will be considered applicable to Chapter 10 of the EIAR. In addition, the potential effects on surface water drainage involve the Biodiversity component due to the presence of a sensitive aquatic receptor in the vicinity of the subject site (Baldoyle Bay SAC/pNHA).

9.12 Monitoring

9.12.1 Construction Phase

During construction phase the following monitoring measures will be considered:

- Regular inspection of surface water run-off and sediments controls e.g. silt traps will be carried during the construction phase.
- Soil sampling to confirm disposal options for excavated soils.
- Regular inspection of construction/mitigation measures will be undertaken e.g. concrete pouring, refuelling, etc.

9.12.2 Operational Phase

There will be no requirement for soil or groundwater monitoring as there is no likely discharge to ground. Maintenance of the surface water drainage system and foul sewers as per normal urban developments is recommended to minimise any accidental discharges to ground.

9.13 Summary of Mitigation & Monitoring

The Table below summarises the proposed construction phase mitigation and monitoring measures.

Likely Significant Effect	Mitigation	Monitoring
Excavation/ Disposition of Contaminated Soils	Appropriate disposal	Testing to determine soil classification
Spillage of fuels stored on site	Oil storage in bunded tanks	Regular inspection of tanks
Spillage of fuels from construction vehicles	Implementation of designated refuelling areas	Regular inspection of refuelling areas
Spillage of concrete	The concrete trucks will wash down their chutes at a designated chute wash down area in the site compound	Regular inspection of wash down area

Table 9.6 Summary of Construction Phase Mitigation and Monitoring

9.14 References and Sources

Infrastructure Report. Residential Development at Howth Road, Howth. 2020. BMCE Consulting Engineers.

Flood Risk Assessment Report. Residential Development at Howth Road, Howth. 2020. BMCE Consulting Engineers.

Site Investigation Report, Howth Road, Howth Co. Dublin. 2019 Site Investigation Ltd.

Outline Construction and Environmental Management Plan, Howth Road. 2021 BMCE Consulting Engineers.

CHAPTER 10
WATER & HYDROLOGY

MAY 2021

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10 Water and Hydrology

10.1 Introduction

AWN Consulting Ltd. (AWN) has prepared this chapter of the Environmental Impact Assessment Report (EIAR) which assesses and evaluates the potential impacts of the development on water and hydrological aspects of the site and surrounding area during the construction and operational phases. In assessing likely potential and predicted effects, account is taken of both the importance of the attributes and the predicted scale and duration of the likely effects.

It is noted that the likely significant impacts of the proposed development on the hydrogeological environment is considered in Chapter 9 of this EIAR.

This report was prepared by Marcelo Allende (BEng), and Teri Hayes (BSc MSc PGeol EurGeol). Marcelo is a Water Resources Engineer with over 15 years of experience in environmental consultancy and water resources studies. Marcelo is an Environmental Consultant with AWN Consulting and a member of the International Association of Hydrogeologists (Irish Group). Teri is a hydrogeologist with over 25 years of experience in water resource management and impact assessment. She has a Masters in Hydrogeology and is a former President of the Irish Group of the Association of Hydrogeologists (IAH) and has provided advisory services on water related environmental and planning issues to both public and private sector bodies. She is qualified as a competent person as recognised by the EPA in relation to contaminated land assessment (IGI Register of competent persons www.igi.ie). Her specialist area of expertise is water resource management eco-hydrogeology, hydrological assessment, and environmental impact assessment.

10.2 Proposed Development

The full description of the proposed development is outlined in **Chapter 2 – Development Description**, of this Environmental Impact Assessment Report.

The design rationale is to create and deliver a high quality, sustainable, strategic housing development which respects its setting and maximises the site's natural attributes while achieving maximum efficiency of existing infrastructure. The Proposed Site Layout is illustrated on **Drawing No. 1101** contained within the architectural suite of drawings.

The development will consist of;

i. 162 no. residential units distributed across 3 no. blocks (A, B & C) ranging in height from 5-6 storeys, with a cumulative gross floor area (GFA) of 13,337.10 sq.m comprising;
    a. 29 no. 1-bedroom units, - 17.9%
    b. 104 no. 2-bedroom units and – 64.2%

c. 29 no. 3-bedroom units – 17.9%

ii. 3 no. resident services and amenity rooms (1 no. in each block A-C) to accommodate co-working space, a community room and a meeting room (combined GFA 108 sq.m)

iii. 132 no. car parking spaces at basement level (underlying Blocks A & B) including 6 no. accessible spaces, 13 no. electric vehicle spaces and 4 no. car sharing spaces;

iv. 325 no. residents bicycle parking spaces (long-stay) at basement level, and 30 no. visitor bicycle parking spaces (short-stay) at surface level;

v. communal amenity space in the form of courtyards and roof gardens (combined 2,192 sq.m)

vi. public open space of 1,161 sq.m including a botanic garden and pocket park;

vii. a single storey ESB sub-station and switch room (45.5 sq.m);

viii. demolition of 2 no. sections of the existing demesne northern boundary wall to provide, a primary access (vehicular/pedestrian/cyclist) to the northwest and a separate pedestrian/cyclist access at the centre;

ix. restoration and refurbishment of the remaining extant northern and eastern demesne boundary wall;

x. change of use and regrading of part of the Deer Park Golf Course from active recreation use to passive amenity parkland and planting of a woodland belt on the southern boundary;

xi. undergrounding of existing ESB overhead lines, and, relocation of the existing gas main; and,

xii. all ancillary site development works including waste storage and plant rooms at basement level, drainage, landscaping/boundary treatment and lighting.

10.2.1 Aspects Relevant to Assessment

10.2.1.1 Surface Water Drainage

The design of the surface water drainage network has taken cognisance of the objectives and guidance contained in the Greater Dublin Strategic Drainage Study (GDSDS). A series of SuDS elements are incorporated in the design, which will comprise treatment via the use of a green roofs, permeable paving, rain gardens, bioretention tree-pits, attenuation tank and petrol interceptors. These measures will be designed to discharge at a controlled rate, limited to the greenfield equivalent runoff increased by 20% to take account of climate change. The new development will be connected to an existing 450mm diameter surface water sewer that discharges north towards the Baldoyle Bay c. 170m to the subject site.

10.2.1.2 Water Supply

There is an existing 160mm diameter MOPVC watermain on Howth Road to the north of the site. A new 150mm diameter HDPE water main pipe will be installed on site. It is proposed to provide 1no. connection to the existing water main system on Howth Road. The watermain

connection will incorporate a bulk water meter and sluice valves to the requirements of Irish Water. Under the Howth Water Supply Scheme, Irish Water is working in partnership with Fingal County Council to upgrade the water mains in Howth to secure the water supply for local businesses and residents into the future. Some of these works include upgrade works to Dungriffen Pump Station and pipe laying/chamber building to Dungriffen Reservoir.

The average and peak water demand for the proposed development will be 0.949 l/s and 4.746 l/s respectively.

10.2.1.3 Foul Water

The new development will be served by a gravity foul network and it is proposed to provide 1no. connection from the site drainage system into the existing public 400mm diameter wastewater network.

A new 225mm diameter foul sewer will connect into the existing foul manhole to the north of the site. This connection will serve as the developments foul connection to the I.W wastewater network which eventually discharge to the Ringsend Waste Water Treatment Plant (WWTP), where it is treated and ultimately discharges into Dublin Bay. The WWTP operates under the EPA licence D0034-01.

The average and peak foul water flow for the proposed development will be 0.835 l/s and 5.012 l/s respectively.

10.3 Methodology

This chapter evaluates the effects, if any, which the development has had or will have on Water and Hydrology as defined in the Environmental Protection Agency (EPA) 'Draft Guidelines on the Information to be contained in Environmental Impact Assessment Reports' (EPA, 2017) and specifically its Table 3.3 (refer to Chapter 1 of this EIAR for further details). The Draft EPA document entitled 'Advice Notes for Preparing Environmental Impact Statements' (EPA, 2015) is also followed in this geological and hydrogeological assessment and classification of environmental effects.

In addition, the document entitled 'Guidelines on Procedures for Assessment and Treatment of Geology, Hydrology and Hydrogeology for National Road Schemes' by the National Roads Authority (NRA/TII, 2009) is referenced where the methodology for assessment of impact is appropriate.

The rating of potential environmental effects on the hydrological environment is based on the matrix presented in Table 1 in Appendix 10.1 which takes account of the quality, significance, duration and type of effect characteristic identified (in accordance with impact assessment criteria provided in the Draft EPA Guidelines (2017) publication).

The duration of each effect is considered to be either momentary, brief, temporary, short-term, medium term, long-term, or permanent. Momentary effects are considered to be those that

last from seconds to minutes. Brief effects are those that last less than a day. Temporary effects are considered to be those which are construction related and last less than one year. Short term effects are seen as effects lasting one to seven years; medium-term effects lasting seven to fifteen years; long-term effects lasting fifteen to sixty years; and permanent effects lasting over sixty years.

The NRA/TII criteria for rating the magnitude and significance of impacts on hydrology related attributes and the importance of hydrological attributes at the site during the EIA stage are also relevant in assessing the impact and are presented in Tables 1-3 in Appendix 10.2.

The principal attributes (and effects) to be assessed include the following:

- River and stream water quality in the vicinity of the site (where available);
- Surface watercourses near the site and potential impact on surface water quality arising from proposed development related works including any discharge of surface water run-off;
- Localised flooding (potential increase or reduction) and floodplains including benefitting lands and drainage districts (if any); and
- Surface water features within the area of the site..

Desk-based geological information on the substrata (both Quaternary deposits and bedrock geology) underlying the extent of the site was obtained through accessing databases and other archives where available. Data was sourced from the following:

- Environmental Protection Agency (EPA) – website mapping and database information. Envision water quality monitoring data for watercourses in the area;
- River Basin Management Plan for Ireland 2018-2021.
- The Planning System and Flood Risk Management, Guidelines for Planning Authorities (Department of the Environment, Heritage and Local Government (DoEHLG) and the Office of Public Works (OPW));
- Office of Public Works (OPW) flood mapping data (www.floodmaps.ie)
- South Dublin City Council (2005), Greater Dublin Strategic Drainage Study: Technical Documents of Regional Drainage Policies. Dublin: Dublin City Council; and
- 'Control of Water Pollution from Construction Sites, Guidance for Consultants and Contractors' (CIRIA 532, 2001);
- National Parks and Wildlife Services (NPWS) – Protected Site Register

Site specific data was derived from the following sources:

- Infrastructure Report. Residential Development at Howth Road, Howth. BMCE Consulting Engineers. 2021;
- Flood Risk Assessment Report. Residential Development at Howth Road, Howth. BMCE Consulting Engineers. 2021;

- Site Investigation Report, Howth Road, Howth Co. Dublin. Site Investigation Ltd. November 2019;
- Construction and Environmental Management Plan, Howth Road. BMCE Consulting Engineers. March 2021;
- Various design site plans and drawings; and
- Consultation with site engineers.

10.4 Difficulties Encountered

No difficulties were encountered during the development of this chapter.

10.5 Consultation

A Pre-Connection Enquiry (PCE) was submitted to Irish Water on the 23rd October 2019 to determine the feasibility of connecting to the public water and drainage infrastructure. A response to the PCE was received on the 22nd of January 2020 and Irish Water confirmed a connection is feasible.

10.6 Existing Environment

10.6.1 Site Area Description

The subject site is located in lands at Deer Park, Howth Road, Howth Co. Dublin and is 1.74 Hectares and currently greenfield. Howth is located to the East of Dublin city and forms a peninsula into the Irish Sea.

The site is bounded to the west by residential dwellings. Howth Castle and St. Marys Church to the south and east have a separate access road from Howth Road (R105). The south is bounded by the Deer Park Golf Club. The land surrounding the site is a mixture of residential, commercial and recreative use.

Adjacent to the Howth Road to the north, the site is at a level of approximately +6.500m and gradually rises to a level of +14.000m towards the Deer Park golf course. The site, therefore, slopes towards the Irish Sea (Baldoyle Bay).

Irish Water has confirmed that there is sufficient capacity on the public network at Howth Road to connect the proposed development site. However, the watermain connection needs to incorporate a bulk water meter and sluice valves to the requirements of Irish Water.

10.6.2 Hydrology

The proposed development site lies within the Liffey and Dublin Bay Catchment (Hydrometric Area 09), River Mayne sub-catchment (WFD name: Mayne_SC_010, Id 09_17) and Howth river sub-basin (WFD name: Howth_010, EU Code IE_EA_09H230880) (EPA, 2021). The Bloody Stream (WFD river waterbody IE_EA_09H230880; segment code 09_2176) flows from

Howth Head (specifically from an old reservoir) towards the Baldoyle Bay coastal waterbody which includes Special Area of Conservation (SAC)/proposed Natural Heritage Area (pNHA).

The Baldoyle Bay is located c.170 to the north of the subject site. This bay is a protected Natura European Site (Special Area of Conservation [SAC, site code IE0000199] and a proposed Natural Heritage Area (pNHA, site code 000199). The local lands are drained by the Bloody stream and a network of local streams which directly discharges to the Bay (refer to **Figure 10.1** below).

Figure 10.1 Site Location and Environmental Context

According to the bibliography consulted (The Rivers of Dublin, Clair Sweeney, 2017), there are a number of local streams in the vicinity of the site that form part of the Bloody Stream catchment. The Bloody Stream flows towards the bay c. 180 m east of the site (i.e., to the east side of St. Mary's Church). There is also a local stream which drains the lands of Howth Castle and flows to the bay c. 50m east of the subject site (refer to **Figure 10.2** below).

Figure 10.2 Site Location and Local Rivers

In addition, the Claremont Beach is a sandy, gently sloping north facing beach which is located c. 150 to the north of the subject site.

10.6.3 Water Quality

The Water Framework Directive (WFD) Directive 2000/60/EC was adopted in 2000 as a single piece of legislation covering rivers, lakes, groundwater and transitional (estuarine) and coastal waters. In addition to protecting said waters, its objectives include the attainment of 'Good Status' in water bodies that are of lesser status at present and retaining 'Good Status' or better where such status exists at present.

The WFD requires 'Good Water Status' for all European waters to be achieved through a system of river basin management planning and extensive monitoring. 'Good status' means both 'good ecological status' and 'good chemical status'.

The Bloody Stream is not designated for water quality status by the EPA presently. As such, its WFD status is classified as 'Unassigned' and its risk score is 'under review'.

The Irish Sea Dublin (HA 09) coastal waterbody hosts the Baldoyle Bay and according to the EPA information, has a 'Good' WFD status and is 'Not at risk' of not achieving good status.

Water quality data is collected for nearby Claremont Beach bathing area and is reported by the EPA on www.beaches.ie. The EPA bathing status is not based on single events, rather it is based on a review of data over 4 years (based on data collected during the bathing season only). Bathing classes are determined as Excellent (highest cleanest class), Good (Generally good water quality), Sufficient (The water quality meets the minimum standard) and Poor (The water quality has not met the minimum standard). A review of this data for the last four years, shows that the Claremont Beach is classified as achieving Sufficient Water Quality in 2019 based on the assessment of bacteriological results for the period 2016 to 2019. Claremont Beach had a Sufficient Water Quality rating in 2018 and 2017 and achieved a Good Water Quality rating in 2016.

10.6.4 Flooding

According to the Flood Risk Assessment carried out by BMCE and included under separate cover, there is no risk of flooding affecting the site from fluvial or coastal sources, since the site lies within Flood Zone C (i.e., where the probability of flooding from rivers is less than 0.1% or 1 in 1000).

There is no evidence that the Bloody Stream results in any flooding on the proposed site, is separated by the west boundary of St. Marys Church and the access road to Howth Castle which would divert any flood water towards Howth Road.

Therefore, the likelihood of flooding on site is low from either Tidal, Fluvial, Pluvial Surface Water or Groundwater.

10.6.5 Rating of Site Importance of the Hydrological Features

Based on the TII methodology (2009) (See Appendix 10.2), the criteria for rating the importance of hydrological features, the importance of the hydrological features at this site is rated as ***Extremely High Importance***. This is based on the connectivity through surface water drainage with Baldoyle Bay SAC/pNHA EU Natura site which is located c. 170m to the north of the site.

10.7 Do Nothing Scenario

In the event that the site is not developed it would remain in its current condition, a greenfield site. This scenario would not have any likely significant impact on the hydrological environment.

However, the site is zoned for development and it is likely that in the absence of this subject proposal that a development of a similar nature would be progressed on the site. It is likely that another development would require surface water drainage infrastructure and a connection to the water supply, the impact would thus be similar to this subject development.

10.8 Likely Significant Effects

10.8.1 Construction Phase

10.8.1.1 Increased Sediments Loading in Run-off

Surface water runoff during the construction phase may contain increased silt levels or become polluted from construction activities. Runoff containing large amounts of silt can cause damage to surface water systems and receiving watercourses. Silt water can arise from dewatering excavations, exposed ground, stockpiles and access roads.

During the construction phase at this site there is potential for an increase in run-off due to the introduction of impermeable surfaces and the compaction of soils. This will reduce the infiltration capacity and increase the rate and volume of direct surface run-off. The potential impact of this is a possible increase in surface water run-off and sediment loading which could potentially impact local drainage. Previous uses of the site (greenfield site) and site testing has not indicated any evidence of soil contamination at the site.

10.8.1.2 Accidental Spills and Leaks

During construction of the development, there is a risk of accidental pollution incidences from the following sources if not adequately mitigated:

- Spillage or leakage of oils and fuels stored on site.
- Spillage or leakage of oils and fuels from construction machinery or site vehicles.
- The use of concrete and cement during pad foundation construction.

Machinery activities on site during the construction phase may result in contamination of runoff into surface water. Potential impacts could arise from accidental spillage of fuels, oils, paints etc. which could impact surface water if allowed to runoff into surface water systems and/or receiving watercourses.

Concreting operations carried out near surface water drainage points during construction activities have the potential to lead to discharges to a watercourse. Concrete (specifically, the cement component) is highly alkaline and any spillage to a local watercourse would be detrimental to water quality and local fauna and flora.

10.8.2 Operational Phase

Potential for likely significant impacts during operation are low. The proposed development does not require any bulk chemical storage and therefore the potential for water quality impact is negligible.

Leakage of petrol/ diesel fuel may occur from car park/road areas.

The stormwater drainage system comprises green roofs, permeable paving, petrol interceptor, and a bounded attenuation storage tank. The storage system will discharge following the characteristics of a greenfield run-off into the existing public surface water sewer located at the northern boundary of the site. As such the potential for silt laden runoff is low.

The development will be fully serviced with separate foul and stormwater sewers which will have adequate capacity for the facility and discharge limits as required by Irish Water licencing requirements. Discharge from the site to the public foul sewer will be sewage and grey water only due to the residential nature of the proposed development. The foul discharge from the site will join the public sewer and will be treated at the Irish Water Ringsend Wastewater Treatment Plant (WWTP) prior to subsequent discharge to Dublin Bay. This WWTP is required to operate under an EPA licence and meet environmental legislative requirements as set out its licence.

During the operational phase, there will be an increase in demand on water supply and wastewater public services. However, Irish Water has confirmed that the public networks have sufficient capacity to accommodate the demand from the proposed development.

10.8.3 Cumulative

The surrounding lands are largely zoned as 'HA – High Amenity', 'RS – Residential', 'OS – Open Space' and 'TC - Town and District Centre' under the Fingal Development Plan 2017-2023 (Fingal County Council, 2017). There is a Special Amenity Area (SAA) buffer zone towards the south of the proposed development site.

There are a number of granted planning permissions for activities/plans/projects which may be in construction at the same time as the proposed development:

- PL06F.306102 (Atlas GP Ltd) – Strategic Housing Development application for 512 apartments, 2 shops, a crèche, a café and a restaurant on lands at the former Techrete manufacturing facility, former Beshoff's car showroom, and former Howth Garden Centre, Claremont, Howth Road, Howth, County Dublin.
- F20A/0294 (Marine Engineering Division) - Construction of a workshop with Offices and Canteen facilities and a gross internal area of 374sqm. The proposed development is an amendment to a previous granted Planning Ref; F18A/0633.
- F20A/0412 (Downey) - Permission to replace entrance lobby with a two storey pitched roof extension; kitchen to rear to be extended by 1.3.m; hips to be replaced with gables and east gable to extend to roadside boundary; east and central chimney stacks to be removed and west stack to be increased in height; front and rear monopitch dormers to be replaced; roof over sunroom to be replaced with monopitch roof extending back to rear pitch with 3 roof lights and, timber leaf pattern added to all gables.
- F18A/0267 (Dept. of Agriculture, Food & Marine) – Construction of two number ground level industrial buildings (5 number units each) and associated site works at Claremont, West Pier, Howth, Co. Dublin.
- F18A/0074 (Minister for Agriculture, Food & Marine) - The provision of 130m long quay wall; associated deck area, road access, hard standing; localised dredging to facilitate works, dredging to -4m Chart Datum along the front of new quay wall to provide berthing depth and land reclamation of approximate 0.30 Ha on the east side of middle pier at Middle Pier, Howth Fishery Harbour Centre, Howth, Co Dublin.

- CH06F.CH3350 – Howth Water Supply Scheme (Fingal County Council and Irish Water) – Irish Water, working in partnership with Fingal County Council, is working to improve the water supply for Malahide, Howth, Swords, Balbriggan and the surrounding areas. John Craddock Limited is carrying out these works on behalf of Irish Water.

Contractors for the proposed scheme will be contractually required to operate in compliance with the outline CEMP which includes the mitigation measures outlined in this Environmental Report.

There is potential for cumulative impacts to arise, as a consequence of the proposed development acting in-combination with the other developments aforementioned, on water quality in the downstream surface water environment. However, these developments will also have to incorporate measures to protect surface water quality in compliance with legislative standards for receiving water quality (S.I No 77/2019 EU Environmental Objectives (Surface Waters) Amendment Regulations 2019).

During operational phase, all developments are required to manage groundwater discharges in accordance with S.I. 272 of 2009 and S.I. 79 of 2019 amendments. As such there is no likely cumulative impact on the natural hydrological regime.

10.8.4 Worst-case Scenario

The worst case scenario would be an accidental spill of contaminant into the surface water drainage which potentially could affect the Baldoyle Bay SAC/pNHA. However, due to the negligible potential contaminant loading, this would be attenuated, diluted and dispersed to below statutory guidelines prior to reach the Natura Site aforementioned. Therefore, no potential impacts are expected on the Baldoyle Bay.

The proposed development will not adversely affect (either directly or indirectly) the integrity of any European site, either alone or in combination with other plans or projects.

10.8.5 Summary

The Table below summarises the identified likely significant effects of the proposed development in the absence of mitigation during the construction phase.

Likely Significant Effect	Quality	Significance	Extent	Probability	Duration	Type
Increase of sediments in run-off	Negative	Slight	Local	Unlikely	Brief	Worst case
Spillage of fuels stored on site	Negative	Moderate	Local	Unlikely	Brief	Worst case
Spillage of fuels from construction vehicles	Negative	Moderate	Local	Unlikely	Brief	Worst case
Spillage of concrete	Negative	Moderate	Local	Unlikely	Brief	Worst case

Table 10-1 Summary of Construction Phase Likely Significant Effects without Mitigation

The Table below summarises the identified likely significant effects of the proposed development in the absence of mitigation during the operational phase.

Likely Significant Effect	Quality	Significance	Extent	Probability	Duration	Type
Leakage of fuel from car park areas	Negative	Slight	Local	Unlikely	Brief	Worst case

Table 10-2 Summary of Operational Phase Likely Significant Effects without Mitigation

10.9 Mitigation

10.9.1 Incorporated Design Mitigation

The proposed development will be designed in accordance with the principles of Sustainable Drainage Systems (SuDS) as embodied in the recommendations of the Greater Dublin Strategic Drainage Study (GDSDS) and will maintain run-off rates at the existing greenfield condition and improve storm water quality discharging to the public storm water system. According to the Infrastructure Report, the flow associated to the greenfield condition is 7.91 l/s.

The SuDS will be addressed by the provision of the following elements:

- Interception storage: Green roofs, permeable paving, rain gardens and bioretention tree-pits
- Attenuation storage: It is proposed to provide an attenuation tank within the site. This will be designed for the 1 in 100 year storm + 20% climate change, and will form the last part of the SuDS management train. A Hydrobrake will be fitted downstream the tank in order to restrict the flow to the greenfield equivalent runoff for the catchment area.

These elements will intercept any potential leakage of fuel from car park areas. The main source of pollutant is potentially from surface water run-off from the basement car park & access roads.

The SuDS measures proposed are linked in series, and this is commonly known as a SuDS Management Train, (SMT). The SMT ensures that rainwater falling on a site is captured, conveyed, stored, intercepted and removed of pollutants correctly and efficiently before it is discharged back into the surrounding water course or network.

10.9.2 Construction Phase Mitigation

A Construction Environmental Management Plan (CEMP) is included under separate cover and will be adopted by the construction contractor prior to commencement of construction. The CEMP incorporates the mitigation measures outlined below as they relate to the construction phase. The CEMP will include emergency response procedures in the event of a spill, leak, fire or other environmental incident related to construction. This is an active document which is continuously updated to manage risk during the construction programme. All relevant personnel working on the site will be trained in the implementation of the procedures.

As a minimum, the manual will be formulated in consideration of the standard best international practice including but not limited to:

- CIRIA, (2001), Control of Water Pollution from Construction Sites, Guidance for Consultants and Contractors.
- Construction Industry Research and Information Association (CIRIA) Environmental Good Practice on Site (C650), 2005.
- BPGCS005, Oil Storage Guidelines.
- Eastern Regional Fisheries Board, (2006), Fisheries Protection Guidelines: Requirements for the Protection of Fisheries Habitat during Construction and Development Works at River Sites..
- CIRIA 697, The SUDS Manual, 2007.
- UK Pollution Prevention Guidelines (PPG) UK Environment Agency, 2004.

10.9.2.1 Management of sediment loading and water quality

During the construction phase, specific measures to prevent the release of sediment over baseline conditions in the downstream receiving water environment. These measures include,

but not limited to, the use of silt fences, silt curtains, settlement lagoons and filter materials. These will be maintained by the contractor to the satisfaction of Inland Fisheries Ireland for the entire construction period.

Provision of exclusion zones and barriers (e.g. silt fences) between earthworks, stockpiles and temporary surfaces to prevent sediment washing into the existing drainage systems and hence the downstream receiving water environment.

Compounds and internal access road will be graded so that all runoff is directed to the dirty water drains. A low mound will be constructed between the compounds / road and the clean water drain to ensure that runoff from the compound / road cannot flow into the clean water system.

A wheel wash will be provided for heavy vehicles exiting the site to ensure that roads outside of the site boundary are clean. These can take the form of dry or wet wheel wash facilities. In the case of a wet wheel wash it is recommended that a designated bunded and impermeable wheel wash area is provided and that the resultant waste water is diverted to a settlement pond for settling out of suspended solids.

The area of exposed ground will be kept to a minimum by maintaining where possible existing vegetation that would otherwise be subject to erosion in the vicinity of the development. The clearing of topsoil will be delayed until just before construction begins rather than stripping the entire site months in advance.

Permanent drainage measures such as the underground rainwater harvesting tank, foul tank, oil bypass separator and storm water filtration tank will be installed within the compound.

Piped and channel drainage systems incorporating roadside gullies will be installed to collect storm water from the finished compound areas and internal access road. Collected storm water runoff will pass through the oil bypass separator before discharging to the storm water filtration tank.

Excavation and stockpiling activities will be minimised during wet weather periods. Stockpiles of excavated soil and/or subsoil will be graded so as to shed water. Stockpiles of soil/subsoil will be restricted to less than 3m in height. Interception and channelling of surface water runoff over exposed soil/subsoil surfaces to sumps, silt traps or settlement ponds, will occur prior to discharge to existing drains or outfalls. Interception and diversion of surface water runoff away from open excavations will occur. Repeated handling of soil will be avoided and ideally all soil stockpiles will remain undisturbed pending later re-use for landscaping.

In addition, any discharge of construction surface water or groundwater from excavations shall pass through appropriate filtration and sedimentation system, designed in accordance with “Control of Water Pollution from Construction Sites, Guidance for Consultants and Contractors (CIRIA C532)”.

10.9.2.2 Fuel and Chemical Handling

To minimise any impact on the underlying subsurface strata from material spillages, all oils, solvents and paints used during construction will be stored within temporary bunded areas.

Leakages of oil from oil stores will be prevented by storing these oils in bunded tanks which have a capacity of 110% of the total volume of the stored oil. Ancillary equipment such as hoses and pipes will be contained within the bunded storage container. Drainage from the bunded area(s) shall be diverted for collection and safe disposal.

Refuelling of construction machinery and vehicles and the addition of hydraulic oils or lubricants to vehicles will take place in designated refuelling areas using a prescribed re-fuelling procedure. Plant nappies or absorbent mats to be place under refuelling point during all refuelling to absorb drips. All relevant personnel will be fully trained in the use of this equipment. Guidelines such as "Control of Water Pollution from Construction Sites, Guidance for Consultants and Contractors" (CIRIA 532, 2001) will be complied with.

Should there be an oil leak or spill, the leak or spill will be contained immediately using oil spill kits; the nearby dirty water drain outlet will be blocked with an oil absorbent boom until the fuel/oil spill has been cleaned up and all oil and any contaminated material removed from the area. This contaminated material will be properly disposed of in a licensed facility.

All ready-mixed concrete will be brought to site by truck. 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. The pouring of concrete will take place within a designated area using a geosynthetic material to prevent concrete runoff into the soil/groundwater media. Pours will not take place during forecasted heavy rainfall. Washout of concrete transporting vehicles will not take place on site. Concrete trucks will be washed out off site at the source.

To reduce the volume of cementitious water, only concrete truck chutes will be washed down on site. The concrete trucks will wash down their chutes at a designated chute wash down area in the site compound. The location of the chute washdown area will be appropriately located.

In the event of a spillage on site, the dirty water drains in the immediate area will temporarily be blocked and the pH levels of the water in the associated settlement ponds will be monitored and if necessary will adjust the pH levels using CO_2 entrainment. Any spillage will be cleared immediately and deposited in the Chute wash down area.

In the case of drummed fuel or other chemical which may be used during construction containers will be stored in a dedicated internally bunded chemical storage cabinet and labelled clearly to allow appropriate remedial action in the event of a spillage.

10.9.3 Operational Phase Mitigation

No mitigation measures have been considered during the operational phase as the SuDS elements incorporated in the design, and presented in section 9.9.1 and the Infrastructure Report prepared by BMCE and submitted under separate cover, address any potential hydrocarbon leakage from the proposed basement car park. There are no other potential hazards during operation.

The peak wastewater discharge is calculated at an average wastewater discharge of 5.012 litres/sec. Sewage will be collected in the public sewer and treated at Irish Water's WWTP at Ringsend prior to discharge to Dublin Bay. In providing a permission for discharge to sewer, Irish Water will have considered the capacity of their infrastructure (current and future capacity) and environmental impact. This WWTP is required to operate under an EPA licence (D0034-01) and to meet environmental legislative requirements. The Ringsend WWTP received planning permission for upgrading works in 2012. In June 2018, Irish Water submitted a planning application for strategic infrastructure development to An Bord Pleanála seeking permission to further progress the upgrade of the Ringsend Wastewater Treatment Plant (WWTP) and In April 2019, Irish Water was granted planning permission by An Bord Pleanála to further progress the upgrade of the Ringsend WWTP.

The 2019 planning permission facilitated upgrading works to meet nitrogen and phosphorus standards set out in the licence and which are temporarily exceeded currently. The design includes aerobic granular sludge which will result in treatment of sewage to a higher quality than current thereby ensuring effluent discharge to Dublin Bay will comply with the Water Framework Directive, Urban Wastewater Treatment Directive and Bathing water Directive. It is understood at this point in time that the upgrade to use of aerobic granular sludge and other phased upgrades will achieve a population equivalent of 2.4 million and are to be completed between by 2027 to 2028. As outlined in the EIAR provided with the 2018 planning submission, modelling has shown that the upgrades which are currently underway will result in improved water quality within Dublin Bay. The 2018 EIAR predicts that the improvement in effluent quality achieved by the upgrade will compensate for the increase in flow through the plant.

The project is being progressed in stages to ensure that the plant continues to treat the wastewater (1.98 million population equivalent) to the current treatment levels throughout the delivery of the upgrade. The project comprises four key elements and underpinning these is a substantial programme of ancillary works:

1. Provision of additional secondary treatment capacity with nutrient reduction (400,000 population equivalent);
2. Upgrade of the 24 existing secondary treatment tanks to provide additional capacity and nutrient reduction, which is essential to protect the nutrient-sensitive Dublin Bay area; and
3. Provision of a new phosphorous recovery process.

In February 2018, the work commenced on the first element, the construction of a new 400,000 population equivalent extension at the Ringsend Wastewater Treatment Plant. These works are at an advanced stage with testing and commissioning stages expected to be completed in the second half of 2021.

Even without treatment at the Ringsend WWTP, the peak effluent discharge, calculated for the proposed development as 5.012 litres/sec (which would equate to 0.045% of the current licensed discharge at Ringsend WWTP [peak hydraulic capacity]), would not have a measurable impact on the overall water quality within Dublin Bay and therefore would not have an impact on the current Water Body Status (as defined within the Water Framework Directive).

10.10 Residual Impact Assessment

10.10.1 Construction Phase

There are no likely significant impacts on the status of the water and hydrological environment associated with construction activities with mitigation measures aforementioned in place. No perceptible effects on the Baldoyle Bay Natura Site are expected.

10.10.2 Operational Phase

There are no likely significant negative impacts on the status of the water and hydrological environment associated with construction activities with mitigation measures aforementioned in place. No perceptible effects on the Baldoyle Bay Natura Site are expected.

10.10.3 Cumulative

There are no likely cumulative impacts on the water and hydrological environment associated with construction activities.

The Table below summarises the identified likely significant effects of the proposed development during the construction phase post application of mitigation measures.

Likely Significant Effect	Quality	Significance	Extent	Probability	Duration	Type
Increase of sediments in run-off	Negative	Imperceptible	Local	Unlikely	Brief	Residual
Spillage of fuels stored on site	Negative	Imperceptible	Local	Unlikely	Brief	Residual
Spillage of fuels from construction vehicles	Negative	Imperceptible	Local	Unlikely	Brief	Residual
Spillage of concrete	Negative	Imperceptible	Local	Unlikely	Brief	Residual

Table 10-3 Summary of Construction Phase Likely Significant Effects with Mitigation

The Table below summarises the identified likely significant effects of the proposed development during the operational phase post application of mitigation measures.

Likely Significant Effect	Quality	Significance	Extent	Probability	Duration	Type
Leakage of fuel from car park areas	Negative	Imperceptible	Local	Unlikely	Brief	Residual

Table 10-4 Summary of Operational Phase Likely Significant Effects with Mitigation

10.11 Interactions

Due to the inter-relationship between land, soils, geology and hydrogeology and surface water (water & hydrology chapter) the following impacts discussed will be considered applicable to Chapter 9 of the EIAR. In addition, the potential effects on surface water drainage involve the Biodiversity chapter due to the presence of a sensitive aquatic receptor in the vicinity of the subject site (Baldoyle Bay SAC/pNHA).

10.12 Monitoring

10.12.1 Construction Phase

During the construction phase the following monitoring measures will be considered:

- Regular inspection of surface water run-off and sediments controls e.g. silt traps will be carried during the construction phase.
- Regular inspection of construction/mitigation measures will be undertaken e.g. concrete pouring, refuelling, etc.

10.12.2 Operational Phase

There will be no requirement for soil or groundwater monitoring as there is no likely discharge to ground. Maintenance of the surface water drainage system and foul sewers as per normal urban developments is recommended to minimise any accidental discharges to ground.

10.13 Summary of Mitigation & Monitoring

The Table below summarises the proposed construction phase mitigation and monitoring measures.

Likely Significant Effect	Mitigation	Monitoring
Increase of Sediments in run-off	Implementation of silt trap, sediment ponds, etc.	Regular inspection of silt trap and sediments ponds
Spillage of fuels stored on site	Oil storage in bunded tanks	Regular inspection of tanks
Spillage of fuels from construction vehicles	Implementation of designated refuelling areas and appropriate containment of fuel	Regular inspection of refuelling areas
Spillage of concrete	The concrete trucks will wash down their chutes at a designated chute wash down area in the site compound	Regular inspection of wash down area

Table 10-5 Summary of Construction Phase Mitigation and Monitoring

10.14 References and Sources

Infrastructure Report. Residential Development at Howth Road, Howth. 2020. BMCE Consulting Engineers.

Flood Risk Assessment Report. Residential Development at Howth Road, Howth. 2020. BMCE Consulting Engineers.

Site Investigation Report, Howth Road, Howth Co. Dublin. 2019. Site Investigation Ltd.

Outline Construction and Environmental Management Plan, Howth Road. 2021. BMCE Consulting Engineers.

The Rivers of Dublin. Clair Sweeney. 2017.

CHAPTER 11
BIODIVERSITY

MAY 2021

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11 Biodiversity

11.1 Introduction

Scott Cawley Ltd. was commissioned to undertake an assessment of impacts on biodiversity (flora and fauna) of a proposed development in lands at Deer Park, Howth Road, Howth, Co. Dublin (hereinafter referred to as the proposed development) at Irish Grid Reference O 27676 39262 (see **Figure 11.1** below for location of proposed site). This chapter was carried out in compliance with the 2014 EIA Directive, the Planning and Development Act 2000 as amended and the European Commission's guidance on the preparation of the Environmental Impact Assessment Report (EIAR).

The proposed development consists of a Strategic Housing Development comprising of 162 no. residential units across 3 no. blocks (A-C), a basement underlying blocks A and B providing car and bicycle parking, landscaping and associated site works. The full description of the proposed development is outlined in Chapter 2 – Project Description of this EIAR.

The purpose of the report is to:

- Establish and evaluate the baseline ecological environment, as relevant to the proposed development
- Identify, describe, and assess all potentially significant ecological effects associated with the proposed development
- Set out the mitigation measures required to address any potentially significant ecological effects and ensure compliance with relevant nature conservation legislation
- Provide an assessment of the significance of any residual ecological effects
- Identify any appropriate compensation, enhancement or post-construction monitoring requirements

11.1.1 Author Statement

This Biodiversity Chapter was authored by Lorna Gill and reviewed by Caroline Kelly BSc. MSc. Senior Ecologist and Andrew Speer Technical Director of Scott Cawley Ltd. The background and experience of the author of this report is set out below with details on reviewers set out in Appendix 11.1, Volume III.

Lorna Gill is a Consultant Ecologist with Scott Cawley. Lorna holds an MSc in Conservation and Biodiversity from the University of Exeter and an honours degree in Natural Sciences with a specialisation in Zoology from Trinity College Dublin. Lorna is experienced in carrying out field surveys in Ireland including wintering birds, breeding birds, bats and other protected mammals. Other experience includes monitoring badger sett closures, radiotracking bats, manual bat call analysis and the use of GIS software. At Scott Cawley, Lorna's work also includes data analysis and the preparation of Appropriate Assessment reports and Ecological Impact Assessments for residential and other commercial projects across the country. Recent ecological assessments as part of an EIAR include an assessment as part of an EIAR for Strategic Housing Development (SHD) at Abingdon, Shanganagh Road, Shankill, Dublin 18

(Bord Pleanála Ref: 308418). This is a development of 193 no/ build to rent apartments and associated works. The application has been granted with conditions. An assessment as part of an EIAR for the construction of 2 no. two storey Information Communication Technology (ICT) facilities in Grange Castle West, Milltown, Newcastle, Co. Dublin (Ref SD20A/0324). The application is currently subject to additional information. An assessment as part of an EIAR for the construction of a 110kV GIS substation compound and grid connection at Grange Castle, Co. Dublin (Bord Pleanála Ref: PL06S.309201).

11.2 Proposed Development

The full description of the proposed development is outlined in **Chapter 2 – Development Description**, of this Environmental Impact Assessment Report.

The design rationale is to create and deliver a high quality, sustainable, strategic housing development which respects its setting and maximises the site's natural attributes while achieving maximum efficiency of existing infrastructure. The Proposed Site Layout is illustrated on **Drawing No. 1101** contained within the architectural suite of drawings.

The development will consist of;

i. 162 no. residential units distributed across 3 no. blocks (A, B & C) ranging in height from 5-6 storeys, with a cumulative gross floor area (GFA) of 13,337.10 sq.m comprising;
    a. 29 no. 1-bedroom units, - 17.9%
    b. 104 no. 2-bedroom units and – 64.2%
    c. 29 no. 3-bedroom units – 17.9%
ii. 3 no. resident services and amenity rooms (1 no. in each block A-C) to accommodate co-working space, a community room and a meeting room (combined GFA 108 sq.m)
iii. 132 no. car parking spaces at basement level (underlying Blocks A & B) including 6 no. accessible spaces, 13 no. electric vehicle spaces and 4 no. car sharing spaces;
iv. 325 no. residents bicycle parking spaces (long-stay) at basement level, and 30 no. visitor bicycle parking spaces (short-stay) at surface level;
v. communal amenity space in the form of courtyards and roof gardens (combined 2,192 sq.m)
vi. public open space of 1,161 sq.m including a botanic garden and pocket park;
vii. a single storey ESB sub-station and switch room (45.5 sq.m);
viii. demolition of 2 no. sections of the existing demesne northern boundary wall to provide, a primary access (vehicular/pedestrian/cyclist) to the northwest and a separate pedestrian/cyclist access at the centre;
ix. restoration and refurbishment of the remaining extant northern and eastern demesne boundary wall;

x. change of use and regrading of part of the Deer Park Golf Course from active recreation use to passive amenity parkland and planting of a woodland belt on the southern boundary;
xi. undergrounding of existing ESB overhead lines, and, relocation of the existing gas main; and,
xii. all ancillary site development works including waste storage and plant rooms at basement level, drainage, landscaping/boundary treatment and lighting.

11.2.1 Aspects Relevant to this Chapter

The proposed development includes removal of part of an existing hedgerow (approx. 25 years old) to the south and planting of replacement hedgerow to form the boundary of the development site. There will be reprofiling of lands identified as Howth Special Amenity Area Order buffer to the south. It is proposed to make two openings in the existing boundary wall to the north of the proposed site, one to the north- west and one to the north-east.

Surface water

There is no existing surface water infrastructure within the proposed development site. On Howth Road, to the north west of the site, there is an existing 450mm diameter surface water sewer that discharges north towards the coast into Baldoyle Bay.

A new 150mm diameter HDPE water main pipe will be installed on site. It is proposed to provide 1no. connection to the existing water main system on Howth Road. The watermain connection will incorporate a bulk water meter and sluice valves to the requirements of Irish Water.

Foul water

There is no existing foul sewer infrastructure within the proposed development site boundary. There is an existing 400mm diameter concrete foul sewer and manhole to the north of the site, adjacent to Howth Road.

The proposed development will be served by a gravity foul network and it is proposed to provide 1no. connection from the site drainage system into the existing public 400mm diameter wastewater network. A new 225mm diameter foul sewer will connect into the existing foul manhole to the north of the site. This connection will serve as the proposed developments foul connection to the I.W wastewater network. The population equivalent value (P.E. value) of the proposed development is 328.

Sustainable Drainage Systems (SuDS)

The proposed development will be situated within an urban environment and therefore the available applicable SuDS measures are limited within the proposed development site. Below

are the applicable SuDS measures which have been chosen for the site[1]. The proposed development will comprise of podium areas between the blocks of apartments. A significant portion of the podium area comprises of pathways which allows for permeable paving to be incorporated. Other measures such as green roofs, permeable paving, rain gardens, bioretention systems & tree pits and attenuation tanks have also been identified as suitable measures.

Whilst certain aspects of the development – such as SUDS – are referenced in the application documentation, absolutely no reliance has been placed on any such measure for the purposes of conducting AA Screening (even though those measures are not directed to the protection of any European site which might potentially be affected by the proposed development).

Figure 11.1 Site of Proposed Development at lands in Deer Park, Howth Road.

[1] SUDS measures are included in the design but not for the purposes of avoiding or reducing any potential harmful effects to any European sites. Rather, their inclusion is due to the fact that in the Greater Dublin Area, SUDS are required for new developments under the objectives of the GDSDS and the relevant County Development Plans. For example, Policy SW04 of the Fingal County Development Plan 2017-2023 states that Fingal will "Require the use of sustainable drainage systems (SuDS) to minimise and limit the extent of hard surfacing and paving and require the use of sustainable drainage techniques where appropriate, for new development or for extensions to existing developments, in order to reduce the potential impact of existing and predicted flooding risks".

11.3 Methodology

11.3.1 Planning, Policy and Legislation

The collation of ecological baseline data and the preparation of this assessment has had regard to the following legislation and policy documents. This is not an exhaustive list but the most relevant legislative and policy basis for the purposes of preparing this EIAR chapter.

The following international legislation is relevant to the proposed development:

- Council Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Fauna and Flora; hereafter, referred to as the 'Habitats Directive'. The Habitats Directive is the legislation under which the Natura 2000 network[2] was established and special areas of conservation (SACs) are designated for the protection of natural habitat types listed in Annex I, and habitats of the species listed in Annex II, of that directive.
- Directive 2009/147/EEC of the European Parliament and of the Council of 30 November 2009 on the conservation of wild birds; hereafter, referred to as the 'Birds Directive'. The Birds Directive is the legislation under which special protection areas are designated for the protection of endangered species of wild birds listed in Annex I of that directive.

The following national legislation is relevant to the proposed development:

- *Wildlife Acts 1976 to 2020*; hereafter collectively referred to as the 'Wildlife Acts'. The Wildlife Acts are the principal pieces of legislation at national level for the protection of wildlife and for the control of activities that may harm wildlife. All bird species, 22 other animal species or groups of species, and 86 species of flora are protected under this legislation.
- *Planning and Development Acts 2000 to 2021*; hereafter collectively referred to as the 'Planning and Development Acts'. This piece of legislation is the basis for Irish planning. Under the legislation, development plans (usually implemented at local authority level) must include mandatory objectives for the conservation of natural heritage and for the conservation of European Sites. It also sets out the requirements in relation to environmental assessment with respect to planning matters, including transposition of the Habitats and Birds Directive into Irish law.

[2] The Natura 2000 network is a European network of important ecological sites, as defined under Article 3 of the Habitats Directive 92/43/EEC, which comprises both special areas of conservation and special protection areas. Special conservation areas are sites hosting the natural habitat types listed in Annex I, and habitats of the species listed in Annex II, of the Habitats Directive, and are established under the Habitats Directive itself. Special protection areas are established under Article 4 of the Birds Directive 2009/147/EC for the protection of endangered species of wild birds. The aim of the network is to aid the long-term survival of Europe's most valuable and threatened species and habitats.

In Ireland these sites are designed as *European sites* - defined under the Planning Acts and/or the Birds and Habitats Regulations as (a) a candidate site of Community importance, (b) a site of Community importance, (c) a candidate special area of conservation, (d) a special area of conservation, (e) a candidate special protection area, or (f) a special protection area. They are commonly referred to in Ireland as Special Areas of Conservation (SACs) and Special Protection Areas (SPAs).

- *European Communities (EC) (Birds and Natural Habitats) Regulations 2011 to 2015*; hereafter the 'Birds and Habitats Regulations'. This legislation transposes the Habitats and Birds Directives into Irish law. It also contains regulations (49 and 50) that deal with invasive species (those included within the Third Schedule of the regulations).
- *Flora (Protection) Order, 2015*. This lists species of plant protected under Section 21 of the Wildlife Acts.

The following plans and policies are relevant to the proposed development:

- *National Biodiversity Action Plan 2017 – 2021*
    - The National Biodiversity Action Plan sets out objectives and targets so that "*biodiversity and ecosystems in Ireland care conserved and restored, delivering benefits essential for all sectors of society and that Ireland contributes to efforts to halt the loss of biodiversity and the degradation of ecosystems in the EU and globally."*
- Fingal Biodiversity Action Plan 2010 - 2015
    - The Biodiversity action plan sets out a series of actions to protect biodiversity within Fingal County Council.
- Fingal Development Plan 2017-2023 (Fingal County Council, 2017)
    - Objective PM64 - Protect, preserve and ensure the effective management of trees and groups of trees.
    - Objective GI16 - Set targets in the Green Infrastructure Strategy for the provision of different green infrastructure elements in urban areas, such as trees in urban areas and green roofs in town centres, so that a net gain in green infrastructure is achieved over the lifetime of this Development Plan.
    - Objective GI21 - Require all new development to address the protection and provision of green infrastructure for the five GI themes set out in the Development Plan (Biodiversity, Parks, Open Space and Recreation, Sustainable Water Management, Archaeological and Architectural Heritage, and Landscape) in a coherent and integrated manner.
    - Objective GI24 - Ensure biodiversity conservation and/or enhancement measures, as appropriate, are included in all proposals for large scale development such as road or drainage schemes, wind farms, housing estates, industrial parks or shopping centres.
    - Objective GI25 - Integrate provision for biodiversity with public open space provision and sustainable water management measures (including SuDS) where possible and appropriate.
    - Objective GI33 - Seek the provision of green roofs and green walls as an integrated part of Sustainable Drainage Systems (SuDS) and which provide benefits for biodiversity, wherever possible.

- Objective NH02 - Integrate provision for biodiversity with public open space provision and sustainable water management measures (including SuDS) where possible and appropriate.
- Objective NH03 - Implement the Fingal Biodiversity Action Plan 2015 and any revisions thereof in partnership with all relevant stakeholders.
- Objective NH07 - Actively support the aims and objectives of the All Ireland Pollinator Plan 2015-2020 by encouraging bee keeping and other measures to protect and increase the population of bees and other pollinating insects in Fingal.
- Objective NH09 - Support the National Parks and Wildlife Service, Department of Arts, Heritage, Regional, Rural and Gaeltacht Affairs, in the maintenance and, as appropriate, the achievement of favourable conservation status for the habitats and species in Fingal to which the Habitats Directive applies.
- Objective NH13 - Ensure that proposals for development do not lead to the spread or introduction of invasive species. If developments are proposed on sites where invasive species are or were previously present, the applicants will be required to submit a control and management program for the particular invasive species as part of the planning process and to comply with the provisions of the European Communities Birds and Habitats Regulations 2011 (S.I. 477/2011).
- Objective NH15 - Strictly protect areas designated or proposed to be designated as Natura 2000 sites (i.e. Special Areas of Conservation (SACs) and Special Protection Areas (SPAs); also known as European sites) including any areas that may be proposed for designation or designated during the period of this Plan.
- Objective NH16 - Protect the ecological integrity of proposed Natural Heritage Areas (pNHAs), Natural Heritage Areas (NHAs), Statutory Nature Reserves, Refuges for Fauna, and Habitat Directive Annex I sites.
- Objective NH17 - Ensure that development does not have a significant adverse impact on proposed Natural Heritage Areas (pNHAs), Natural Heritage Areas (NHAs), Statutory Nature Reserves, Refuges for Fauna, Habitat Directive Annex I sites and Annex II species contained therein, and on rare and threatened species including those protected by law and their habitats.
- Objective NH18 - Protect the functions of the ecological buffer zones and ensure proposals for development have no significant adverse impact on the habitats and species of interest located therein.
- Objective NH24 - Protect rivers, streams and other watercourses and maintain them in an open state capable of providing suitable habitat for fauna and flora, including fish.
- Objective NH27 - Protect existing woodlands, trees and hedgerows which are of amenity or biodiversity value and/or contribute to landscape character and ensure that proper provision is made for their protection and management.

- Objective NH28 - Consider the use of Tree Preservation Orders (TPOs) to protect important trees, groups of trees or woodlands
- Objective NH44 - Protect and enhance the character, heritage and amenities of the Howth and the Liffey Valley Special Amenity Areas in accordance with the relevant Orders.
- Objective NH51 - Protect High Amenity areas from inappropriate development and reinforce their character, distinctiveness and sense of place.
- Objective DMS01 - Ensure that all plans and projects in the County which could, either individually or in combination with other plans and projects, have a significant effect on a European site or sites are subject to Screening for Appropriate Assessment.
- Objective DMS77 - Protect, preserve and ensure the effective management of trees and groups of trees.
- Objective DMS78 - Ensure during the course of development, trees and hedgerows that are conditioned for retention are fully protected in accordance with 'BS5837 (2012) Trees in relation to the Design, Demolition and Construction – Recommendations' or as may be updated.
- Objective DMS79 - Require the use of native planting where appropriate in new developments in consultation with the Council.
- Objective DMS80 - Ensure trees, hedgerows and other features which demarcate townland boundaries are preserved and incorporated where appropriate into the design of developments.
- Objective DMS81 - Consider in tree selection the available rooting area and proximity to dwellings or business premises particularly regarding shading of buildings and gardens.
- Objective DMS82 - Promote the planting of large canopy trees on public open space and where necessary provide for constructed tree pits as part of the landscape specification.
- Objective DMS83 - Ensure roadside verges have a minimum width of 2.4 metres at locations where large trees are proposed and where necessary provide for constructed tree pits as part of the landscape specification. Road verges shall be a minimum of 1.2 metres wide at locations where small canopy trees are proposed.
- Objective SW04 - Require the use of sustainable drainage systems (SuDS) to minimise and limit the extent of hard surfacing and paving and require the use of sustainable drainage techniques where appropriate, for new development or for extensions to existing developments, in order to reduce the potential impact of existing and predicted flooding risks.
- Objective WQ01 - Strive to achieve 'good status' in all waterbodies in compliance with the Water Framework Directive, the Eastern River Basin District Management Plan 2009-2015 and the associated Programme of Measures (first cycle) and to

cooperate with the development and implementation of the second cycle national River Basin Management Plan 2017-2021.

- Objective WQ04 - Protect existing riverine wetland and coastal habitats and where possible create new habitats to maintain naturally functioning ecosystems whilst ensuring they do not impact negatively on the conservation objectives of any European Sites.
- Objective WT01 - Liaise with and work in conjunction with Irish Water during the lifetime of the plan for the provision, extension and upgrading of waste water collection and treatment systems in all towns and villages of the County to serve existing populations and facilitate sustainable development of the County, in accordance with the requirements of the Settlement Strategy and associated Core Strategy.
- Objective WT02 - Liaise with Irish Water to ensure the provision of wastewater treatment systems in order to ensure compliance with existing licences, EU Water Framework Directive, River Basin Management Plans, the Urban Waste Water Directive and the EU Habitats Directive.

11.3.2 Scope of the Assessment

The study area is defined by the zone of influence of the proposed development with respect to the ecological receptors that could potentially be affected.

The Zone of Influence (ZoI), or distance over which potentially significant effects may occur, will differ across the Key Ecological Receptors (KERs), depending on the potential impact pathway(s). The results of both the desk study and the suite of ecological field surveys undertaken has established the habitats and species present within, and in the vicinity of, the proposed development site. The ZoI and study area was then informed and defined by the sensitivities of each of the KERs present, in conjunction with the nature and potential impacts associated with the proposed development.

The ZoI of habitat loss impacts will be confined to within the proposed development boundary.

The ZoI of potential impacts on surface water quality in the receiving freshwater environment could extend downstream as far as Baldoyle Bay *c.* 170m north of the proposed development.

The ZoI of general construction activities (i.e. risk of spreading/introducing non-native invasive species, dust deposition and disturbance due to increased noise, vibration, human presence and lighting) is not likely to extend more than several hundred metres from the proposed development.

11.3.3 Desk Study

A desk study was undertaken on the 18 February 2021 to collate available information on the local ecological environment. The following resources were used to inform the assessment presented in this report:

- Data on European sites, Natural Heritage Areas (NHAs) or proposed Natural Heritage Areas (pNHAs) as held by the National Parks and Wildlife Service (NPWS) from https://www.npws.ie/protected-sites and https://www.npws.ie/maps-and-data – refer to **Table 11.4, Figure 11.5** and **Figure 11.7** for descriptions and locations of protected sites in the vicinity of the proposed development
- Records of rare and protected species for the 10km grid square(s), as held by the National Biodiversity Data Centre www.biodiversityireland.ie or the NPWS – refer to Appendix 11.3, Volume III for all desk study flora and fauna records
- Spatial information relevant to the planning process including land zoning and planning applications from Department of Housing Planning, Community and Local Government web map portal. Available from https://myplan.ie/
- Ordnance Survey Ireland mapping and aerial photography from http://map.geohive.ie/
- Data on waterbodies, available for download from the Environmental Protection Agency (EPA) web map service. Available from https://gis.epa.ie/EPAMaps/
- Information on soils, geology and hydrogeology in the area available from the Geological Survey Ireland (GSI) online Spatial Resources service. Available from https://www.gsi.ie/en-ie/data-and-maps/Pages/Groundwater.aspx
- Information on the conservation status of birds in Ireland from *Birds of Conservation Concern in Ireland* (Colhoun & Cummins, 2013)
- Information on the location, nature and design of the proposed development supplied by the applicant's design team

11.3.4 Consultation

A consultation letter was submitted by email to the Development Applications Unit of the Department of Culture, Heritage and the Gaeltacht on 9th February 2021. The letter included an outline description of the proposed development, and a request for any comments on the proposal. No response has been received by Scott Cawley prior to submission of the planning application for the proposed development.

As is required for SHD proposals, pre application consultation was undertaken with An Bord Pleanála (ABP). During the course of this stage of the application, Fingal County Council submitted a written opinion to ABP. It highlighted that the ecological function of the trees proposed for removal to facilitate the development should be considered. Accordingly, this chapter provides an assessment of the impact of this aspect of the proposed development.

11.3.5 Ecological evaluation and impact assessment methodology

The criteria used to assess the ecological value (Appendix 11.2, Volume III) and significance of habitats follows Guidelines for assessment of *Ecological Impacts of National Road Schemes* (NRA, 2009) and is consistent with *Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine version 1.1* (CIEEM, 2018).

In accordance with the NRA (2009) guidelines for assessment of ecological impacts, impact assessment is only undertaken of '*Key Ecological Receptors*' (KERs). KERs are within the zone of influence[3] of the development and are '*both of sufficient value to be material in decision making and likely to be affected significantly*'. According to NRA (2009) guidelines to qualify as KERs, features must be of local importance (higher value) or higher as per the criteria in Appendix 11.2, Volume III. For example, local importance (higher value) would include locally important populations of priority species or habitats or natural heritage features identified in the Local Biodiversity Action Plan, or sites containing semi-natural habitat types with high biodiversity in a local context, or populations of species that are uncommon in the locality. Features of lower ecological value are not assessed, and would include, for example, sites containing small areas of semi-natural habitat that are of some local importance for wildlife. The highest levels of impact significance for each Sensitive Ecological Receptor 'value' rating are shown in **Table 11.1** below.

Sensitive Ecological Receptor 'value' rating	Highest possible significance level
International Importance	**Significant Positive/ Negative impact at International level**
National Importance	**Significant Positive/Negative impact at National level**
County Importance	**Significant Positive/ Negative impact at County level**
Local Importance (higher value)	**Significant Positive/ Negative impact at Local level**

Table 11.1 Maximum level of impact significance for Sensitive Ecological Receptors

11.3.6 Field Surveys

This section describes the ecological surveys carried out to inform the assessment of likely significant effects on European sites.

A summary of ecological surveys carried out and survey dates are provided in **Table 11.2**.

[3] In accordance with NRA (2009) Guidelines, the Zone of Influence is an important term to define the receiving environment for the activities associated with the project and the biophysical changes that are likely to occur. The Zone of Influence is the 'effect area' over which change is likely to occur. This differs for different species and habitats due to varying sensitivities to potential impacts.

Survey	Survey Date(s)	Surveyor(s)
Habitat and flora surveys	22nd October 2019 3rd June 2020	Scott Cawley Ltd.
Terrestrial mammal surveys	22nd October 2019 3rd June 2020	Scott Cawley Ltd.
Breeding bird surveys	3rd June 2020 11th June 2020	Scott Cawley Ltd. and independent ornithologist John Fox
Wintering bird surveys	22nd October 2019 15th November 2019 29th November 2019 12th December 2019 23rd December 2019 10th January 2020 29th January 2020 13th February 2020 26th February 2020 12th March 2020 24th March 2020 26th November 2020 10th December 2020 15th December 2020 25th January 2021 29th January 2021 16th February 2021 25th February 2021 11th March 2021 15th March 2021	Scott Cawley Ltd. and independent ornithologists Hugh Delaney and Kathryn Sheridan
Winter bird camera monitoring	December 9th 2019 to March 30th 2020	Evercam
Bat surveys:		
Bat fauna assessment - Altemar	2nd October 2019	Altemar
Appraisal of Potential Roost Features	22nd October 2019	Scott Cawley Ltd.
Bat roost presence/absence surveys and bat activity surveys	11th June 2020 14th July 2020 6th August 2020	Scott Cawley Ltd.

Table 11.2 Ecological surveys and survey dates

11.3.6.1 Habitats and flora Survey

An initial habitat survey was undertaken of the proposed development site on the 22nd October 2019 by Colm Clarke of Scott Cawley Ltd. Habitats on site were re-assessed

later in the growing season on 3rd June 2020 by Colm Clarke of Scott Cawley Ltd. These habitat surveys were conducted following the methodology described in *Best Practice Guidance for Habitat Survey and Mapping* (Smith *et al.,* 2011). All habitat types were classified using the *Guide to Habitats in Ireland* (Fossitt, 2000), recording the indicator species and abundance using the DAFOR scale[4] and recording any species of conservation interest. Vascular and bryophyte plant nomenclature generally follow that of *The National Vegetation Database (*Weekes & FitzPatrick, 2010), having regard to more recent taxonomic changes to species names after the *New Flora of the British Isles* (Stace, 2019) and the British Bryological Society's *Mosses and Liverworts of Britain and Ireland: A Field Guide* (Atherton, Bosanquet & Lawley, 2010).

11.3.6.2 Fauna Surveys

Terrestrial Mammals (excl. Bats)

A terrestrial fauna survey (excluding bats) of the proposed development site was undertaken on 22nd October 2019 and again on 3rd June 2020 by Colm Clarke and Kristie Watkin Bourne of Scott Cawley. The presence/absence of terrestrial fauna species were surveyed through the detection of field signs such as tracks, markings, feeding signs, and droppings, as well as by direct observation. The habitats on site were assessed for signs of usage by protected/red-listed fauna species, and their potential to support these species. The terrestrial mammal surveys included checks for the presence of badger setts and otter holts (e.g., resting places of these protected species).

Bats

The trees and stone walls within the proposed development site, and residential buildings to the immediate north-west of the proposed development site, were appraised and inspected for signs of roosting bats (e.g., droppings, oil staining, corpses) on 22nd October 2019 by Colm Clarke of Scott Cawley Ltd. Colm is named on licence DER/BAT 2020-67, a derogation licence for the *European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. No 477 of 2011)*, issued by the NPWS to facilitate entry to and survey of a bat roost, including use of an endoscope to check potential roost features.

[4] The DAFOR scale is an ordinal or semi-quantitative scale for recording the relative abundance of plant species. The name DAFOR is an acronym for the abundance levels recorded: Dominant, Abundant, Frequent, Occasional and Rare.

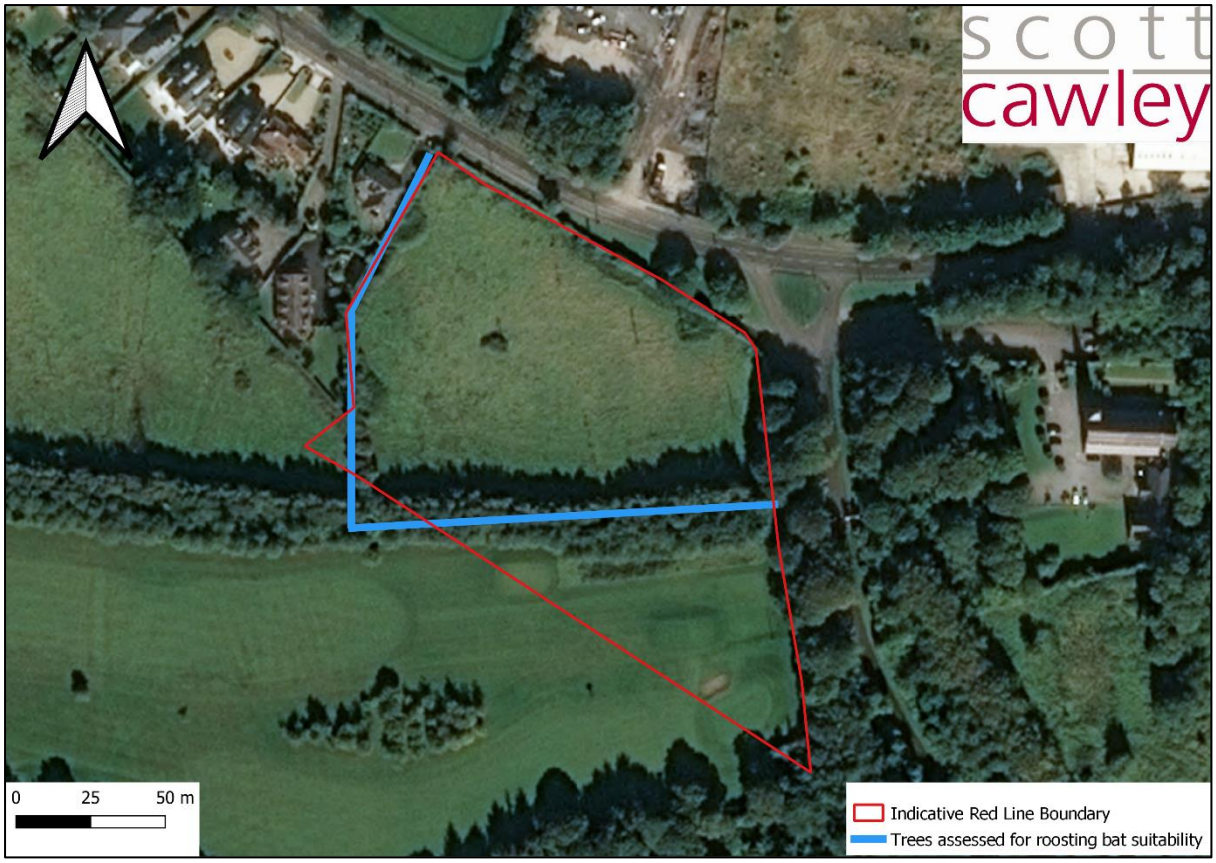

Figure 11.2: Trees assessed for roosting bat suitability

The survey on 22nd October 2019 consisted of appraisal of external parts of buildings only: No buildings are located within the proposed development site, and those along the perimeter are outside of the ownership of the applicant. Inspection surveys of trees, specifically trees in the hedgerow that runs east-west through the site, see **Figure 11.2**, was aided by the use of an endoscope device (Rigid CA-350x).The proposed development site and the trees within were assessed for their suitability for roosting and / or foraging bats on this occasion, based on advice contained within *Bat Surveys for Professional Ecologists: Good Practice Guidelines* (Collins, ed., 2016), which have been reproduced in **Table 11.3** below.

Suitability	Description Roosting habitats	Commuting and foraging habitats
Negligible	Negligible habitat features on site likely to be used by roosting bats.	Negligible habitat features on site likely to be used by commuting or foraging bats.
Low	A structure with one or more potential roost sites that could be used by individual bats opportunistically. However, these potential roost sites do not provide enough space, shelter, protection, appropriate conditions and/or suitable surrounding habitat to be used on a regular basis or by larger numbers of bats (i.e., unlikely to be suitable for maternity or hibernation). A tree of sufficient size and age to contain PRFs but with none seen from the ground or features seen with only very limited roosting potential.	Habitat that could be used by small numbers of commuting bats such as a gappy hedgerow or unvegetated stream, but isolated, i.e., not very well connected to the surrounding landscape by another habitat. Suitable, but isolated habitat that could be used by small numbers of foraging bats such as a lone tree (not in a parkland situation) or a patch of scrub.
Moderate	A structure or tree with one or more potential roost sites that could be used by bats due to their size, shelter, protection, conditions and surrounding habitat but unlikely to support a roost of high conservation status (with respect to roost type only – the assessments in this table are made irrespective of species conservation status, which is established after presence is confirmed).	Continuous habitat connected to the wider landscape that could be used by bats for commuting such as lines of trees and scrub or linked back gardens. Habitat that is connected to the wider landscape that could be used by bats for foraging such as trees, scrub, grassland or water.
High	A structure or tree with one or more potential roost sites that are obviously suitable for use by larger numbers of bats on a more regular basis and potentially for longer periods of time due to their size, shelter, protection, conditions and surrounding habitat.	Continuous, high-quality habitat that is well-connected to the wider landscape that is likely to be used regularly by commuting bats such as river valleys, streams, hedgerows, lines of trees and woodland edge. High-quality habitat that is well connected to the wider landscape that is likely to be used regularly by foraging bats such as broadleaved woodland, treelined watercourses and grazed parkland. Site is close to and connected to known roosts.

Table 11.3 Guidelines for assessing the potential suitability of proposed development sites for bats, based on the presence of habitat features within the landscape, applied according to professional judgement. This table is from Collins (2016).

Two extended dusk roost emergence surveys were completed by Nicholas Fettes, Adele Goulding Sheehan, Críostóir MacCuirc, and Shane Brien of Scott Cawley Ltd., and

independent ecologist Kevin Delahunty on 11th June 2020 and 6th August 2020. A dawn roost re-entry survey was completed by Nicholas Fettes and Niall McHugh of Scott Cawley Ltd. on 14th July 2020. Weather during the survey was generally dry and partly cloudy, with temperatures above 12˚C. There was some light drizzle on 11th June 2020, however this is not likely to have imposed a limitation on survey outcomes on account of the time of year of surveys, and the high night-time temperatures on the survey date.

The aim of the surveys was to determine roost presence/absence in buildings in the vicinity of the proposed development site, specifically two residential dwellings on the north-western boundary of the proposed development site. The secondary aim of the survey was to document the range of species occurring within the proposed development site and the vicinity, and to identify important features for foraging and commuting bats within the proposed development site. Surveyors were posted at vantage points within the lands and in the immediate vicinity to observe aspects of the buildings that overlook the proposed development site. The dusk emergence surveys commenced approximately 15 minutes before sunset, and were concluded approximately two hours after sunset. The dawn re-entry survey commenced approximately two hours before sunrise and finished shortly after sunrise. Bat calls were recorded using Elekon BatLogger M devices. Surveyors undertook a short walked transect of hedgerows and other boundary features in the proposed development site and immediate vicinity with the bat detectors, following the completion of roost presence/absence surveys to record any foraging or commuting bats.

Bat calls were analysed by Colm Clarke of Scott Cawley using Elekon BatExplorer software to aid in the identification of bat species by their calls. Calls were identified to species level (where this was possible), through professional judgement and with reference *British Bat Calls: A Guide to Species Identification* (Russ, 2012).

Breeding Birds

Breeding bird surveys were undertaken in the proposed development site on the 3rd June 2020 by Colm Clarke of Scott Cawley, and on 11th June 2020 by independent ornithologist John Fox, using a methodology adapted from the *Bird Monitoring Methods - A Manual of Techniques for Key UK Species (*Gilbert, Gibbons, & Evans, 1998). The study area encompassed the proposed development site and immediate vicinity. Lands within the study area were slowly walked in a manner allowing the surveyor to come within 50m of all habitat features. Birds were identified by sight and song, and general location and activity were recorded using the British Trust for Ornithology (BTO) species and activity codes.

Wintering Birds

Wintering bird surveys were undertaken across two wintering bird seasons, from October 2019 to March 2020 in the 2019/20 wintering bird season, and between November 2020 and March 2021 in the 2020/21 wintering bird season. Dates of surveys are included in **Table 11.2**.

Surveys were completed by independent ornithologists Hugh Delaney and Kathryn Sheridan as well as Colm Clarke, Cathal O'Brien, Shane Brien, Nicholas Fettes, Emmi Virkki, and Lorna

Gill, all of Scott Cawley Ltd. Wintering bird surveys were conducted using a methodology based on the *Bird Monitoring Methods - A Manual of Techniques for Key UK Species.*

The study area covered the proposed development site, the adjacent Deer Park Golf Course up to *c.* 300m[5], from the proposed development site boundary and Claremont Strand up to 300m from the proposed development site boundary, see **Figure 11.1** for 300m buffer. The Golf Course section was surveyed visually using binoculars/scope by a team of two surveyors on each survey visit. The proposed development site was checked for evidence of usage by wildfowl such as swans or geese (e.g., droppings). Birds were identified by sight, and general location and activity were recorded using the British Trust for Ornithology (BTO) species and activity codes. Observations of birds at Claremont Strand were also undertaken from a vantage point north of the Howth DART station at high, low, and mid-tide, on each survey date.

In addition to the winter bird surveys, Glenveagh Living Ltd. engaged Evercam Ltd. to install 8 no. cameras in areas identified by Scott Cawley Ltd. as having been used by light-bellied brent geese in the past, and which were known (in November 2019) to continue to be used by light-bellied brent geese and other wintering wetland bird species associated with protected sites. These cameras collected data on the use of Deer Park Golf Course lands by light-bellied brent geese and other wintering bird species between December 2019 and March 2020. The data collected was utilised by Scott Cawley Ltd. to complement information collected from field surveys and to inform their assessment of the proposed development. The layout of cameras in the survey area is illustrated in **Figure 11.3** below.

[5] For birds, disturbance effects would not be expected to extend beyond a distance of c.300m, as noise levels associated with general construction activities would attenuate to close to background levels at that distance. The disturbance zone of influence for waterbirds is based on the relationship between the noise levels generated by general construction traffic/works (BS 5228:2009 Code of Practice for Noise and Vibration Control on Construction and Open Sites – Part 1 Noise) and the proximity of those noise levels to birds – as assessed in Cutts, N. Phelps, A. & Burdon, D. (2009) *Construction and Waterfowl: Defining Sensitivity, Response, Impacts and Guidance*, and Wright, M., Goodman, P & Cameron, T. (2010) Exploring Behavioural Responses of Shorebirds to Impulsive Noise. *Wildfowl* (2010) 60: 150–167. At 300m, noise levels are below 60dB or, in most cases, are approaching the 50dB threshold below which no disturbance or displacement effects would arise.

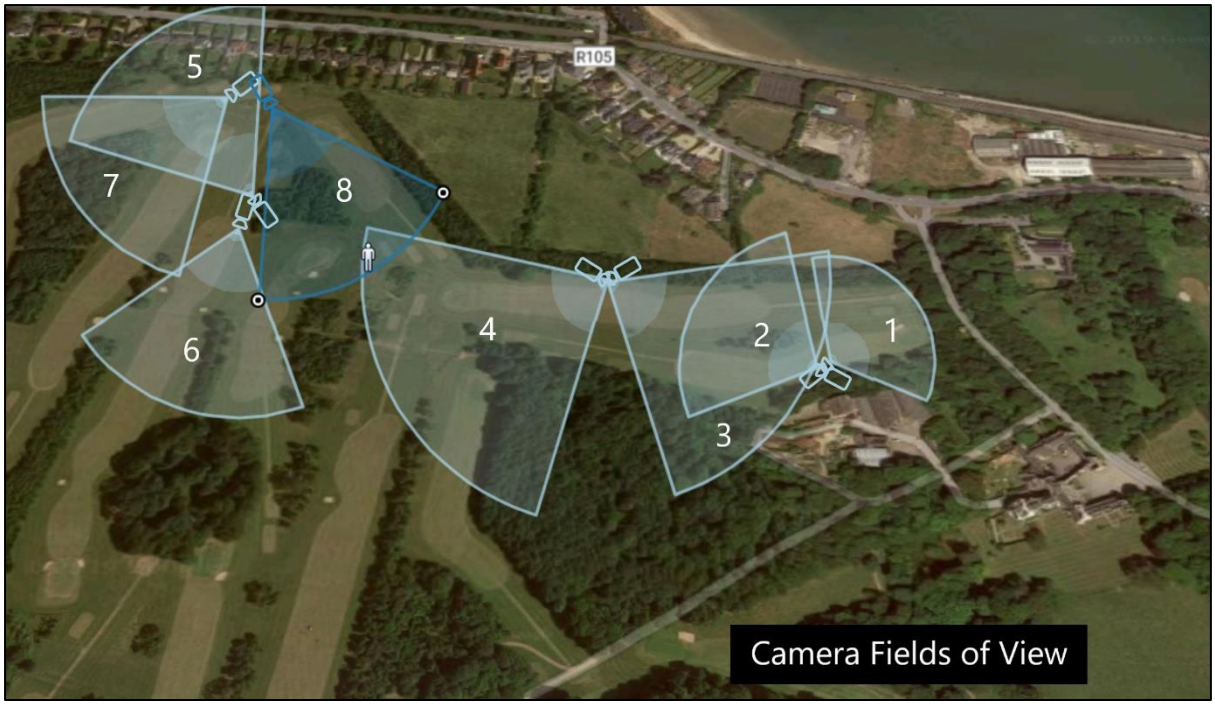

Figure 11.3: Camera Layout in Deer Park Golf Course

Reptiles and Amphibians

The lands were visually assessed by Colm Clarke of Scott Cawley Ltd. for their suitability for use by reptiles and amphibians on 3rd June 2020. Common lizard *Zootoca vivipara*, Ireland's only indigenous reptile species, requires a range of basking, foraging and sheltering areas and can be found in a variety of habitats[6]. Ireland's amphibians are generally associated with wetlands, and pond edge habitats, but also forage in terrestrial habitats (King *et al*., 2011).

11.4 Difficulties Encountered

The initial habitat survey of the proposed development site was undertaken in late autumn, outside of the optimal season for recording flora species. However, this limitation was overcome by rechecks of vegetation (including checks for invasive species) in June 2020, concurrent with a breeding bird survey. This time of year is within the optimal season for survey of vegetation (NRA, 2009).

Surveys of the proposed development site for bats were undertaken within the appropriate survey seasons:

- Appraisal of features for roosting bats can be undertaken at any time of year (refer to Table 2.2, page 18 of *Bat Surveys for Professional Ecologists: Good Practice Guidelines* (Collins ed., 2016)), as the purpose of such surveys is to identify features which could potentially be used by bats, and detect any visible signs of roosting bats. There were no constraints to the identification of potential roost features from visual inspection in October 2020.

[6] The Herpetological Society of Ireland (2020) *Common Lizard*. Available online at www.thehsi.org Accessed 22nd February 2021

- Bat activity surveys are seasonally limited, as the likelihood of encountering bats during survey depends on prevailing weather conditions. Bat activity drops off at low temperatures (e.g., when air temperatures are less than 8˚C). Activity is therefore lowest during the winter and spring months. Generally, bat activity surveys in Ireland, for the purpose of identification of transitional and day roosts, will be undertaken between April/May and September/October, while surveys for maternity roosts will be undertaken between mid-May and August. The surveys for the proposed development were undertaken within the period for identification of either maternity or transitional roosts, during appropriate weather conditions and therefore the timing of surveys is not a limitation to the survey outcomes.
- Survey effort for the identification of roosting bats is in line with recommendations in *Bat Surveys for Professional Ecologists: Good Practice Guidelines* (Collins, ed. 2016) for sites with 'high suitability' for roosting bats. The level of survey effort is proportionate to the site, and all reasonable lengths have been undertaken to determine the presence of roosting bats on site.

Due to timing of engagement of Scott Cawley Ltd. by the client, the full winter bird season (generally taken as October- March inclusive) could not be covered for either the 2019/2020 surveys or 2020/2021 surveys. Surveys in 2019/2020 commenced on 22nd October, thereby missing the first 3 weeks of the winter bird season, and surveys in 2020/2021 commenced on 24th November thereby missing the first 7 weeks of the winter bird season. This is not considered a limitation given that there were two winter seasons covered and the period not covered on both years consisted of early in the winter bird season when birds are less likely to forage inland[7]. This means that there are no limitations arising from the timing of winter bird survey visits with respect to identifying the range of bird species present and identifying and mitigating potential impacts on winter bird populations

Both breeding bird surveys were undertaken in June 2020, and therefore corresponded to late season breeding bird surveys. The early breeding bird season (mid-March through April, inclusive) in 2020 coincided with the imposition of restrictions on movements and activities by the Irish Government in response to the first wave of the COVID-19 pandemic. Scott Cawley Ltd. ceased survey work between 27th March and 18th May 2020 in response to government advice on working with COVID. This meant that an early season breeding bird survey visit could not be completed. The rate of visitation to the site over the 2019 and 2020, during which bird species, including resident species were observed, means that there are no limitations arising from the timing of breeding bird survey visits with respect to identifying the range of bird species present and identifying and mitigating potential impacts on local breeding bird populations.

[7] BirdWatch Ireland Wings Winter (2017) https://birdwatchireland.ie/app/uploads/2019/03/Species-Focus-Brent-Goose.pdf [Accessed: 31/03/2021]

11.5 Baseline Environment

11.5.1 Land use zoning

The proposed development site is currently zoned as 'RS – Residential' with the objective '*To provide for residential development and to protect and improve residential amenity.'* and 'HA – High Amenity' with the objective, see **Figure 11.4** '*To protect and improve high amenity areas.'* under the Fingal Development Plan 2017-2023. The proposed development site lies within the northern boundary of Deer Park. Lands to the south of the proposed development, within Deer Park area zoned as 'HA – High Amenity' with the objective '*To protect and improve high amenity areas'.* Lands to the north of the proposed development site are zoned as 'OS – Open Space' with the objective '*To preserve and provide for open space and recreational amenities'* and 'TC - Town and District Centre' with the objective *'Protect and enhance the special physical and social character of town and district centres and provide and/ or improve urban facilities'.* There is a Special Amenity Area (SAA) buffer zone towards the south of the proposed development site.

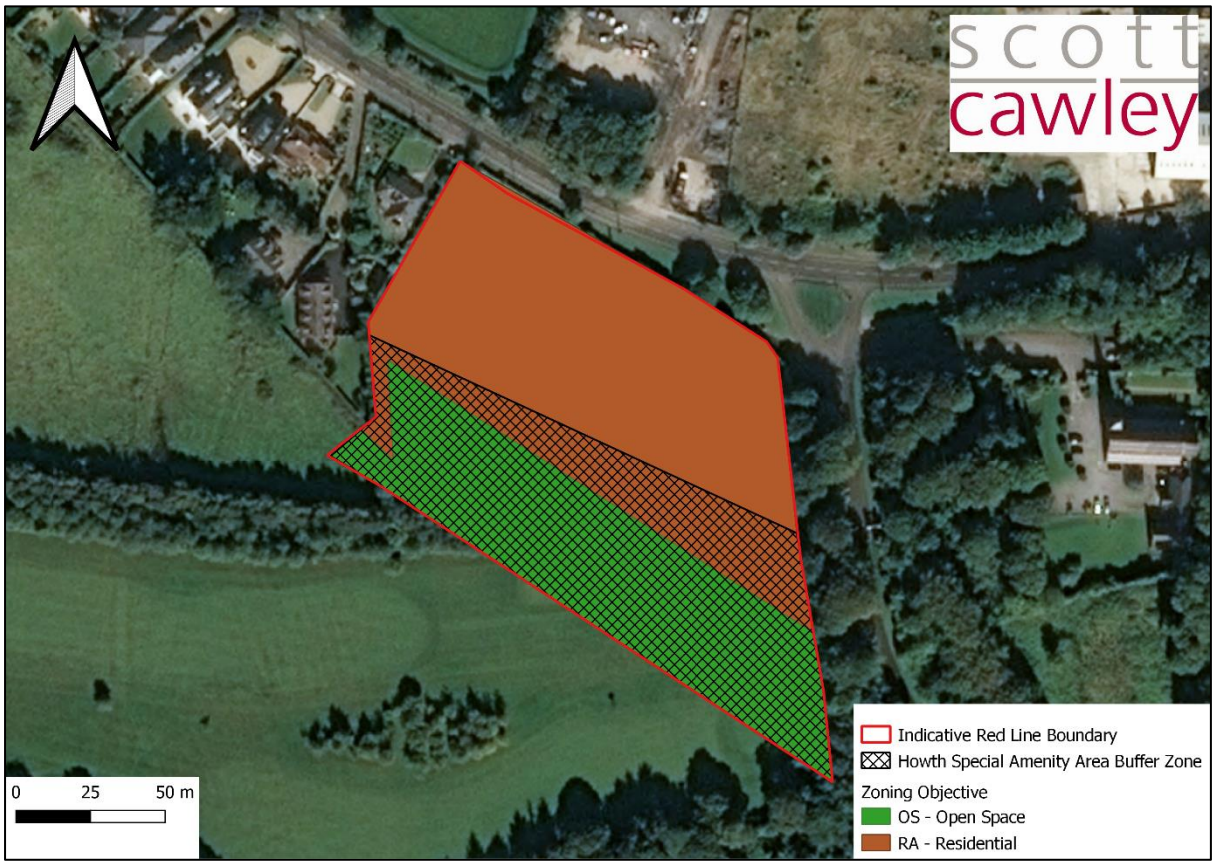

Figure 11.4 Zoning Objectives within the proposed development site

11.5.2 Designated sites

11.5.2.1 European Designated Sites

Special Areas of Conservations (SAC) are designated under the EC Habitats Directive (92/43/EEC) as amended, which is transposed into Irish law through a variety of legislation

including the Birds and Habitats Regulations and the Planning and Development Acts. The legislation enables the protection of certain habitats (listed on Annex I of the Directive) and/or species (listed on Annex II). Special Protection Areas (SPAs) are designated under the Birds Directive (2009/147/EC). This allows for the protection of protected bird species listed on Annex I of the Directive, e.g. regularly occurring populations of migratory species (such as ducks, geese or waders), and areas of international importance for birds.

There are no European sites within or directly adjacent to the boundaries of the proposed development site. There are 9 SACs within *c.* 15km of the proposed development and 11 SPAs within *c.* 20km. As birds are mobile, and some wintering goose species can travel up to 20km between roosting and feeding sites (SNH, 2014), it is possible that wintering birds occurring in the vicinity of the proposed development site are associated with SPAs located a significant distance from the proposed development site. The closest European site to the proposed development is Baldoyle Bay SAC; *c*. 170m to the north. Baldoyle Bay SAC is designated for mudflats and sandflats not covered by seawater at low tide [1140], Salicornia and other annuals colonizing mud and sand [1310] Atlantic salt meadows *Glauco-Puccinellietalia maritimae* [1330], Mediterranean salt meadows *Juncetalia maritimi* [1410]. See **Figure 11.5** and **Figure 11.6** for a map of European Sites located within the vicinity of the proposed development site

The proposed development site is located within the Liffey and Dublin Bay catchment, the Mayne_SC_010 sub-catchment and the 'Howth_010' sub-basin. The Irish Sea Dublin (HA 09) coastal waters are the receiving hydrological environment. According to EPA online Envision Maps, the status of Irish Sea Dublin (HA 09) coastal waters are 'good', and it has been classified as 'not at risk' of failing to meet its objectives under the Water Framework Directive. Irish Sea Dublin (HA 09) coastal waters are 'unpolluted'. There are no watercourses within the proposed site. The nearest watercourse, according to the EPA envision mapping, is the Bloody Stream (WFD river waterbody IE_EA_09H230880; segment code 09_2176), which is located 50m east of the proposed development site, and outfalls into the Irish Sea Dublin (HA 09) at Claremont Strand.

The Appropriate Assessment Screening Report (Scott Cawley, 2021) accompanying this application under separate cover, assessed Qualifying Interests, their threats, and their underpinning conditions for all European Sites potentially affected by the development and concluded that the possibility of the proposed development resulting in significant effects of European sites could not be excluded, either alone or in combination with other plans or projects. The assessment presented in the Natura Impact Statement (NIS) (Scott Cawley, 2021) accompanying this application, of the potential for the proposed development to impact upon European sites, concluded that, with the implementation of the mitigation measures proposed in the NIS report, the proposed development does not pose a risk of adversely affecting (either directly or indirectly) the integrity of any European sites, either alone or in combination with other plans or projects. Therefore, the proposed development is not likely to have significant residual effects on any European sites.

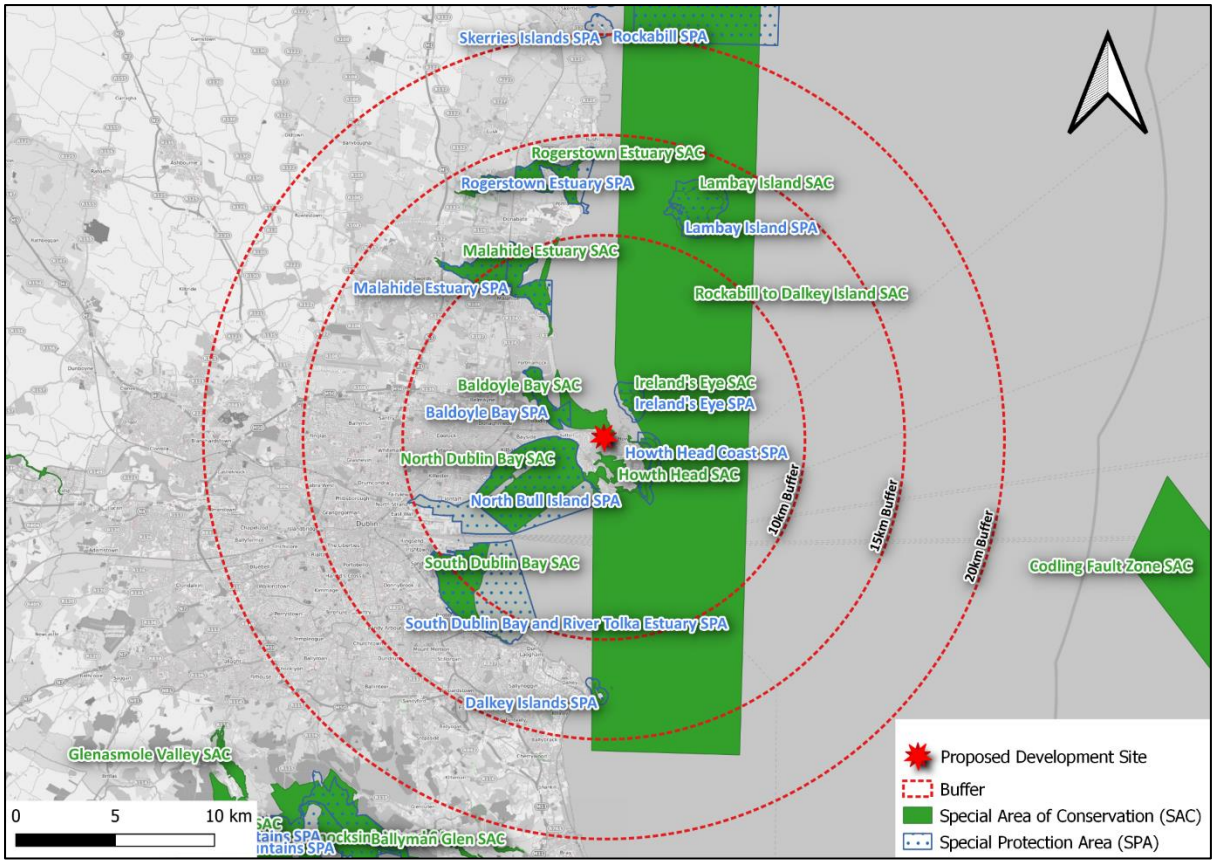

Figure 11.5 European designated sites within the vicinity of the proposed development site

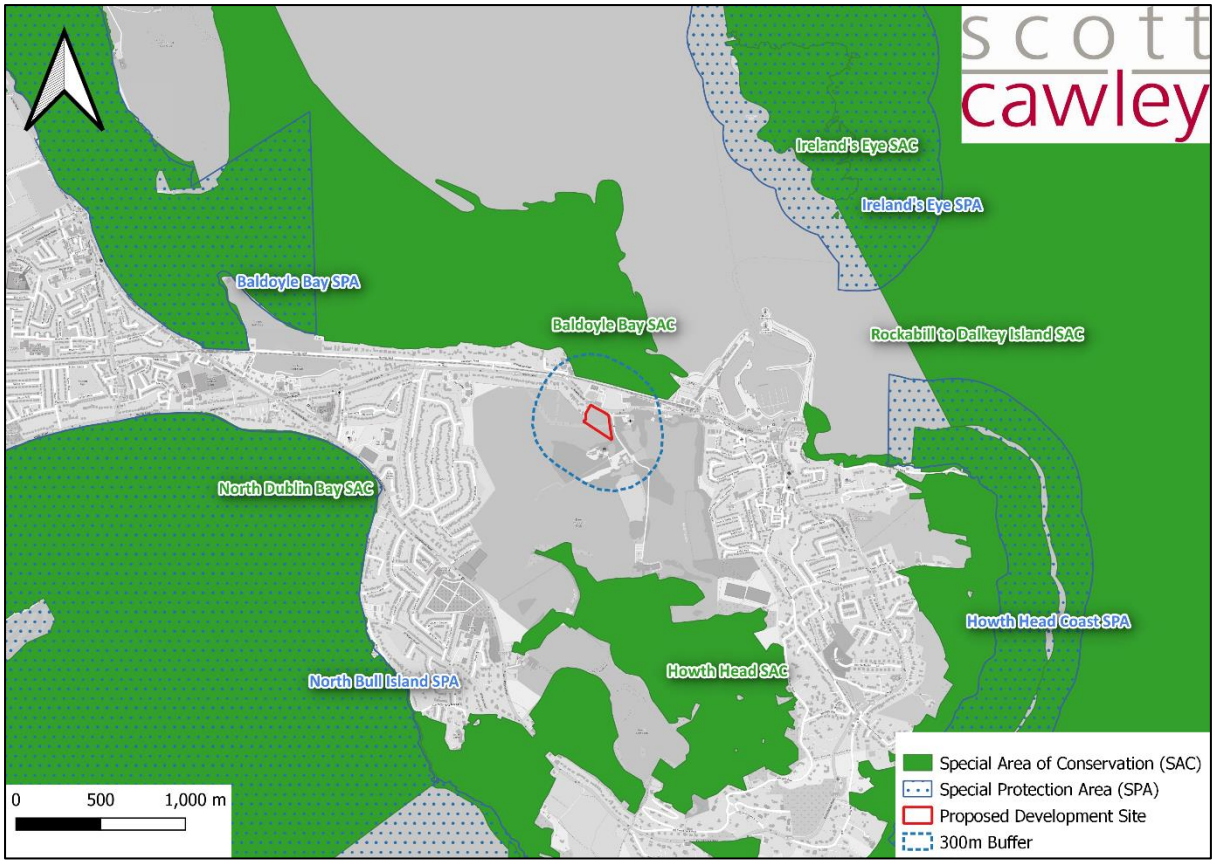

Figure 11.6: European designated sites within the vicinity of the proposed development site

11.5.2.2 Nationally Designated Sites

Natural Heritage Areas (NHAs) are designations under the Wildlife Acts in order to protect habitats, species or geology of national importance. Many of the NHAs in Ireland overlap with Natura 2000 sites. Although many NHA designations are not yet fully in force under this legislation (referred to as 'proposed NHAs' or pNHAs), they are offered protection in the meantime under planning legislation which requires that planning authorities give due regard to their protection in planning policies and decisions[8].

There are no NHAs within or directly adjacent to the boundaries of the proposed development site. The nearest nationally designated site to the proposed development is Skerries Islands NHA (001218) which is 19.9km north of the proposed development site. There are no pNHAs within or directly adjacent to the boundaries of the proposed development site. The nearest nationally designated site to the proposed development is Baldoyle Bay pNHA (000199) which is *c.* 170m north of the proposed development site. Surface water from the proposed development will drain into Baldoyle Bay and into the pNHA. See **Figure 11.7** for a map of Natural Heritage Areas located within the vicinity of the proposed development site.

[8] Source: NPWS Website. Available online at http://www.npws.ie/protected-sites/nha. Accessed 06 October 2020

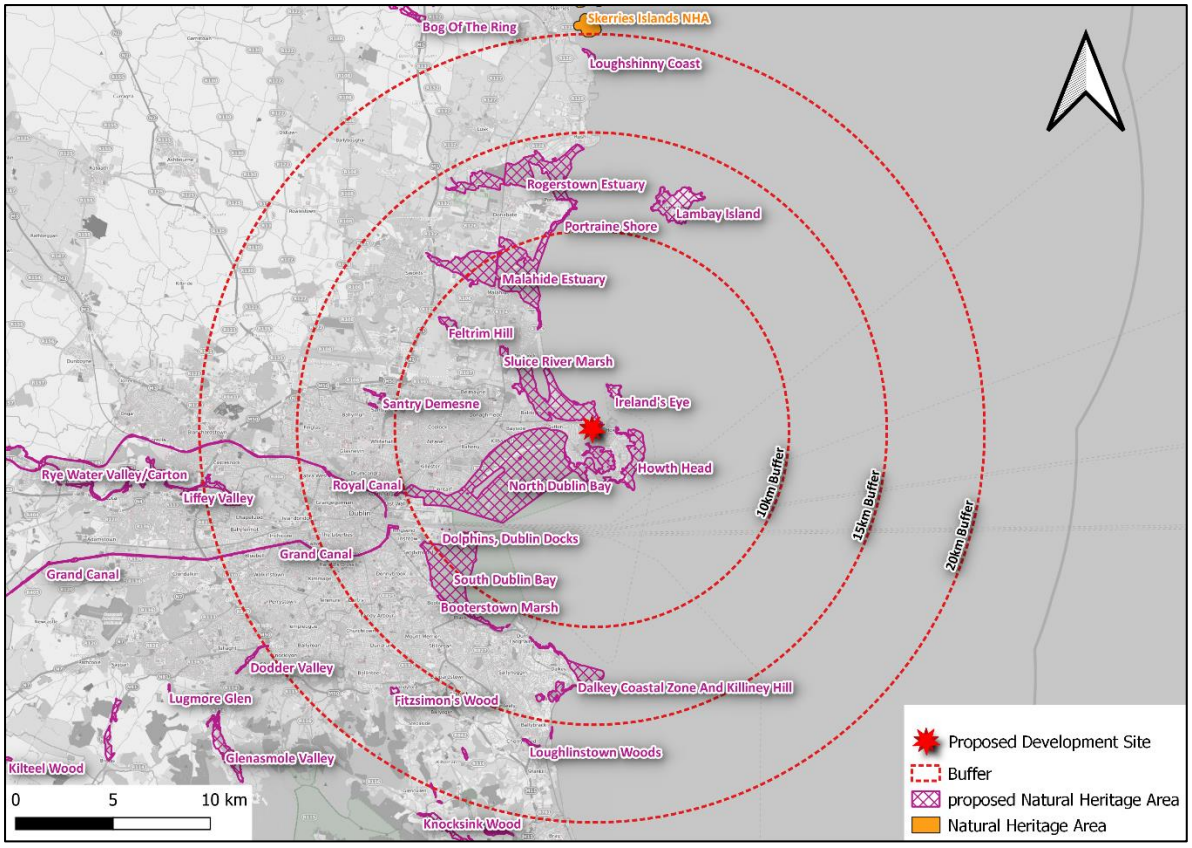

Figure 11.7 Natural Heritage Areas (NHAs) and proposed Natural Heritage Areas (pNHAs) within the vicinity of the proposed development site

Table 11.4 Designated Sites Located within the vicinity of the proposed development site and proposed Natural Heritage Areas within the vicinity of the proposed development site

European Site Name [Code] and its Qualifying interest(s) / Special Conservation Interest(s) (*Priority Annex I Habitats)	**Location Relative to the Proposed Development Site**
Special Area of Conservation (SAC)	
Baldoyle Bay SAC [000199] 1140 Mudflats and sandflats not covered by seawater at low tide 1310 Salicornia and other annuals colonizing mud and sand 1330 Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) 1410 Mediterranean salt meadows (*Juncetalia maritimi*) NPWS (2012) *Conservation Objectives: Baldoyle Bay SAC 000199.* Version 1.0. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht[9]	*c.* 170m north of the proposed development

[9] The versions of the conservation objectives documents referenced in this table are the most recent published versions at the time of writing – 18/02/2021

Table 11.4 Designated Sites Located within the vicinity of the proposed development site and proposed Natural Heritage Areas within the vicinity of the proposed development site

European Site Name [Code] and its Qualifying interest(s) / Special Conservation Interest(s) (*Priority Annex I Habitats)	Location Relative to the Proposed Development Site
Howth Head SAC [000202] 1230 Vegetated sea cliffs of the Atlantic and Baltic coasts 4030 European dry heaths NPWS (2016) *Conservation Objectives: Howth Head SAC 000202.* Version 1. National Parks and Wildlife Service, Department of Arts, Heritage, Regional, Rural and Gaeltacht Affairs.	*c.* 675m south and east of the proposed development
North Dublin Bay SAC [000206] 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 1330 Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) 1395 Petalwort *Petalophyllum ralfsii* 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 NPWS (2013) *Conservation Objectives: North Dublin Bay SAC 000206.* Version 1. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.	*c.* 1.3km south-west of the proposed development
Rockabill to Dalkey Island SAC [003000] 1170 Reefs 1351 Harbour porpoise *Phocoena phocaena* NPWS (2013) *Conservation Objectives: Rockabill to Dalkey Island SAC 003000.* Version 1. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.	*c.* 1.8km north-east of the proposed development
Ireland's Eye SAC [002193] 1220 Perennial vegetation of stony banks 1230 Vegetated sea cliffs of the Atlantic and Baltic coasts NPWS (2017) *Conservation Objectives: Ireland's Eye SAC 002193.* Version 1. National Parks and Wildlife Service, Department of Arts, Heritage, Regional, Rural and Gaeltacht Affairs.	*c.* 1.8km north-east of the proposed development

Table 11.4 Designated Sites Located within the vicinity of the proposed development site and proposed Natural Heritage Areas within the vicinity of the proposed development site

European Site Name [Code] and its Qualifying interest(s) / Special Conservation Interest(s) (*Priority Annex I Habitats)	**Location Relative to the Proposed Development Site**
Malahide Estuary SAC [000205] 1140 Mudflats and sandflats not covered by seawater at low tide 1310 Salicornia and other annuals colonising mud and sand 1330 Atlantic salt meadows *(Glauco-Puccinellietalia maritimae)* 1410 Mediterranean salt meadows *(Juncetalia maritimi)* 2120 Shifting dunes along the shoreline with *Ammophila arenaria* (white dunes) 2130 Fixed coastal dunes with herbaceous vegetation (grey dunes) NPWS (2013) *Conservation Objectives: Malahide Estuary SAC 000205.* Version 1. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.	*c.* 6.3km north-west of the proposed development
South Dublin Bay SAC [000210] 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 NPWS (2013) *Conservation Objectives: South Dublin Bay SAC 000210.* Version 1. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.	*c.* 7.8km south-west of the proposed development
Lambay Island SAC [000204] 1170 Reefs 1230 Vegetated sea cliffs of the Atlantic and Baltic coasts 1364 Grey seal *Halichoerus grypus* 1365 Harbour seal *Phoca vitulina* NPWS (2013) *Conservation Objectives: Lambay Island SAC 000204. Version 1*. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.	*c.* 11km north-east of the proposed development

Table 11.4 Designated Sites Located within the vicinity of the proposed development site and proposed Natural Heritage Areas within the vicinity of the proposed development site

European Site Name [Code] and its Qualifying interest(s) / Special Conservation Interest(s) (*Priority Annex I Habitats)	**Location Relative to the Proposed Development Site**
Rogerstown Estuary SAC [000208] 1130 Estuaries 1140 Mudflats and sandflats not covered by seawater at low tide 1310 Salicornia and other annuals colonising mud and sand 1330 Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) 1410 Mediterranean salt meadows (*Juncetalia maritimi*) 2120 Shifting dunes along the shoreline with *Ammophila arenaria* (white dunes) 2130 Fixed coastal dunes with herbaceous vegetation (grey dunes) NPWS (2013) *Conservation Objectives: Rogerstown Estuary SAC 000208*. Version 1. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.	*c.* 11.6km north-west of the proposed development
Special Protection Area (SPA)	
North Bull Island SPA [004006] 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 *Croicocephalus ridibundus* A999 Wetlands & Waterbirds NPWS (2015) *Conservation Objectives: North Bull Island SPA 004006.* Version 1. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.	*c.* 1.3km south-west of the proposed development

Table 11.4 Designated Sites Located within the vicinity of the proposed development site and proposed Natural Heritage Areas within the vicinity of the proposed development site

European Site Name [Code] and its Qualifying interest(s) / Special Conservation Interest(s) (*Priority Annex I Habitats)	**Location Relative to the Proposed Development Site**
Ireland's Eye SPA [004117] A017 Cormorant *Phalacrocorax carbo* A184 Herring Gull *Larus argentatus* A188 Kittiwake *Rissa tridactyla* A199 Guillemot *Uria aalge* A200 Razorbill *Alca torda* NPWS (2021) *Conservation objectives for Ireland's Eye SPA [004117].* Generic Version 8.0. Department of Housing, Local Government and Heritage.	*c.* 1.6km north-east of the proposed development
Baldoyle Bay SPA [004016] 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 Wetland and Waterbirds NPWS (2013) *Conservation Objectives: Baldoyle Bay SPA 004016. Version 1.* National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.	*c.* 1.7km north-west of the proposed development
Howth Head Coast SPA [004113] A188 Kittiwake *Rissa tridactyla* NPWS (2021) *Conservation objectives for Howth Head Coast SPA [004113].* Generic Version 8.0. Department of Housing, Local Government and Heritage	*c.* 1.7km east of the proposed development

Table 11.4 Designated Sites Located within the vicinity of the proposed development site and proposed Natural Heritage Areas within the vicinity of the proposed development site

European Site Name [Code] and its Qualifying interest(s) / Special Conservation Interest(s) (*Priority Annex I Habitats)	Location Relative to the Proposed Development Site
Malahide Estuary SPA [004025] A005 Great Crested Grebe *Podiceps cristatus* A046 Light-bellied Brent Goose *Branta bernicla hrota* A048 Shelduck *Tadorna tadorna* A054 Pintail *Anas acuta* A067 Goldeneye *Bucephala clangula* A069 Red-breasted Merganser *Mergus serrator* A130 Oystercatcher *Haematopus ostralegus* A140 Golden Plover *Pluvialis apricaria* A141 Grey Plover *Pluvialis squatarola* A143 Knot *Calidris canutus* A149 Dunlin *Calidris alpina* A156 Black-tailed Godwit *Limosa limosa* A157 Bar-tailed Godwit *Limosa lapponica* A162 Redshank *Tringa totanus* A999 Wetland and Waterbirds NPWS (2013) *Conservation Objectives: Malahide Estuary SPA 004025.* Version 1. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.	*c.* 5.7km north-west of the proposed development
South Dublin Bay and River Tolka Estuary SPA [004024] 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 *Croicocephalus ridibundus* A192 Roseate Tern *Sterna dougallii* A193 Common Tern *Sterna hirundo* A194 Arctic Tern *Sterna paradisaea* A999 Wetland and Waterbirds NPWS (2015) *Conservation Objectives: South Dublin Bay and River Tolka Estuary SPA 004024*. Version 1. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.	*c.* 6.9km south-west of the proposed development

Table 11.4 Designated Sites Located within the vicinity of the proposed development site and proposed Natural Heritage Areas within the vicinity of the proposed development site

European Site Name [Code] and its Qualifying interest(s) / Special Conservation Interest(s) (*Priority Annex I Habitats)	**Location Relative to the Proposed Development Site**
Lambay Island SPA [004069] A009 Fulmar *Fulmarus glacialis* A017 Cormorant *Phalacrocorax carbo* A018 Shag *Phalacrocorax aristotelis* A043 Greylag Goose *Anser anser* A183 Lesser Black-backed Gull *Larus fuscus* A184 Herring Gull *Larus argentatus* A188 Kittiwake *Rissa tridactyla* A199 Guillemot *Uria aalge* A200 Razorbill *Alca torda* A204 Puffin *Fratercula arctica* NPWS (2021) *Conservation objectives for Lambay Island SPA [004069].* Generic Version 8.0. Department of Housing, Local Government and Heritage	*c.* 10.7km north-east of the proposed development
Rogerstown Estuary SPA [004015] A043 Greylag Goose *Anser anser* A046 Light-bellied Brent Goose *Branta bernicla hrota* A048 Shelduck *Tadorna tadorna* A056 Shoveler *Anas clypeata* A130 Oystercatcher *Haematopus ostralegus* A137 Ringed Plover *Charadrius hiaticula* A141 Grey Plover *Pluvialis squatarola* A143 Knot *Calidris canutus* A149 Dunlin *Calidris alpina alpina* A156 Black-tailed Godwit *Limosa limosa* A162 Redshank *Tringa totanus* A999 Wetlands NPWS (2013) *Conservation Objectives: Rogerstown Estuary SPA 004015*. Version 1. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.	*c.* 11.2km north-west of the proposed development
Dalkey Islands SPA [004172] A192 Roseate Tern *Sterna dougallii* A193 Common Tern *Sterna hirundo* A194 Arctic Tern *Sterna paradisaea* NPWS (2021) *Conservation objectives for Dalkey Islands SPA [004172].* Generic Version 8.0. Department of Housing, Local Government and Heritage.	*c.* 12km south of the proposed development

Table 11.4 Designated Sites Located within the vicinity of the proposed development site and proposed Natural Heritage Areas within the vicinity of the proposed development site

European Site Name [Code] and its Qualifying interest(s) / Special Conservation Interest(s) (*Priority Annex I Habitats)	**Location Relative to the Proposed Development Site**
Rockabill SPA [004014] A148 Purple Sandpiper *Calidris maritima* A192 Roseate Tern *Sterna dougallii* A193 Common Tern *Sterna hirundo* A194 Arctic Tern *Sterna paradisaea* NPWS (2013) *Conservation Objectives: Rockabill SPA 004014*. Version 1. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.	*c.* 19.8km north of the proposed development
Skerries Islands SPA [004122] A017 Cormorant *Phalacrocorax carbo* A018 Shag *Phalacrocorax aristotelis* A046 Light-bellied Brent Goose *Branta bernicla hrota* A148 Purple Sandpiper *Calidris maritima* A169 Turnstone *Arenaria interpres* A184 Herring Gull *Larus argentatus* NPWS (2021) *Conservation objectives for Skerries Islands SPA [004122].* Generic Version 8.0. Department of Housing, Local Government and Heritage.	*c.* 19.9km north of the proposed development
Natural Heritage Area (NHA)	
Skerries Islands NHA (001218). Listed under similar conservation objectives as its SAC/SPA designations.	*c.* 19.9km north of the proposed development
proposed Natural Heritage Area (pNHA)	
Baldoyle Bay pNHA [000199] Listed under similar conservation objectives as its SAC/SPA designations.	*c.* 170m north of the proposed development
Howth Head pNHA [000202] Listed under similar conservation objectives as its SAC/SPA designations.	*c.* 705m south and east of the proposed development
North Dublin Bay pNHA [000206] Listed under similar conservation objectives as its SAC/SPA designations.	*c.* 1.3km south-west of the proposed development
Ireland's Eye pNHA [000203] Listed under similar conservation objectives as its SAC/SPA designations.	*c.* 1.8km north-east of the proposed development

Table 11.4 Designated Sites Located within the vicinity of the proposed development site and proposed Natural Heritage Areas within the vicinity of the proposed development site

European Site Name [Code] and its Qualifying interest(s) / Special Conservation Interest(s) (*Priority Annex I Habitats)	Location Relative to the Proposed Development Site
Sluice River Marsh pNHA [001763] This site is located about 1 km west of Portmarnock village. The Sluice River flows into Baldoyle Estuary, less than 1 km away. The marsh backs onto the east side of the railway embankment. The wettest parts of the marsh have Yellow Flag (*Iris seudacorus*), Bulrush (*Typha latifolia*), Water Horsetail (*Equisitum fluviatile*), Common Club-rush (*Scirpus lacustris*), Starwort (*Callitriche* spp.), Thread-leaved Water-crowfoot (*Ranunculus tricophyllus*), the uncommon Brackish Water-crowfoot (*Ranunculus baudotii*), Lesser Marshwort (*Apium inundatum*) and Duckweed (*Lemna* spp.). In the somewhat drier marsh areas the typical plant species are Marsh Bedstraw (*Galium palustre*), Creeping Cinquefoil (*Potentilla reptans*), Meadowsweet (*Filipendula ulmaria*), Water Mint (*Mentha aquatica*), Angelica (*Angelica sylvestris*), Water Plantain (*Alisma plantago-aquatica*) and the sedges *Carex disticha* and *Carex nigra*. Wet grassland occurs around the marsh, and includes such species as Silverweed (*Potentilla anserina*), Lady's Smock (*Cardamine pratensis*), Meadow Vetchling (*Lathyrus pratensis*), Soft Rush (*Juncus effusus*), Creeping bent-grass (*Agrostis stolonifera*) and buttercups (*Ranunculus repens* and *R. acris*). Some wet woodland and scrub occurs on the west side of the site, mostly comprised of willows (*Salix* spp.), Alder (*Alnus glutinosa*) and Downy Birch (*Betula pubescens*), as well as some Hazel (*Corylus avellana*). Mallard, Snipe, Grey Heron, Moorhen and Reed Bunting have been recorded from the marsh. The herons nest nearby. Some waterfowl from Baldoyle Estuary may use the marsh on occasions. This site is of importance as a relatively intact freshwater marsh, a habitat that is now rare in County Dublin.	*c.* 5.6km north-west of the proposed development
Malahide Estuary pNHA [000205] Listed under similar conservation objectives as its SAC/SPA designations.	*c.* 6.3km north-west of the proposed development
South Dublin Bay pNHA [000210] Listed under similar conservation objectives as its SAC/SPA designations.	*c.* 7.7km south-west of the proposed development
Feltrim Hill pNHA [001208] Feltrim Hill is situated in North Co. Dublin less than 1km east of the M1 motorway, and west of Portmarnock. It is a knoll-reef dating from the Carboniferous period. Such reefs were formed by an accumulation of rock and organic debris and they are not strictly comparable with coral reefs today. Knoll-reefs are known from central Ireland and Northern England but are comparatively rare in Britain. Feltrim Hill is regarded as a good example of the phenomenon and a number of fish species have been described from the lower shales. The site was previously known to contain two rare plant species, namely Spring Squill (*Scilla verna*) and Long-stalked Crane's-bill (*Geranium columbinum*). Quarrying at Feltrim has now removed the greater part of the limestone structure and only marginal exposures remain. Despite this the site is still valuable as a geological education site.	*c.* 8.5km north-west of the proposed development
Dolphin, Dublin Docks pNHA [000201] Listed under similar conservation objectives as its SAC/SPA designations.	*c.* 8.9km south-west of the proposed development

Table 11.4 Designated Sites Located within the vicinity of the proposed development site and proposed Natural Heritage Areas within the vicinity of the proposed development site

European Site Name [Code] and its Qualifying interest(s) / Special Conservation Interest(s) (*Priority Annex I Habitats)	Location Relative to the Proposed Development Site
Portraine Shore pNHA [001215] This site is located about 3km east of Donabate. The site is mostly a stretch of rocky shore, with some intertidal sands at the south end. A narrow strip of coastal vegetation above the rocky shore is included. Geologically the rocky shore is an inlier – a structure in which older rock is surrounded by rock of younger age. The northern end is an area of volcanic rocks with limestone, shale and grit to the south. The grit series apparently forms the younger part of the exposure and the volcanic rocks the older. The flora and fauna of the rocky shore is typical of such a habitat, with brown, green and red algae, and marine invertebrates. Turnstones, Oystercatchers and Curlew feed along the shore. Above the rocky shore the following plant species were recorded: Thrift (*Armeria maritima*), Sea Campion (*Silene uniflora*), Sea Beet (*Beta vulgaris* subsp. *maritima*), Kidney Vetch (*Anthyllis vulneraria*), Sea Mayweed (*Tripleurospermum maritimum*), spurge (*Euphorbia* spp.), scurvygrass (*Cochlearia* spp.), Hoary Cress (*Cardaria draba*) and Tree-mallow (*Lavatera arborea*). Spring Squill (*Scilla verna*) was recorded along the cliff path. The narrow cliff path is used regularly by walkers. This site is a good example of a rocky bedrock shore with a typical flora and fauna. The grassy vegetation above the shore adds habitat diversity. The site is also an important geological site.	*c.* 10km north-west of the proposed development
Santry Demesne pNHA [000178] This site is located immediately north of old Santry village, Co. Dublin. The site comprises the remnants of a former demesne woodland. The remaining woods are of generally good quality and include Beech (*Fagus sylvatica*), Wych Elm (*Ulmus glabra*), Ash (*Fraxinus excelsior*), Sycamore (*Acer pseudoplatanus*), Hawthorn (*Crataegus monogyna*) and Scots Pine (*Pinus sylvatica*). A wide range of herbaceous species were recorded from this woodland, including Wood Speedwell (*Veronica montana*), Sanicle (*Sanicula europaea*), Ramsons (*Allium ursinum*), Early Dog-violet (*Viola reichenbachiana*), Goldilocks Buttercup (*Ranunculus auricomus*), Giant Fescue (*Festuca gigantea*) and False Brome (*Brachypodium sylvaticum*). A species legally protected under the Flora Protection Order 1987, Hairy St. John's wort (*Hypericum hirsutum*), was recorded here in 1991. This downy-leaved perennial of river banks and shady places has been recorded from only five counties in eastern Ireland, concentrated in the River Liffey valley. The primary importance of this site is that it contains a legally protected plant species. The woodland, however, is of general ecological interest as it occurs in an area where little has survived of the original vegetation.	*c.* 10.7km west of the proposed development
Grand Canal pNHA [002104] The Grand Canal is a man-made waterway linking the River Liffey at Dublin with the Shannon at Shannon Harbour and the Barrow at Athy. The Grand Canal proposed Natural Heritage Area (pNHA) comprises the canal channel and the banks on either side of it. The canal system is made up of a number of branches - the Main Line from Dublin to the Shannon, the Barrow Line from Lowtown to Athy, the Edenderry Branch, the Naas and Corbally Branch and the Milltown Feeder. The ecological value of the canal lies more in the diversity of species it supports along its linear habitats than in the presence of rare species. It crosses through agricultural land and therefore provides a refuge for species threatened by modern farming methods.	*c.* 11.1km south-west of the proposed development

Table 11.4 Designated Sites Located within the vicinity of the proposed development site and proposed Natural Heritage Areas within the vicinity of the proposed development site

European Site Name [Code] and its Qualifying interest(s) / Special Conservation Interest(s) (*Priority Annex I Habitats)	Location Relative to the Proposed Development Site
Dalkey Coastal Zone and Killiney Hill pNHA [001206] This site represents a fine example of a coastal system with habitats ranging from the sub-littoral to coastal heath. The flora is well developed and includes some scarce species. The islands are important bird sites. The site also has geological importance.	*c.* 11.1km south-west of the proposed development
Lambay Island pNHA [000204] Listed under similar conservation objectives as its SAC/SPA designations.	*c.* 11.2km north-east of the proposed development
Royal Canal pNHA [002103] The Royal Canal is a man-made waterway linking the River Liffey at Dublin to the River Shannon near Tarmonbarry. There is a branch line from Kilashee to Longford Town. The canal NHA comprises the central channel and the banks on either side of it. The main water supply is from Lough Owel (also an NHA) via a feeder channel into the canal at Mullingar. The ecological value of the canal lies more in the diversity of species it supports along its linear habitats than in the presence of rare species. It crosses through agricultural land and therefore provides a refuge for species threatened by modern farming methods.	*c.* 11.2km south-west of the proposed development
Booterstown Marsh pNHA [001205] Booterstown Marsh is the only saltmarsh in south Dublin and, despite some concerns about the increasing salinity of the site, it remains a valuable habitat for many birds as well as containing a diverse flora including the protected plant Borrer's Saltmarsh-grass (Puccinellia fasciculata).	*c.* 11.5km south-west of the proposed development
Rogerstown Estuary pNHA [000208] Listed under similar conservation objectives as its SAC/SPA designations.	*c.* 11.6km north-west of the proposed development

Table 11.4 Designated Sites Located within the vicinity of the proposed development site and proposed Natural Heritage Areas within the vicinity of the proposed development site

11.5.3 Habitats and Flora

11.5.3.1 Desktop Study Flora Records

The National Biodiversity Data Centre (NBDC) database search returned records of five protected flora species under the Flora (Protection) Order 2015 within 2km of the proposed development site listed below with year of record, however none of these species were recorded within the proposed development site during the habitat survey in October 2019 or in June 2020:

- Petalwort *Petalophyllum ralfsii* in 1975
- Cernuous Thread-moss *Bryum uliginosum* in 1860
- Glass-wort Feather-moss *Scleropodium tourettii* in 1872
- Many-seasoned Thread-moss *Bryum intermedium* in 1860
- Warne's Thread-moss *Bryum warneum* in 1910

The NBDC database search returned records of eight non-native invasive species listed on the Third Schedule of the European Communities (Birds and Natural Habitats) Regulations 2011 within 2km of the proposed development site, listed below with year of record, however none of these species were recorded within the proposed development site during the habitat survey in October 2019 or in June 2020:

- Brazilian Giant-rhubarb *Gunnera manicata* in 2014
- Canadian Waterweed *Elodea canadensis* in 2014
- Giant hogweed *Heracleum mantegazzianum* in 2017
- Hottentot-fig *Carpobrotus edulis* in 1986
- Japanese Knotweed *Reynoutria japonica* in 2016
- Rhododendron *Rhododendron ponticum* in2018
- Salmonberry *Rubus spectabilis* in 2014
- Three-cornered Garlic *Allium triquetrum* in 2014

Records of two non-native species which are not subject to restrictions under Regulations 49 and 50 were returned from the desk study; Butterfly-bush *Buddleja davidii* and Sycamore *Acer pseudoplatanus* which are both identified as a medium impact species on Irelands Biodiversity List (O'Flynn, Kelly & Lysaght, 2014).

11.5.3.2 Flora Field Survey Results

The proposed development site is located on the eastern side of the entrance to the Deer Park Demesne. The northern part of the proposed development site, north of a wide hedgerow which runs-east-west, is composed largely of rank dry meadow grassland. The southern part of the proposed development site contains fairways from the Deer Park Golf Course and is dominated by intensively managed amenity grassland.

Residential dwellings and associated gardens are located to the northwest of the proposed development site. The Howth Road is located immediately to the north, and a strip of mixed broadleaved woodland, part of the Deer Park Demesne is located to the east. Further east is St. Mary's Church, which is surrounded by trees on four sides.

The following habitat types (and mosaics of these), assigned using the Heritage Council classification system (Fossitt, 2000), were identified within the proposed development site and are mapped in **Figure 11.8**:

- Stone Walls (BL2)
- Scrub (WS1)
- Amenity grassland (improved) (GA2)
- Dry meadows and grassy verges (GS2)
- Hedgerows (WL1)
- Mixed broadleaved woodland (WD1)

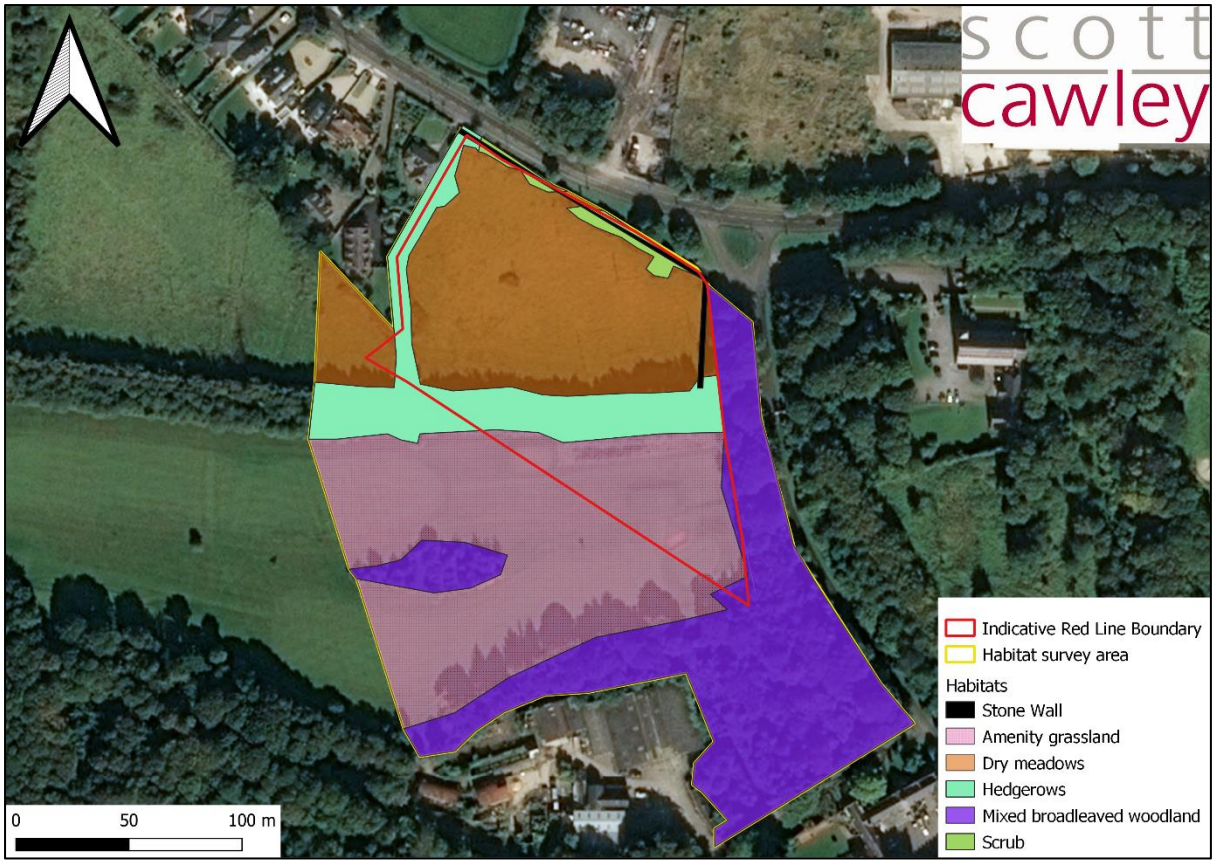

Figure 11.8: Habitat types identified within the proposed development site

A description for each habitat is provided in full below:

Stone Walls (BL2)

The demesne boundary wall is composed of stone and mortar and is almost entirely obscured by growth of ivy *Hedera helix*, which has developed into a dense bush on top of much of the wall. Butterfly bush *Buddleja davidii* has also colonised sections of wall in the north-west corner, and sycamore *Acer pseudoplatanus* has taken foot in cracks in the wall along the northern boundary. Floristically, the stone wall is not particularly unusual in the context of the locality, however it supports a range of fauna species (discussed further under the relevant fauna sections). It has been valued as local importance (lower value) for its floristic interest.

Plate 11-1 – Northern boundary stone wall, almost entirely obscured by scrub vegetation.

Scrub (WS1)

Dense bramble scrub has developed in small pockets in the northern part of the proposed development site. This habitat is dominated by bramble and nettle with some emergent remnant grasses such as false oat-grass. It is likely to have developed over unmanaged dry meadow grassland. This habitat type is of little floristic note, and is of local importance (lower value).

Amenity grassland (improved) (GA2)

The southern part of the proposed development site, corresponding to fairways of the Deer Park Golf Course, is dominated by amenity grassland (improved) (GA2). This is a very species-poor grassland type, dominated by perennial rye-grass *Lolium perenne*, with very occasional white clover *Trifolium repens*, and other weedy grass species such as Yorkshire fog *Holcus lanatus* and Cock's-foot *Dactylis glomerata*. Amenity grassland is one of the most widespread habitat types in urban and suburban areas. The variant in Deer Park Golf Course (pictured in Plate 11-2) is heavily managed through an intensive mowing regime, and application of fertilisers. This area of habitat is included in the Howth SAA buffer zone. This habitat is of local importance (lower value) on account of its low floristic diversity and abundance in the context of the Dublin area. For information on the value of this habitat for wintering birds, refer to section 11.5.4.4.

Plate 11-2 – Amenity grassland in Deer Park Golf Course

Dry meadows and grassy verges (GS2)

The northern part of the proposed development site is dominated by dry meadow grassland. The grass is largely unmanaged, with either no mowing or a very low mowing regime (e.g., grass being cut once or twice per-annum)., resulting in the development of a dense thatch. The sward is dominated by weedy grass species such as false oat-grass *Arrhenatherum elatius*, cock's-foot, Yorkshire fog, bent species *Agrostis* spp. and occasional curled dock *Rumex crispus*. Forbs are very sparse, with nettle *Urtica dioica* being the most abundant. Bramble has colonised patches along the northern boundary of the proposed development site, and is establishing elsewhere in the site. The southern portion of this habitat is included in the Howth SAA buffer zone. This habitat type is floristically poorly developed, and it is of local importance (lower value).

Plate 11-3 – Rank dry meadow grassland in the proposed development site.

Hedgerows (WL1)

A wide (approximately 20m width) hedgerow cuts the proposed development site in two, running east-west across the site (see Plate 11-4). The hedgerow appears to be of relatively recent origin (likely planted in the late twentieth century), and contains a diversity of species. The species are a mix of native and non-native species and include larch *Larix* spp., silver birch *Betula pendula*, Scot's pine *Pinus sylvestris*, Italian alder *Alnus cordata* and hawthorn *Crataegus monogyna*. The understorey is largely composed of bramble. Some woodland species have colonised the ground flora such as false brome *Brachypodium sylvaticum*. A narrower band of remnant hedgerow forms the western boundary of the proposed development site and consists largely of elder *Sambucus nigra* and hawthorn with a bramble understorey. The examples of hedgerows within the proposed development site, while not dominated by native species, are wide, and natural and link with other woodland habitats in the immediate vicinity. The southern hedgerow is included in the Howth SAAO buffer zone. The hedgerows across the site are valued as local importance (higher value) on this basis.

Plate 11-4 – Hedgerow that runs through the centre of the proposed development site.

Mixed Broadleaved Woodland (WD3)

The treelined avenue along the entranceway to the Deer Park demesne has developed into a woodland community. This is largely outside of the proposed development site, although individual trees overhang the proposed development site at its eastern edge. This habitat type is well-established, appearing on the Ordnance Survey Ireland maps from 1837-1842 and

1888-1913[10]. The overstorey is composed of a mix of species, including oak *Quercus* spp. and ash *Fraxinus excelsior*. The understorey is highly modified and dominated by non-native and ornamental species, typical of estate demesnes. The most notable species is bay *Laurus nobilis*, however ornamental varieties of holly *Ilex* sp. are also located along the Deer Park avenue. The ground flora is largely composed of ivy, but false brome and bluebells *Hyacinthoides non-scripta* are also present (the latter outside of the proposed development site entirely).

Woodland habitats are rare at the county and national level. Objectives PM64, RF88, NH27, NH28, NH29, DMS77 DMS78, DMS80, DMS81, DMS82 and DMS83 of the Fingal Development plan afford protection to woodland habitats. Although the woodland in the study area contains a large cohort of non-native species, the rarity of woodland habitats means that it is of at least county level importance.

11.5.4 Fauna

A desk study and several field surveys were carried out to assess the usage of the proposed development site by protected/ red-listed fauna species and potential to support these species. The desk study records for rare, threatened or protected fauna species were generated from a 2km search around the proposed development site using the National Biodiversity Data Centre's online map viewer.

11.5.4.1 Bats

Desktop Study Records

Bats, and their breeding and resting places, are protected under the Wildlife Acts. All bat species are also listed on Annex IV of the EU Habitats Directive (with the lesser horseshoe bat *Rhinolophus hipposideros* also listed on Annex II) and are afforded strict protection under the Habitats Directive and *the European Communities (Birds and Natural Habitats) Regulations, 2011*. All Irish bat species are listed as 'least concern' in the *Ireland Red List No. 12: Terrestrial Mammals* (Marnell *et al*., 2019).

Records of 5 roosts within *c.* 10km of the proposed development were returned from a search of the BCI database conducted on 8th March 2021. None of these known roosts are within or immediately adjacent to the proposed development site, with the closest located in North Co. Dublin to the north. A search of the NBDC database returned the following records, listed below with year of record, of five bat species within 2km of the proposed development site:

- Brown Long-eared Bat *Plecotus auratus* in 2014
- Leisler's bat *Nyctalus leisleri* in 2006
- Soprano Pipistrelle *Pipistrellus pygmaeus* in 2014
- Pipistrelle species *Pipistrellus sp.* in 2014

Given the habitat present in surrounding environment bat roosts are likely to be located nearby. For example, there are four church structures within 300m of the proposed

[10] Based on review of historic maps on the Ordnance Survey Ireland's web mapping database GeoHive, accessed 23rd February 2021

development site, see **Figure 11.9** below. Churches are often used by roosting bats[11], and therefore these structures may provide suitable roosting opportunities for local bat populations in the wider environment.

Figure 11.9: Churches in the immediate vicinity of the proposed development site

Field Survey Results

There are no buildings within the proposed development site (see **Figure 11.1**), although the site is bounded by a stone wall. Two residential buildings, located outside of the proposed development site, are located adjacent to the north-western site boundary. The stone wall that forms the northern boundary is densely vegetated with ivy. Some narrow cracks were visible and inspected with an endoscope device, with no signs or evidence of roosting bats detected. It is likely to be of low suitability for roosting bats. It contains some cracks and crevices, but no large cavities that could accommodate larger numbers of bats. Nonetheless, the wall contains a few suitable cracks (some of which may be obscured by ivy), which may be exploited by bats as a day roost on occasion.

No bats were observed emerging from residential buildings northwest of the proposed development site in 2020. The buildings appear to date to the mid-twentieth century and are partially illuminated by floodlights and street lighting. Bats are light-sensitive species and tend

[11] Bat Conservation Trust – 'Bats and Churches'. Available at: https://www.bats.org.uk/our-work/buildings-planning-and-development/bats-and-churches [Accessed 25/03/2021]

to avoid roosting or foraging in areas subject to artificial illumination (Roche *et al*., 2014). The buildings are constructed in a contemporary style, appear to have attic spaces, are in good condition, with no obvious defects that could be seen from external inspection and which could be exploited by roosting bats. Nonetheless, the buildings are adjacent to high suitability foraging habitat in Deer Park and have been assessed as moderate suitability for roosting bats. Although the buildings are outside the redline boundary, as they are in close proximity to the proposed development site they may be subject to potential impacts arising from the proposal.

Although there are a large number of trees in the proposed development site, specifically in the hedgerow that runs east-west through the site, no trees with Potential Roost Features (PRF)s were identified in the proposed development site during surveys in October 2019. The trees in the hedgerow are mostly of small diameter at breast height and have not developed wounds/cavities which could accommodate roosting bats. For these reasons, the trees across the proposed development site are of negligible suitability for roosting bats. A site-specific bat report produced by Altemar (2019), see Appendix 11.4, Volume III, also found no roosting bats within the proposed development site. Altemar recorded two soprano pipistrelles foraging along the hedgerow that runs through the southern end of the proposed development site.

Four species of bat: Common pipistrelle bat *Pipistrellus pipistrellus*, soprano pipistrelle bat *Pipistrellus pygmaeus*, Leisler's bat *Nyctalus leisleri*, and brown long-eared bat *Plecotus auratus*, were identified during surveys of the proposed development site and its vicinity, although only two of these species (Leisler's bat and common pipistrelle bat) were observed foraging within or passing over the proposed development site, see **Figure 11.10**. A single common pipistrelle bat was observed foraging along the hedgerow in the development site in July 2020. A small number (1-2) of common pipistrelle bats were observed foraging along the same hedgerow for a short period (approximately 10 minutes) during the survey in August 2020. A single Leisler's bat was noted flying over the lands on the same date in August. No bats were recorded within the proposed development site in June 2020. The two species observed in the proposed development site are the most light-tolerant of the Irish bat species and tend to be associated with edge habitats (Roche *et al.*, 2014). They tend to be the only species (along with soprano pipistrelle bat) recorded on surveys in highly urbanised environments in Dublin (Author, pers. Obs).

Bat activity was more heavily concentrated in the area of mixed broadleaved woodland along the avenue in Deer Park, and in the vicinity of the old Abbey in Deer Park (e.g., outside of the proposed development site) on all survey dates. All four species recorded during surveys by Scott Cawley Ltd. were recorded in the woodland in Deer Park. Of particular note were several observations of brown long-eared bat in the vicinity of the Old Abbey, Deer Park. Brown long-eared bat is a woodland specialist (Roche *et al.*, 2014), and emits a very quiet echolocation call, and typically a surveyor will need to be within 5m of a bat to record a call (Dietz & Kiefer, 2014)).

The habitats in the proposed development site are of moderate suitability for foraging bats. The hedgerow that dissects the lands, and the rank grassland in the north of the proposed development site support a small population of foraging common pipistrelle, and likely soprano

pipistrelle bat and Leisler's bat (e.g., other bat species that use edge habitats). Bats appear to avoid the northern boundary of the proposed development site, possibly due to the light spill from the adjacent public road, and from security lighting emitted from nearby residential dwellings.

The habitats in the adjacent Deer Park demesne, particularly woodland habitats, are of high suitability for foraging and commuting bats.

Based on the assessment of the suitability of the proposed development site for roosting and foraging bats, and completion of bat activity surveys in the lands, the local bat populations are considered to be of local importance (higher value) for bats.

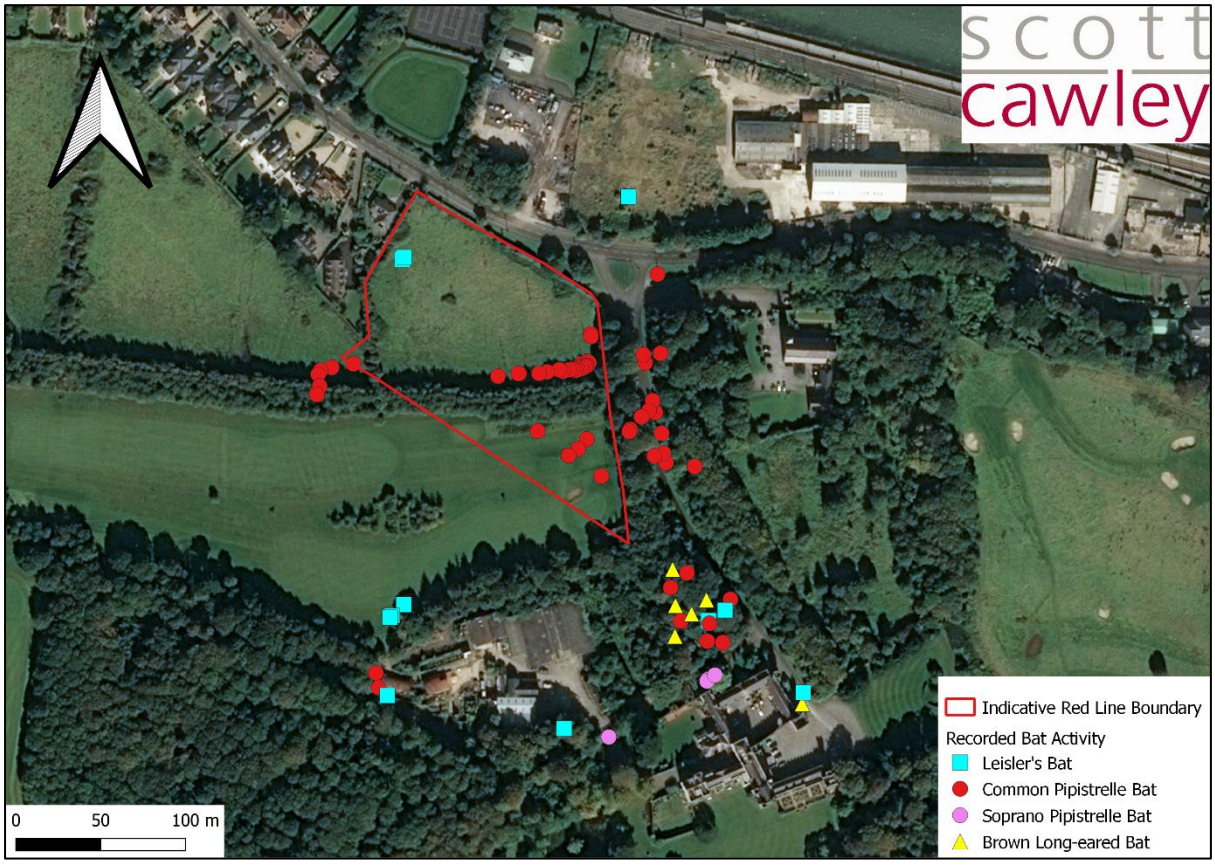

Figure 11.10: Bat activity recorded during 2020 bat activity surveys

11.5.4.2 Terrestrial Mammals (Excluding Bats)

Desktop Study Records

A search of the NBDC database returned the following records, listed below with year of record, of mammal species protected under the EU Habitats Directive and/or Wildlife Acts within 2km of the proposed development site:

- Eurasian Badger *Meles meles* in 1969
- Eurasian Pygmy Shrew *Sorex minutus* in 2014

- Eurasian Red Squirrel *Sciurus vulgaris* in 2014
- European Otter *Lutra lutra* in 1969
- West European Hedgehog *Erinaceus europaeus* in 2016

Field Survey Results

The proposed development site contains a relatively large area of green space. The habitats in the north of the proposed development site are unmanaged and provide a greater degree of variability than the amenity grassland associated with the Deer Park Golf Course. The hedgerows that dissect the site, and woodland in the vicinity are suitable foraging and sheltering habitat for a range of terrestrial fauna species. Badger *Meles meles*, are known to dig setts (underground resting places) in banks and along hedgerows in the Dublin area (Author, pers. Obs). Nonetheless, no setts were identified by surveyors in 2019 or 2020. Signs of foraging by mammals (small snuffle holes) were noted in the northern part of the lands in October 2019. These signs could relate to either badger or fox *Vulpes vulpes*. The Deer Park demesne contains larger tracts of suitable habitat for badger, it is possible that badgers are present in the surrounding Howth demesne, although this was not identified during surveys for the proposed development site. The relatively small number of feeding signs encountered and absence of setts in the lands suggests that it is likely to form a small part of any such territory. The local badger populations are valued to be of local importance (higher value), as the proposed development site is likely to form part of a badger foraging territory.

No other signs of terrestrial mammal activity were collected from the proposed development site.

Two male red squirrels *Sciurus vulgaris* were reported (Sciurus Ecological Solutions Ltd., 2018) during an assessment for Fingal County Council on the Howth peninsula in winter 2017/2018. No red squirrel observations were made within the proposed development site during site visits between October 2019 and March 2021. The mixed broadleaved woodland habitat overhanging the proposed development site is known to be suitable habitat to support red squirrel populations (Sciurus Ecological Solutions Ltd., 2018).

No signs of small mammals were noted during the site surveys within the proposed development. However, the unmanaged grassland, woodland and hedgerow habitats within the proposed development site are considered to be potentially suitable habitat to support small mammal species, such as pygmy shrew *Sorex minutus* or hedgehog *Erinaceus europaeus*. As such, the local small mammal populations are assessed as being of a local importance (higher value).

11.5.4.3 Breeding birds

Desktop Study Records

All nesting wild birds are protected from disturbance and destruction under the Wildlife Acts. Records of Red-listed species and Amber-listed species of Birds of Conservation Concern in Ireland (BoCCI) (Colhoun and Cummins, 2013) were returned within 2km from the survey area. Red-listed, and are listed in Appendix 11.3, Volume III.

Field Survey Results

A range of common bird species were observed in the proposed development site and surrounding areas during surveys conducted in June 2020. Blackbird, blue tit *Cyanistes caeruleus*, coal tit *Periparus ater*, dunnock *Prunella modularis*, goldfinch *Carduelis carduelis*, great tit *Parus major*, hooded crow *Corvus cornix*, magpie *Pica pica*, woodpigeon *Columba palumbus*, wren *Troglodytes troglodytes*, pied wagtail *Motacilla alba*, and chaffinch *Fringilla coelebs* (all species green listed on BoCCI) were identified singing, foraging, or roosting within the proposed development site. Bird species were most frequently observed in or along hedgerows and trees and scrub in the lands. Robin *Erithacus rubecula,* a common species, albeit on the amber list of BoCCI were observed foraging and displaying in the proposed development site, indicating that the site forms part of their home territories. Barn swallow *Hirundo rustica* (amber-listed on the BoCCI), a summer migratory species to Ireland, were observed foraging in the lands in 2020. No nesting habitat for swallow or for swifts *Apus apus* (red-listed on the BoCCI) was identified in the proposed development site.

A broader range of bird species were observed flying over the proposed development site, including species associated with marine habitats in Dublin Bay to the southwest, and in the Irish Sea to the north. Herring gull *Larus argentatus* was the most frequent marine species that flew over the site. Individual cormorants *Phalacrocorax carbo* and great black-backed gull *Larus marinus*, were also noted flying over the site in June 2020.

The breeding bird fauna of the proposed development site is typical of similar suburban settings. The proposed development site contains high quality foraging and nesting habitat, e.g., rank grassland, scrub and hedgerows. The bird fauna at the proposed development site are of local importance (higher value) for this reason.

11.5.4.4 Wintering birds

Winter bird surveys were carried out to inform this EIAR chapter and the Appropriate Assessment report (Scott Cawley Ltd, 2021) and Natura Impact Statement report (Scott Cawley Ltd, 2021) accompanying this application. For baseline survey results and impact assessment on populations of Special Conservation Interest (SCI) species associated with Special Protected Areas (SPA) within 20km of the proposed development site, please refer to these reports. For the purpose of the EIAR chapter, only non-SCI species for SPAs within 20km of the proposed development site will be discussed.

Peak Flock Counts

Peak counts of bird species recorded were all significantly lower than 1% of the national population or, for gull species, 1% of the international population. No national or international population estimates were available for buzzard; however, they are a green listed species (Colhoun and Cummins, 2014-2019) in Ireland with an increase in population and range expansion throughout most of the island (Balmer et al. 2013).

Species	Peak count	1% National[12]	1% International[13]
Within the proposed development site			
Buzzard (*Buteo buteo*)	1	N/A	N/A
Within 300m of the proposed development site			
Great Black-backed Gull (*Larus marinus*)	79	-	3,600
Lesser Black-backed Gull (L*arus fuscus*)	7	-	650
Heron (*Ardea cinerea*)	7	25	5,000

Table 11.5 Peak counts of bird species recorded using the proposed development site during 2019/2020 and 2020/2021 winter bird surveys

Additionally, two red listed (Colhoun & Cummins, 2013) species, meadow pipit *Anthus pratensis* and grey wagtail *Motacilla cinerea* and four amber listed species, mistle thrush *Turdus viscivorus,* greenfinch *Carduelis chloris,* starling *Sturnus vulgaris* and robin *Erithacus rubecula* were recorded during 2019/2020 and 2020/2021 winter bird surveys.

The proposed development site contains high quality foraging habitat for species such as light-bellied brent goose, curlew and oystercatcher, e.g., amenity grassland. The winter bird fauna at the proposed development site are of local importance (higher value) for this reason.

11.5.4.5 Reptiles and Amphibians

Desktop Study Records

A search of the NBDC database returned the following records, listed below with year of record, of reptile and amphibian species protected under the EU Habitats Directive and/or Wildlife Acts within 2km of the proposed development site:

- Common frog *Rana temporaria* in 2018
- Smooth newt *Triturus vulgaris* in 1972
- Common lizard *Lacerta vivipara* in 1908

Field Survey Results

The Wildlife Acts provide protection to Ireland's only reptile species, common lizard and two amphibian species, common frog *Rana temporaria* and smooth newt *Lissotriton vulgaris*. These species are listed as "*least concern*" (Nelson et al., 2019).

The proposed development site is of low to moderate suitability for common lizard species. While there are a range of potential basking and sheltering locations, which could be utilised by common lizard, the species was not observed on site during any surveys conducted in

[12] Crowe, O., & Holt, C. 2013. Estimates of waterbird numbers wintering in Ireland, 2006/07 – 2010/11. Irish Birds 9, 545-552.

[13] Wetlands International. 2012. Waterbird Population Estimates, Fifth Edition. Summary Report Wetlands International, Wageningen The Netherlands (with estimates available at http://wpe.wetlands.org/).

2020. Common lizard is widespread in Ireland and is found in a variety of habitats[6], including grassland and hedgerows, which both occur on site and the surrounding environment, therefore the local common lizard populations are considered to be of local importance (higher value).

Amphibians require access to aquatic habitats (including ephemeral ponds) to breed. No common frogs or smooth newts were observed in the lands during the surveys. The proposed development site does not contain any aquatic habitat features and therefore does not contain suitable habitat for breeding amphibians. Local common frog and smooth newt populations are of local importance (higher value), however, they are not considered to be a key ecological receptor due to lack of suitable habitat, provided that there will be no indirect off-site effects.

11.5.5 Summary of ecological evaluation

Table 11.6 below summarises all identified Key Ecological Receptors (KERs). KERs have been identified as at risk of potentially significant impacts via a source-pathway-receptor link. KER's are valued as local importance (high) or above per the criteria set out in Appendix 11.2, Volume III.

Ecological Receptor	Ecological Valuation	KER?
Designated Sites		
European Sites	International	**Yes**
Proposed Natural Heritage Areas (pNHAs)	National	**Yes**
Habitats		
Stone Walls (BL2)	Local Importance (Lower Value)	No
Amenity grassland (improved) (GA2)	Local Importance (Lower Value)	No
Dry meadows and grassy verges (GS2)	Local importance (Lower Value)	No
Hedgerows (WL1)	Local Importance (Higher Value)	**Yes**
Mixed broadleaved woodland (WD1)	County Importance	**Yes**
Scrub (WS1)	Local Importance (Lower Value)	No
Fauna Species		
Bats	Local importance (Higher value)	**Yes**
Terrestrial mammals (excluding bats)	Local importance (Higher value)	**Yes**
Breeding birds	Local importance (Higher value)	**Yes**
Winter Birds	Local importance (Higher value)	**Yes**
Reptiles and Amphibians	Local importance (Higher value)	No - due to lack of suitable habitat

Table 11.6 Ecological evaluation of key ecological receptors

11.6 Do Nothing Scenario

The proposed development site is zoned for residential development and it is likely that in the absence of this subject proposal that a development of a similar nature would be progressed on the site that accords with National policy for compact growth. In a development scenario, , the impact would likely be similar to that set out in this chapter.

In the absence of development, the existing management of the amenity grassland, dry meadows, hedgerow, woodland and scrub is expected to maintain the existing habitat types close to their current form.

11.7 Likely Significant Effects Impact Assessment

As per relevant guidelines, potential significant impacts have only been assessed for key ecological receptors (KERs), as listed in the table above. An impact is considered to be ecologically significant if it is predicted to affect the integrity or conservation status of a KER at a specified geographical scale. All impacts are described in the absence of mitigation. In addition to the above guidance, the definitions of duration have been employed as follows:

- Temporary: up to 1 year
- Short-term: from 1-7 years
- Medium-term: 7-15 years
- Long-term: 15-60 years
- Permanent: over 60 years

11.7.1 Construction Phase

11.7.1.1 European Sites

This section describes the potential for the proposed development to result in likely significant effects on European sites that lie within the Zone of Influence of the proposed development during the construction phase of the proposed development. In the context of European sites this is focussed on the habitats and species for which the sites are selected (QIs for SACs and SCIs for SPAs) and the conservation objectives supporting their conservation status in each site. This assessment is directly related to the assessment methodology for European sites required under the Habitats Directive, which is presented in the Appropriate Assessment Screening Report for the proposed development that accompanies this application.

The Appropriate Assessment Screening Report (Scott Cawley Ltd., 2021) accompanying this EIAR, concluded that there is the possibility for significant effects on the following European sites, either arising from the project alone or in combination with other plans and projects, as a result of habitat degradation as a result of hydrological impacts and disturbance and displacement impacts: Baldoyle Bay SAC, Howth Head SAC, Baldoyle Bay SPA, North Bull Island SPA, Ireland's Eye SPA, Malahide Estuary SPA, South Dublin Bay and River Tolka Estuary SPA, Lambay Island SPA, Rogerstown Estuary SPA, and Skerries Islands SPA.

The proposed development does not overlap with the boundary of any European site. As the proposed development does not traverse any European sites there is no potential for habitat fragmentation to occur. The proposed development site does not support significant populations of any fauna species linked with the QI/SCI populations of any European site(s). Therefore, there are no European sites at risk of direct or indirect (*ex-situ*) habitat loss impacts.

There is a possibility for hydrological impacts on European sites as a result of the proposed development. Surface water from the proposed development will drain into Baldoyle Bay where it has the potential to reduce water quality, putting Baldoyle Bay SAC and Baldoyle Bay SPA QI/ SCI populations at risk. While likely significant effects on water quality as a result of the proposed development could not be excluded, mitigation measures outlined within the NIS excludes any adverse impacts on downstream European sites.

The proposed development will not have any measurable effects on water quality in Dublin Bay as a result of foul water discharges. This is because foul water discharges from the proposed development would equate to a very small percentage of the overall discharge volumes sent to Ringsend WWTP for treatment. It is concluded that the proposed development will not impact on the overall water quality status of Dublin Bay.

There is no potential for hydrogeological impacts on European sites as a result of the proposed development. The proposed development lies within the Dublin Groundwater Body (Dublin GWB). The only European site within the Dublin GWB that is designated for groundwater dependant habitats and/or species is the Rye Water Valley/Carton SAC, which is located upgradient of the proposed development site, and therefore these is no possibility of interaction. All of the qualifying interests of the Rye Water Valley/Carton SAC, the priority Annex I habitat Petrifying springs and the two whorl snail species, are dependent upon the existing condition and functioning of the groundwater regime.

As there were no invasive species recorded within the proposed development site, there is no risk of invasive species spreading to European sites as a result of the proposed development.

There are European sites within the disturbance Zone of Influence of the proposed development and therefore there are disturbance/ displacement impacts predicted to QI/ SCI species associated with European sites. However, further investigation into this impact in the NIS ruled out the need for mitigation given the short-term nature of the impact, the availability of large areas of alternative suitable foraging and/or roosting habitat for these SCI bird species in the wider locality of the proposed development and that SCI species peak counts were below the 1% national population, it was concluded that the operational phase will not adversely impact the population trends or distribution of SCI species.

There is no risk of habitat degradation within European sites as a result of contaminated land as site investigations (see Construction Waste Management Plan included under separate cover) found no evidence of contamination across the site and the site is suitable for this development.

Considering the proposed development's coastal location, adjacent to Baldoyle Bay, there is potential for the proposed development to present a collision risk to mobile SCI species which may fly over the proposed development lands to reach inland foraging sites during the construction phase of the proposed development once building commences.

The Natura Impact Statement (Scott Cawley Ltd., 2021) accompanying this EIAR, concluded, following an examination, analysis, and evaluation of the relevant information, including in particular the nature of the predicted impacts from the proposed development, that in the absence of any mitigation measures, any likely significant effects as a result of the proposed development cannot be excluded.

11.7.1.2 Nationally Designated Sites

This section describes the potential for the proposed development to result in likely significant effects on Nationally designated sites that lie within the Zone of Influence of the proposed development during the construction phase of the proposed development. In the case of NHAs and pNHAs the assessment considers whether the integrity of any such site would be affected by the proposed development with reference to the ecological features for which the site is designated or is proposed.

There is a possibility for hydrological impacts on nationally designated sites as a result of the proposed development. During construction, surface water from the proposed development site will drain into Baldoyle Bay where it has the potential to reduce water quality, putting Baldoyle Bay pNHA at risk. Baldoyle Bay pNHA, which is designated for similar reasons as those listed under its SAC/SPA designations, lies *c.* 170m north of the proposed development.

As concluded in the NIS (Scott Cawley Ltd, 2021), during construction the proposed development has the potential to affect the conservation objectives of SCI populations of SPAs within 20km (SNH, 2016) through collision risk, and therefore, in the absence of any mitigation measures, likely significant effects on pNHAs which are designated for similar reasons as those listed under its SAC/SPA designations, i.e. Baldoyle Bay pNHA, Ireland's Eye pNHA, Malahide Estuary pNHA, South Dublin Bay pNHA, Lambay Island pNHA and Rogerstown Estuary pNHA, cannot be excluded.

11.7.1.3 Habitats

This section describes the potential for the proposed development to result in likely significant effects on habitats that lie within the proposed development during the construction phase of the proposed development.

The proposed development will require the removal of KER habitats, *c.*1265m^2 of the southern hedgerow is planned for removal as part of the proposed development and *c.*726m^2 of the southern hedgerow is to be retained (BSLA, 2021). The western hedgerow is to be retained. The northern area of scrub and stone wall are to be partially removed for site access to the proposed development site. The eastern mixed broadleaved woodland is outside of the site boundary and will remain unaffected by the proposed development.

In total, the proposed development will require the removal of nine individual trees of moderate arboricultural quality and part removal of two groups of trees of moderate arboricultural quality, 11 individual trees of low arboricultural quality, one individual tree of poor arboricultural quality and part removal of one hedge/area of vegetation of poor arboricultural quality (John Morris Arboricultural Consultancy, 2021). Of these trees, any suitable for lifting and relocating within the proposed development will be subject to further assessment prior to construction. Four trees are recommended for removal irrespective of the proposed development due to structural defects or irreversible decline that warrants them in such a condition that they cannot be realistically retained as living trees in the context of the current land use for longer than 10 years.

In the absence of any mitigation, there is the potential for damage to trees and hedgerows marked for retention. While some of the hedgerow habitat and all of the woodland habitat is being retained within the proposed development, there remains a risk of damage to the habitats arising during construction such as driving vehicles and storing materials within tree root protection zones, or through accidental machinery strikes to branches or trunks of trees. This impact, in a worst-case scenario could result in damage, degradation and death of trees and hedgerows, and potentially result in a significant impact at a county geographical scale.

11.7.1.4 Bats

This section describes the potential for the proposed development to result in likely significant effects on bat populations that use lands within the proposed development site during the construction phase of the proposed development.

Bats, and their breeding and resting places, are strictly protected under the Birds and Habitats Regulations, and under the Wildlife Acts, and it is an offence under that legislation to intentionally kill or injure bats or to interfere with or destroy their breeding or resting places. Suitable locations on site for roosting bats were limited to a few suitable cracks along the stone wall to the north of the site, with tress onsite considered of negligible suitability. No roosting bats were found during the 2020 activity surveys.

The loss of dry meadows grassland habitat will result in the permanent loss of foraging habitat for bat species within the proposed development area. Part of the proposed development includes the partial removal of the southern hedgerow during the construction phase of the proposed development. The removal of this feature is not deemed to affect the overall function of these hedgerows as linear habitats of suitable foraging/commuting habitats. As such the proposed development will not result in fragmentation of suitable foraging habitat, as the linear western hedgerow will be retained and partial retention of the southern hedgerow, lands to the east and west of the site, which remain suitable for foraging bats, will continue to be connected via the portion of the southern hedgerows to be retained and will be enhanced by the landscaping design. It is therefore predicted that, despite any temporary effects, the loss of foraging/commuting habitat associated with the proposed development is unlikely to affect the conservation status of the local bat population and will not result in a likely significant negative effect, at any geographic scale, especially considering that common pipistrelle and Leisler's bat are known to have a widespread distribution across the region, and in Ireland (Roche *et al.,* 2014) and that both species are showing an increase in their population trend.

An increase in the existing light levels during construction within and adjacent to the proposed development site may potentially indirectly impact on bat species that utilise the site for foraging and/or commuting. However, given the residential nature of the surrounding environment to the north and north-west of the proposed development site the local bat population would be expected to be habituated to artificial light spill. Species that were recorded within the proposed development site, Leisler's bat and common pipistrelle bat are some of the least sensitive species to artificial light spill. Additionally, any effects associated with artificial lighting during construction of the proposed development, are likely to be short-term during the construction phase. Considering the protection afforded bats and given that the subject lands are used by a number of bat species for commuting/foraging purposes a precautionary approach has been adopted and mitigation measures have been provided in section 11.8.1.4 below to address any potential impacts as a result of light spill during construction. It is therefore predicted that, despite any short-term effects, disturbance from artificial lighting associated with construction of the proposed development is unlikely to affect the conservation status of the local bat population and will not result in a likely significant negative effect, at any geographic scale.

11.7.1.5 Terrestrial mammals (excluding bats)

This section describes the potential for the proposed development to result in likely significant effects on terrestrial mammals (excluding bats) that use lands within the proposed development during the construction phase of the proposed development.

The grassland, hedgerow and woodland habitats on the proposed development site are likely to support small mammal species such the pygmy shrew or hedgehog. Given the relatively low numbers of individuals of each species that are likely to be affected, and that they are highly mobile species, construction at the proposed development site is not likely to result in any level of injury or mortality that would affect the species' conservation status, and therefore not result in a significant negative effect, even at a local geographic scale.

In conjunction with any short-term displacement effects associated with increased human presence and/or noise and vibration associated with proposed works, the proposed works have the potential to displace mammal species from both breeding/resting places and from foraging habitat. However, given the short-term nature of the disturbance and the relatively low number of individuals the habitat is likely to support, it is extremely unlikely to even result in any short-term effects on the local mammal population or their conservation status. Therefore, disturbance/displacement during construction is unlikely to result in a significant negative effect, at any geographic scale.

11.7.1.6 Breeding birds

This section describes the potential for the proposed development to result in likely significant effects on breeding birds that nest within the proposed development during the construction phase of the proposed development.

Bird species are protected under the Wildlife Acts 1976-2019 and it is an offence to disturb birds while on their nests, or to wilfully take, remove, destroy, injure, or mutilate their eggs or nests. In the absence of adoption of measures for the protection of birds and their nests, there is potential for direct impacts on nesting birds and/or mortality of birds arising from the clearance of vegetation within the proposed development site.

Vegetation removal required to facilitate the construction of the proposed development comprises largely habitat loss of dry meadows grassland (suitable for nesting species such as meadow pipit which was recorded during a winter bird survey in December 2019), areas of scrub to the north and a portion of the southern hedgerow, see **Figure 11.11** taken from the 'Landscape Masterplan in Context' plan (Bernard Seymour Landscape Architects, 2021) submitted with the application. The woodland to the east is outside the redline boundary and, therefore, will be retained. The hedgerow to the west and the south-west will be retained. Loss of foraging/nesting habitat for breeding birds during the construction phase of the proposed development is not significant at any geographic scale, given the large areas of retained periphery hedgerows and the suitability of the surrounding habitats beyond the proposed development site for foraging/nesting birds.

Figure 11.11 illustrating trees along boundary with Deer Park Golf Course to be removed (dotted line marked 'treeline' in red text) and new planting proposed further along the southern red line boundary (Source: Bernard Seymour Landscape Architects, 2021)."

It is possible that birds currently using habitats within the proposed development site and its environs may be temporarily disturbed as a consequence of increased noise and human activity levels during the construction phase of the proposed development. This disturbance could potentially result in the short-term displacement of birds within the construction zone and in adjacent hedgerow habitats, as a result, a potential reduction in the breeding success of affected birds is expected during this period. Although construction phase impacts on breeding birds are considered to be short term in nature, impacts are potentially significant at a local geographical scale.

11.7.1.7 Winter birds

This section describes the potential for the proposed development to result in likely significant effects on winter birds that roost, or forage within or commute through the proposed development during the construction phase of the proposed development.

No direct loss of winter bird feeding habitat is predicted as a result of the proposed development. However, a short-term increase in noise, vibration and/or human activity levels during the construction phase of the proposed development could result in the disturbance to and/or displacement of wintering bird species present within the footprint and/or the vicinity of the proposed development. Landscaping proposals include the removal of a number of trees along the southern hedgerow of the proposed development. This hedgerow currently provides screening to the amenity grassland habitat within Deer Park golf course, within which surveys in winter of 2019/2020 and winter 2020/2021 recorded use by foraging birds. The permanent removal of these trees will increase the visual and noise disturbance to foraging birds which use these areas of amenity grassland.

Current understanding of construction related noise disturbance to wintering waterbirds is based on the research presented in Cutts et al. (2009) and Wright et al. (2010). In terms of construction noise, levels below 50dB would not be expected to result in any response from foraging or roosting birds. Noise levels between 50dB and 70dB would provoke a moderate effect/level of response from birds, i.e. birds becoming alert and some behavioural changes (e.g. reduced feeding activity), but birds would be expected to habituate to noise levels within this range. Noise levels above 70dB would likely result in birds moving out of the affected zone, or leaving the site altogether. Calculated noise levels for the nearest sensitive receptor for winter birds with all plant operating simultaneously were low. Claremont Strand which is *c.* 143m was calculated to be 36dB(A). Noise levels for the area of Deer Park golf course, *c*. 189m west of the proposed development site, which recorded flocks of *c.* 100 wintering birds, were calculated to be 33dB(A). As such, disturbance effects for general construction activities across the majority of the proposed development site would not be expected to extend beyond a distance of *c.* 140m, as noise levels associated with general construction activities would attenuate to close to background levels at that distance and beyond.

As the majority of works will be carried out during normal working daylight hours, the potential for construction to disturb wintering birds at night will not arise. Impacts associated with increased levels of disturbance will likely result in the short-term displacement of these wintering bird species to other suitable available lands in the locality. These impacts will be associated with general construction activities (e.g. visual impact of construction workers and machinery and the associated vibration and more constant/continuous noise levels) and impulse noise disturbance from infrequent noise sources with a high noise level.

Following the completion of construction, disturbance levels will likely return to baseline conditions and as a result these lands will become available again as foraging habitat for these wintering bird species.

Certain species often forage on inland sites in the Greater Dublin Bay Area. Suitable sites are usually composed of open parkland/ playing pitches. The following known inland wintering bird feeding sites are known (Scott Cawley Ltd, 2017) to occur within c. 300m of the proposed development, and birds at these locations could be temporarily displaced during construction works:

- Deer Park golf course, within 300m (major importance)

The following six known (Scott Cawley Ltd, 2017) inland wintering bird feeding sites are known to occur within c. 300m-1km of the proposed development (i.e. beyond the ZoI), and it is likely that birds displaced from the sites listed above, would be displaced to the following known sites (**Figure 11.12)**

- Deer Park golf course, beyond 300m (major importance)
- North Bull/Santa Sabina Manor (major importance)
- Carrickbrack Road (unknown importance)
- North Bull/Santa Sabina School (major importance)

- North Bull/Howth Celtic Football Pitch (high importance)
- Sutton Golf Course (high importance)

Wintering birds which are disturbed during construction will likely be displaced to suitable sites in the surrounding environment, such as those listed above, and therefore impacts are not considered to be significant beyond the local level. Therefore, in consideration of these factors, an increase in short-term disturbance or displacement effects will not affect the conservation status of any wintering bird species and will not result in a likely significant negative effect, at any geographic scale.

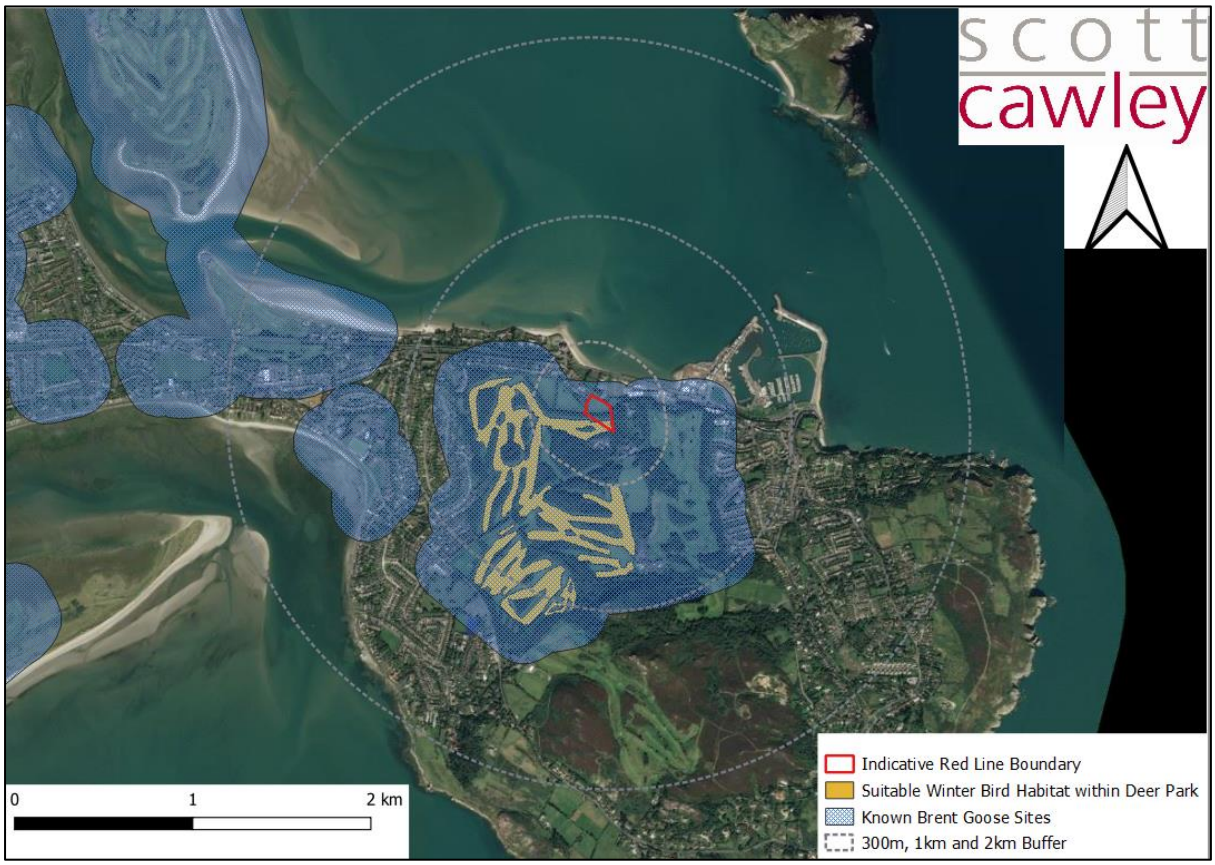

Figure 11.12: Suitable inland feeding sites for winter bird species within 2km of the proposed development site

11.7.2 Operational Phase

11.7.2.1 European Sites

This section describes the potential for the proposed development to result in likely significant effects on European sites that lie within the Zone of Influence of the proposed development during the operational phase of the proposed development. In the context of European sites this is focussed on the habitats and species for which the sites are selected (QIs for SACs and SCIs for SPAs) and the conservation objectives supporting their conservation status in each site. This assessment is directly related to the assessment methodology for European sites

required under the Habitats Directive, which is presented in the Appropriate Assessment Screening Report for the proposed development that accompanies this application.

The Appropriate Assessment Screening Report (Scott Cawley Ltd., 2021) accompanying this application, concluded that there is the possibility for significant effects on the following European sites, either arising from the project alone or in combination with other plans and projects, as a result of habitat degradation as a result of hydrological impacts and disturbance and displacement impacts: Baldoyle Bay SAC, Howth Head SAC, Baldoyle Bay SPA, North Bull Island SPA, Ireland's Eye SPA, Malahide Estuary SPA, South Dublin Bay and River Tolka Estuary SPA, Lambay Island SPA, Rogerstown Estuary SPA, and Skerries Islands SPA.

There is a possibility for hydrological impacts on European sites as a result of the proposed development. Surface water from the proposed development will drain into Baldoyle Bay during operation where it has the potential to reduce water quality, putting Baldoyle Bay SAC and Baldoyle Bay SPA QI/ SCI populations at risk. With the incorporated design mitigation, as discussed below in section 11.8.1.1, the use of Sustainable Urban Drainage Systems mitigates the possibility for hydrological impacts on European sites as a result of the operational phase of proposed development.

The proposed development will not have any measurable effects on water quality in Dublin Bay as foul water discharges generated from the proposed development during operation would equate to a very small percentage, see section 10.2.1.3 of the Water and Hydrology Chapter of the overall discharge volumes sent to Ringsend WWTP for treatment, see section 10.9.3 of the Water and Hydrology Chapter. It is concluded that the proposed development will not impact on the overall water quality status of Dublin Bay.

As there were no invasive species recorded within the proposed development site or proposed for planting as part of the proposed development, there is no risk of invasive species spreading to European sites during the operational phase proposed development.

There are European sites within the disturbance Zone of Influence of the proposed development and therefore there are disturbance/ displacement impacts predicted to QI/ SCI species associated with European sites, during the operation of the proposed development from an increase in human presence on site.

Considering the proposed development's coastal location, adjacent to Baldoyle Bay, there is potential for the proposed development to present a collision risk to mobile SCI species which may fly over the proposed development lands to reach inland foraging sites, during operation.

The Natura Impact Statement (Scott Cawley Ltd., 2021) accompanying this EIAR, concluded, following an examination, analysis and evaluation of the relevant information, including in particular the nature of the predicted impacts from the proposed development, that with the implementation of the mitigation measures, see section 11.8, the operation of the proposed development will not adversely affect (either directly or indirectly) the integrity of any European site, either alone or in combination with other plans or projects.

11.7.2.2 Nationally Designated Sites

This section describes the potential for the proposed development to result in likely significant effects on Nationally Designated sites that lie within the Zone of Influence of the proposed development during the operational phase of the proposed development. In the case of NHAs and pNHAs the assessment considers whether the integrity of any such site would be affected by the proposed development with reference to the ecological features for which the site is designated or is proposed.

There is a possibility for hydrological impacts on Nationally Designated sites as a result of the operation of the proposed development. Surface water from the proposed development will drain into Baldoyle Bay where it has the potential to reduce water quality, putting Baldoyle Bay pNHA at risk. Baldoyle Bay pNHA, which is listed under similar conservation objectives as its SAC/SPA designations, lies *c.* 170m north of the proposed development. With the incorporated design mitigation, as discussed below in section 11.8.1.1, the used of Sustainable Urban Drainage Systems mitigates the possibility for hydrological impacts on nationally designated sites as a result of the operation phase of the proposed development.

11.7.2.3 Habitats

This section describes the potential for the proposed development to result in likely significant effects on habitats that lie within the proposed development during the operational phase of the proposed development.

Composition of the proposed development site will change. The portion of the southern hedgerow to be lost will be enhanced by the landscaping design, see **Figure 11.11**. The landscape design proposes to enhance this altered boundary with replanting the moved trees (where possible) and to enforce it with native species whips such as scots pine, hawthorn, blackthorn and oak. Additional planting by the landscape plan includes grass terraces with bulb planting in the area to the south, large and medium specimen tree planting along the western, northern boundaries and wildflower meadows. The proposed development is not predicted to result in a significant negative impacts on habitats during operation at any geographic scale.

11.7.2.4 Bats

This section describes the potential for the proposed development to result in likely significant effects on bat populations that use lands within the proposed development site during the operational phase of the proposed development.

Disturbance and displacement effects may arise from the introduction of artificial lighting, noise and an increase in human activity during operation.

During the operational phase of the proposed development, the Noise and Vibration EIAR chapter of this report found operational noise levels would not result in any significant increase in noise levels in the area or at the nearest sensitive receptor.

As discussed in section 11.7.1.4, bat species recorded on site, i.e. Leisler's bat and common pipistrelle bat, are associated with sub-urban and urban environments and are considered to be tolerant of disturbances such as lighting and noise in these environments. Additionally, the planting proposed, as described in section 11.7.2.3 above, will provide a visual barrier

between the proposed development and areas likely to be used by commuting and foraging bats. The proposed development is not predicted to result in a significant negative impact on the local bat populations during operation as a result of these disturbance effects at any geographic scale. Considering the protection afforded to bats and given that the subject lands are used by a number of bat species for commuting/foraging purposes a precautionary approach has been adopted and mitigations measures have been provided in section 11.8.1.4 below to address any potential impacts as a result of light spill during construction.

11.7.2.5 Terrestrial mammals (excluding bats)

This section describes the potential for the proposed development to result in likely significant effects on terrestrial mammals (excluding bats) that use lands within the proposed development site during the operational phase of the proposed development.

In conjunction with displacement effects associated with increased human presence, the operation of the proposed development has the potential to displace mammal species from both breeding/resting places and from foraging habitat. However, given the relatively low number of individuals the habitat is likely to support, it is extremely unlikely to even result in any short-term effects on the local mammal population or their conservation status. Therefore, disturbance/displacement during operation is unlikely to result in a significant negative effect, at any geographic scale.

11.7.2.6 Breeding birds

This section describes the potential for the proposed development to result in likely significant effects on breeding birds that nest within the proposed development during the operational phase of the proposed development.

Loss of foraging/nesting habitat for breeding birds during the operational phase of the proposed development is not significant at any geographic scale, given the large areas of retained periphery hedgerows and the suitability of the surrounding habitats beyond the proposed development site for foraging/nesting birds.

It is possible that birds currently using habitats within the proposed development site and its environs may be disturbed as a consequence of increased noise and human activity levels during the operational phase of the proposed development. A range of bird species utilise the proposed development site to forage within. While there is some potential for short-term disturbance of bird species foraging within the lands at the early stage of operation, it is anticipated that birds will acclimatise to human presence. This is because the lands are located in a semi-urban locality, and the bird species noted on site are generally associated with gardens and other urban habitats frequented by people.

Overall, the development is not predicted to result in a significant impact on breeding birds during operation at any geographic scale.

11.7.2.7 Winter birds

This section describes the potential for the proposed development to result in likely significant effects on winter birds that roost, or forage within or commute through the proposed development during the operational phase of the proposed development.

During operation, the proposed development has the potential to disturb and displace wintering bird species from habitat near the proposed development boundary due to an increase in noise, human activity and visual disturbance. Although the operational disturbance/displacement effect cannot be quantified it would be expected to be much less than the 300m ZoI associated with construction works. Most species of wintering birds are likely to habituate to the increased in human presence.

Although there is still likely to be some level of displacement effect, a perceptible effect would be expected to be limited to habitats immediately adjacent to the proposed development. Part of the footprint of the proposed development is a known feeding site (i.e. Deer Park golf course). As any operational noise increases are not likely to alter the existing baseline noise effect on wintering birds in the locality, noise disturbance at this known feeding site can also be excluded.

Therefore, any displacement of birds from habitat areas during operation of the proposed development is not likely to affect the conservation status of wintering bird species and will not result in a likely significant negative effect, at any geographic scale.

11.7.3 Cumulative Effects

The surrounding lands are largely zoned as 'HA – High Amenity', 'RS – Residential', 'OS – Open Space' and 'TC - Town and District Centre' under the Fingal Development Plan 2017-2023 (Fingal County Council, 2017). There is a Special Amenity Area (SAA) buffer zone towards the south of the proposed development site. There are numerous granted planning permissions for activities/plans/projects which may be in construction at the same time as the proposed development:

- PL06F.306102 (Atlas GP Ltd) – Strategic Housing Development application for 512 apartments, 2 shops, a crèche, a café and a restaurant on lands at the former Techrete manufacturing facility, former Beshoff's car showroom, and former Howth Garden Centre, Claremont, Howth Road, Howth, County Dublin.
- F20A/0294 (Marine Engineering Division) - Construction of a workshop with Offices and Canteen facilities and a gross internal area of 374sqm. The proposed development is an amendment to a previous granted Planning Ref; F18A/0633.
- F20A/0412 (Downey) - Permission to replace entrance lobby with a two storey pitched roof extension; kitchen to rear to be extended by 1.3.m; hips to be replaced with gables and east gable to extend to roadside boundary; east and central chimney stacks to be removed and west stack to be increased in height; front and rear monopitch dormers to be replaced; roof over sunroom to be replaced with monopitch roof extending back to rear pitch with 3 roof lights and, timber leaf pattern added to all gables.

- F18A/0267 (Dept. of Agriculture, Food & Marine) – Construction of two number ground level industrial buildings (5 number units each) and associated site works at Claremont, West Pier, Howth, Co. Dublin.

- F18A/0074 (Minister for Agriculture, Food & Marine) - The provision of 130m long quay wall; associated deck area, road access, hard standing; localised dredging to facilitate works, dredging to -4m Chart Datum along the front of new quay wall to provide berthing depth and land reclamation of approximate 0.30 Ha on the east side of middle pier at Middle Pier, Howth Fishery Harbour Centre, Howth, Co Dublin.

Figure 11.13: Granted planning permissions for activities/plans/projects which may be in construction at the same time as the proposed development

In this case, there is potential for cumulative impacts to arise, as a consequence of the proposed development acting in-combination with other projects, on water quality in the downstream surface water environment and on disturbance to birds and bats. It is considered that these potential cumulative impacts would be temporary and could occur at a local geographical scale, in the absence of mitigation.

There is also potential for cumulative impacts on local bird and bat populations in the area to arise as a result of habitat loss and habitat fragmentation, if areas of hedgerow and woodland

are replaced by areas of hard standing or buildings and artificial surfaces. However, there is limited vegetation clearance of hedgerows proposed as part of the proposed development and there is landscape planting proposed for the site. Additionally, there is suitable hedgerow and woodland habitat available in the immediate vicinity of the proposed development site in the Deer Park lands to the south and east. See **Figure 11.1** which shows the extent of these habitats in the immediate vicinity and context of the proposed development site. These lands are zoned as 'HA – High Amenity' (Fingal County Council, 2017) and as such, development within these lands is extremely limited under the current development plan. Therefore, no cumulative effects are predicated as a result of habitat loss and habitat fragmentation, in conjunction with the proposed development.

There is potential for "in-combination" effects on water quality in Dublin Bay from any other projects carried out within the functional areas of the Fingal Development Plan 2017-2023 (Fingal County Council, 2017), South Dublin County Council Development Plan 2016-2022 (South Dublin County Council, 2016), Dublin City Development Plan 2016-2022 (Dublin City Council, 2016), the Dún Laoghaire-Rathdown County Development Plan 2016-2022 (Dún Laoghaire-Rathdown County Council, 2016) or any other county level land use plans which can influence conditions in Dublin Bay via rivers and other surface water features. As noted within the AA Screening accompanying this report (Scott Cawley Ltd., 2021), Dublin Bay is currently unpolluted, and the proposed development will not result in any measurable effect on water quality in Dublin Bay. There are also protective policies and objectives in place at a strategic planning level to protect water quality in Dublin Bay. Therefore, there is no possibility of any other plans or projects acting in combination with the proposed development to undermine the conservation objectives of any of the qualifying interests or special conservation interests of the European or nationally designated sites in, or associated with, Dublin Bay as a result of water quality effects.

11.7.4 Summary

The Table below summarises the identified likely significant effects in the absence of mitigation during the construction phase of the proposed development.

Likely Significant Effect	Quality	Significance	Extent	Probability	Duration	Type
European Sites	Negative	Significant	International	Likely	Short-term	Direct
Nationally designated sites	Negative	Significant	National	Likely	Short-term	Direct
Habitats	Negative	Significant	County	Likely	Short-term	Direct
Bats	Negative	Significant	Local	Likely	Short-term	Direct
Terrestrial mammals (excluding bats)	Negative	Significant	Local	Likely	Short-term	Direct
Breeding birds	Negative	Significant	Local	Likely	Short-term	Direct
Wintering birds	Neutral	Not significant	Local	Likely	Short-term	Direct

Table 11.7 Summary of Construction Phase Likely Significant Effects

The Table below summarises the identifies likely significant effects in the absence of mitigation during the operational phase of the proposed development.

Likely Significant Effect	Quality	Significance	Extent	Probability	Duration	Type
European Sites	Negative	Significant	International	Likely	Permanant	Direct
Nationally designated sites	Negative	Significant	National	Likely	Permanant	Direct
Habitats	Neutral	Significant	County	Likely	Permanant	Direct
Bats	Neutral	Significant	Local	Likely	Permanant	Direct
Terrestrial mammals (excluding bats)	Neutral	Significant	Local	Likely	Permanant	Direct
Breeding birds	Neutral	Significant	Local	Likely	Permanant	Direct
Wintering birds	Neutral	Significant	Local	Likely	Permanant	Direct

Table 11.8 Summary of Operational Phase Likely Significant Effects

11.8 Mitigation

11.8.1 Incorporated Design Mitigation

11.8.1.1 European sites

Sustainable Urban Drainage Systems (SuDS) are to be implemented to remove any potential for contaminated/polluted surface water to drain via the new surface water sewer network proposed as part of the development. SuDS proposed for the site include:

- Green Roofs – General: - Green roofs are areas of living vegetation, installed on the top of buildings. They provide water quality, water quantity, amenity and biodiversity benefits. Green roofs also intercept rainfall at source reducing the reliance on attenuation storage structures.

- Green Roof – Extensive: Extensive roofs have low substrate depths and therefore low loadings on the building structure, they are lightweight and have a low cost to maintain. These systems cover the entire roof area with hardy, slow growing, drought resistant, low maintenance plants and vegetation, such as sedums. The planting usually matures slowly, with the long-term biodiverse benefits being the sought-after results. These roofs are typically only accessed for maintenance and are usually comprised of between 20mm – 150mm overall total depth. It is proposed to cover the apartment block roofs with extensive green roofs. The apartment block roofs take up a considerable portion of the site area and therefore by utilising these for green roofs, there will be interception and treatment storage provided at source. The proposed system will be a sedum roof over a drainage tray, which will intercept water.

- Permeable Paving: Permeable paving provides a surface suitable for pedestrian and/or vehicular traffic, while also allowing rainwater to infiltrate through the surface and into the underlying structural layers. Permeable paving systems are an effective way of managing surface water runoff close to its source. The pathways throughout the site will be of a permeable paving build up. The paving within the podium slab area will incorporate a drainage board which also contributes to the interception storage within the site.

- Rain Gardens: A rain garden is a bioretention shallow depression designed to collect, store, filter and treat surface water runoff. The rainwater downpipes for the three blocks will be directed to the adjacent rain gardens. The system will incorporate a drainage board to provide a degree of additional interception storage, and outlets below connected to the surface water drainage system.

- Bioretention Systems & Tree Pits: Bioretention systems are shallow landscaped depressions that can reduce the runoff rates and volumes of surface water. They treat pollution using engineered soils and vegetation. They are very effective in delivering interception and treatment storage. By including tree pits, the effectiveness of the overall system in meeting the requirements of water quality, water quantity, amenity and biodiversity is significantly improved. Trees provide benefits to the SuDS measures by:

- Transpiration – Water evaporates through the stomata on the leaf as a result of photosynthesis.
- Interception – Leaves, branches and trunk surfaces intercept and absorb rainfall reducing the amount of water that reaches the ground.
- Infiltration – Root growth increases the soil infiltration capacity and rate, ultimately reducing run-off volumes.
- Phytoremediation – When drawing up water, trees also take up trace amounts of harmful chemicals. These chemicals can be transformed into less harmful substances within the tree.

- Bioretention tree-pits will be used within the landscape podium areas between the apartment blocks and to the north of the site near the existing boundary wall.
- Attenuation Tanks: Attenuation tanks are used to create below-ground void space for the temporary storage of surface water before infiltration, controlled release, or use. Attenuation tanks can be constructed using geocellular crates, which offer flexibility in size, shape and constructability meaning that they can be tailored to suit specific site characteristics. It is proposed to provide an attenuation tank within the site. This will be designed for the 1 in 100 year storm + 20% climate change, and will form the last part of the SuDS management train. A Hydrobrake will be fitted downstream of the tank in order to restrict the flow to Qbar for the catchment area.

11.8.1.2 Nationally designated sites

Incorporated design mitigation measures to protect downstream nationally designated sites are the same as those to protect European sites as discussed in section 11.8.1.1 above.

11.8.1.3 Habitats

There will be permanent loss of a sections of the southern hedgerow, valued as a local importance (higher value) habitat. New tree planting is proposed along the southern boundary where this habitat will be removed and additional planting is proposed to strengthen linear hedgerow habitats to the west. A strong woodland edge is proposed connecting to the existing retained portion, which will create a new green link of biodiversity. This planting is in accordance with the All-Ireland pollinator plan, in recognition of Fingal County Councils partnership status in the All Ireland Pollinator Plan 2015-2020, which promotes use of native species in order to enhance wildlife. It is proposed that this element of the scheme occurs prior to building works so that maximum time is allowed for the re-establishment of the broken link from west to east of the site. High density planting around the wet zones will consist of species such as Ilex, Birch, Beech, Hazelnut, Rowan, Cherry, Oak, and Alder which provide food and habitats to a wide range of wildlife. All of the species come in varieties, and therefore sourcing the native strains would be important for maximising wildlife value. The landscape restoration strategy proposes using any existing scrub for the underplanting, particularly on the west and eastern boundaries of this area. The scrub will act as a nursery for a variety of trees, such as the native Quercus (*Q.robur* and *Q. petraea*) and Scots pine, and will protect the young trees from grazing. This will enhance a new woodland type which will be characterised by an early

establishment of diverse composition eventually maturing into an oakwood over the passage of time.

11.8.1.4 Bats

The landscape plan includes additional native woodland planting of scots pine, hawthorn. Blackthorn and oak along the southern hedgerow, creating further light screening from the proposed development and re-establishing the connectivity between the woodland to the east and the severed southern hedgerow.

11.8.1.5 Terrestrial mammals (excluding bats)

The landscape plan, proposes to plant treelines to link with existing vegetation, creating wildlife corridors and green infrastructure links for small mammals.

11.8.1.6 Breeding birds

Retained habitats will be enhanced by the landscape plan through provision of additional hedgerows or treeline habitats using native species to support local biodiversity, which are connected to other similar habitats and creating habitat corridors to wider landscape. Additionally, the landscape plan proposes wild bird cover seeding in place of meadow seeding in patches throughout the scheme.

11.8.1.7 Wintering birds

The landscape plan proposes to plant trees, a new southern hedgerow boundary. This will provide screening to the amenity grassland habitat within Deer Park golf course, within which surveys found black-headed gulls, herring gulls, light-bellied brent geese, curlew and oystercatcher foraging in the winter of 2019/2020 and winter 2020/2021, thus reducing any increase in noise, vibration and/or human activity levels during the operational phase of the proposed development. Additionally, the landscape plan proposes wild bird cover seeding in place of meadow seeding in patches throughout the scheme.

11.8.2 Construction Phase Mitigation

11.8.2.1 European sites

The construction contractor will be required to implement the following specific mitigation measures as a condition if granted by An Bord Pleanála all of which will be incorporated into the CEMP, for release of hydrocarbons, polluting chemicals, sediment/silt and contaminated waters control:

- Specific measures to prevent the release of sediment over baseline conditions in the downstream receiving water environment, during the construction work. These measures include, but are not limited to, the use of silt fences, silt curtains, settlement lagoons and filter materials.
- Provision of exclusion zones and barriers (*e.g.* silt fences) between earthworks, stockpiles and temporary surfaces to prevent sediment washing into the existing drainage systems and hence the downstream receiving water environment.
- Provision of temporary construction surface drainage and sediment control measures to be in place before earthworks commence.

- Weather conditions will be taken into account when planning construction activities to minimise risk of run-off from the site.
- Prevailing weather and environmental conditions will be taken into account prior to the pouring of cementitious materials for the works adjacent to any surface water drainage features, or drainage features connected to same. Pumped concrete will be monitored to ensure no accidental discharge. Mixer washings and excess concrete will not be discharged to existing surface water drainage systems. Concrete washout areas will be located remote from any surface water drainage features, to avoid accidental discharge to watercourses. Washing out of any concrete trucks on site will be avoided.
- Any fuels or chemicals (including hydrocarbons or any polluting chemicals) will be stored in a designated, secure bunded area(s) to prevent any seepage of potential pollutants into the local surface water network. These designated areas will be clearly sign-posted and all personnel on site will be made aware of their locations and associated risks.
- All mobile fuel bowsers shall carry a spill kit and operatives must have spill response training. All fuel containing equipment such as portable generators shall be placed on drip trays. All fuels and chemicals required to be stored on-site will be clearly marked. Care and attention will be taken during refuelling and maintenance operations. Particular attention will be paid to gradient and ground conditions, which could increase risk of discharge to waters.
- A register of all hazardous substances, which will either be used on site or expected to be present (in the form of soil and/or groundwater contamination) will be established and maintained. This register will be available at all times and shall include as a minimum:
    - Valid Safety Data Sheets;
    - Health & Safety, Environmental controls to be implemented when storing, handling, using and in the event of spillage of materials;
    - Emergency response procedures/precautions for each material; and,
    - The Personal Protective Equipment (PPE) required when using the material.
- Implementation of response measures to potential pollution incidents.
- Robust and appropriate Spill Response Plan and Environmental Emergency Plan will be prepared prior to works commencing and they will be communicated, resourced and implemented for the duration of the works. Emergency procedures/precautions and spillage kits will be available and construction staff will be trained and experienced in emergency procedures in the event of accidental fuel spillages.
- All trucks will have a built-on tarpaulin that will cover excavated material as it is being hauled off-site and wheel wash/wheel cleaning facilities will be provided at all site egress points.
- If groundwater is encountered during the proposed works and temporary pumping at a very localised location is required:
    - An appropriate dewatering system and groundwater management system specific to the site conditions will be designed and maintained. These will include measures to minimise any surface water inflow into the excavation,

where possible, and the prolonged exposure of groundwater to the atmosphere will be avoided.
    - Qualitative and quantitative monitoring will be adopted to ensure that the water is of sufficient quality to discharge. The use of silt traps will be adopted if the monitoring indicates the requirement for same with no silt or contaminated water permitted to discharge to the receiving water environment.
- Water supplies shall be recycled for use in the wheel wash/wheel cleaning facilities. All waters shall be drained through appropriate filter material prior to discharge from the construction sites.
- The removal of any made ground material, which may be contaminated, from the construction site and transportation to an appropriate licenced facility shall be carried out in accordance with the Waste Management Act, best practice and guidelines for same.
- A discovery procedure for contaminated material will be prepared and adopted by the appointed contractor prior to excavation works commencing on site. These documents will detail how potentially contaminated material will be dealt with during the excavation phase.
- Implementation of measures to minimise waste and ensure correct handling, storage and disposal of waste (most notably wet concrete, pile arisings and asphalt).
- All of the above measures implemented on site will be monitored throughout the duration of construction to ensure that they are working effectively, to implement maintenance measures if required/applicable and to address any potential issues that may arise.

11.8.2.2 Nationally designated sites

Construction phase mitigation measures to protect downstream nationally designated sites are the same as those to protect European sites as discussed in section 11.8.2.1 above.

11.8.2.3 Habitats

The following mitigation measures are proposed:

- All trees and hedgerows marked for retention as identified in the landscaping proposals will be fenced off at the outset of works and for the duration of construction to avoid damage to the trunk, branches or root systems of the trees and structures.
- Temporary fencing will be erected at a sufficient distance from the tree so as to enclose the Root Protection Area (RPA) of the tree (NRA, 2005-2011). In general, the RPA covers an area equivalent to a circle with a radius 12 times the stem diameter (measured at 1.5m above ground level for single stemmed trees);
- Where fencing is not feasible due to insufficient space, protection for the tree will be afforded by wrapping hessian sacking (or suitable equivalent) around the trunk of the tree and strapping stout buffer timbers around it. It will still be necessary to ensure that the area within the RPA is not used for vehicle parking or the storage of materials (including oils and chemicals). This measure is considered secondary to fencing of retained habitats, and should only be undertaken as a last resort;
- Weekly checks of the fences will take place by the project ecologist and/or contractor.

- Spoil materials such as rubble, topsoil, building goods and equipment, will not be placed within the RPA of trees or hedgerows.

11.8.2.4 Bats

Construction phase lighting has been designed by Ethos Engineering (2021) to be sensitive to the presence of commuting and foraging bats along the southern hedgerow and adheres to the following guidance:

- Bats & Lighting: Guidance Notes for Planners, engineers, architects and developers (Bat Conservation Trust, 2010);
- Guidance Notes for the Reduction of Obtrusive Light GN01/20 (Institute of Lighting Professionals, 2020);
- Bats and Lighting in the UK – Bats and the Built Environment Series (Bat Conservation Trust UK, January 2008).

11.8.2.5 Terrestrial mammals (excluding bats)

There is no construction phase mitigation required for the protection of terrestrial mammals (excluding bats) within the proposed development site.

11.8.2.6 Breeding birds

Where feasible, vegetation (e.g. hedgerows, trees, scrub and grassland) will not be removed, between the 1st March and the 31st August, to avoid direct impacts on nesting birds. Where the construction programme does not allow this seasonal restriction to be observed, then these areas will be inspected by a suitably qualified ecologist for the presence of breeding birds prior to clearance. Areas found not to contain nests will be cleared within 3 days of the nest survey, otherwise repeat surveys will be required.

11.8.2.7 Wintering birds

There is no construction phase mitigation required for the protection of wintering birds within the proposed development site.

11.8.3 Operational Phase Mitigation

11.8.3.1 European sites

There is no operational phase mitigation required for the protection of European sites.

11.8.3.2 Nationally designated sites

There is no operational phase mitigation required for the protection of nationally designated sites.

11.8.3.3 Habitats

There is no operational phase mitigation required for the protection of habitats within the proposed development site.

11.8.3.4 Bats

Operational phase lighting has been designed by Ethos Engineering (2021) to be sensitive to the presence of commuting and foraging bats along the southern hedgerow and adheres to the following guidance:

- Bats & Lighting: Guidance Notes for Planners, engineers, architects and developers (Bat Conservation Trust, 2010);
- Guidance Notes for the Reduction of Obtrusive Light GN01/20 (Institute of Lighting Professionals, 2020);
- Bats and Lighting in the UK – Bats and the Built Environment Series (Bat Conservation Trust UK, January 2008).

11.8.3.5 Terrestrial mammals (excluding bats)

There is no risk of the proposed development on terrestrial mammals (excluding bats), mitigation measures intended to avoid or reduce any harmful effects of the proposed development are not required.

Increased urbanisation with hindered access to gardens by e.g. stonewalls has led to the decline of hedgehog populations in Ireland. To increase the urban habitat connectivity for hedgehogs, it is recommended that hedgehog holes measuring 13cm by 13cm[14] are left in boundary walls and fences where possible to facilitate their movement through the urban landscape.

11.8.3.6 Breeding birds

There is no operational phase mitigation required for the protection of breeding birds within the proposed development site.

11.8.3.7 Wintering birds

There is no operational phase mitigation required for the protection of wintering birds within the proposed development site.

11.9 Residual Impact Assessment

11.9.1 Construction Phase

11.9.1.1 European Sites

With the full and successful implementation of the mitigation measures outlined above, no residual impacts are predicted on any European sites at any geographical scale.

11.9.1.2 Nationally designated Sites

With the full and successful implementation of the mitigation measures outlined above, no residual impacts are predicted on any nationally designated sites at any geographical scale.

11.9.1.3 Habitats

With the full and successful implementation of the mitigation measures outlined above, no residual impacts are predicted on habitats at any geographical scale.

[14] More information on increasing habitat connectivity for hedgehog can be found at: https://www.hedgehogstreet.org/help-hedgehogs/link-your-garden/ [Accessed: 31/03/2021]

11.9.1.4 Bats

With the full and successful implementation of the mitigation measures outlined above, no residual impacts are predicted on foraging/commuting bats at any geographical scale.

11.9.1.5 Terrestrial mammals (excluding bats)

Residual impacts on terrestrial mammals (excluding bats) include short-term displacement from the proposed development site during the construction phase and in particular vegetation clearance, albeit over a small scale. However, with the full and successful implementation of the mitigation measures, no long-term significant impacts are predicted on terrestrial mammals (excluding bats) at any geographical scale.

11.9.1.6 Breeding birds

Residual impacts on breeding birds include short-term displacement from the proposed development site during the construction phase and in particular vegetation clearance, albeit over a small scale. However, with the full and successful implementation of the mitigation measures, no long-term significant impacts are predicted on breeding birds at any geographical scale.

11.9.1.7 Wintering birds

Residual impacts on wintering birds include short-term displacement from the proposed development site during the construction phase and in particular vegetation clearance, albeit over a small scale. However, with the full and successful implementation of the mitigation measures, no long-term significant impacts are predicted on wintering birds at any geographical scale.

11.9.2 Operational Phase

11.9.2.1 European Sites

With the full and successful implementation of the mitigation measures outlined above, no residual impacts are predicted on European sites at any geographical scale.

11.9.2.2 Nationally designated Sites

With the full and successful implementation of the mitigation measures outlined above, no residual impacts are predicted on nationally designated sites at any geographical scale.

11.9.2.3 Habitats

With the full and successful implementation of the mitigation measures outlined above, no residual impacts are predicted on habitats at any geographical scale.

11.9.2.4 Bats

With the full and successful implementation of the mitigation measures outlined above, no residual impacts are predicted on foraging/commuting bats at any geographical scale.

11.9.2.5 Terrestrial mammals (excluding bats)

With the full and successful implementation of the mitigation measures, no long-term significant impacts are predicted on terrestrial mammals (excluding bats) at any geographical scale.

11.9.2.6 Breeding birds

With the full and successful implementation of the mitigation measures, no long-term significant impacts are predicted on breeding birds at any geographical scale.

11.9.2.7 Wintering birds

With the full and successful implementation of the mitigation measures, no long-term significant impacts are predicted on wintering birds at any geographical scale.

11.9.3 Cumulative

As there are no residual impacts predicted for European sites, nationally designated sites, habitats, bats, terrestrial mammals (excluding bats), breeding birds or wintering birds, there is no potential for them to act in combination with any other plans or projects to form cumulative effects.

11.9.4 Development Plan Objectives

The local authority for this proposed development is Fingal County Council. Plans and developments within Fingal must comply with the policies and objectives of the *Final Development Plan 2017-2023* (Fingal County Council, 2017), including the plans objectives for biodiversity and green infrastructure, which apply to ecological features within the lands. The proposed development is compliant with the objectives of the *Fingal Development Plan 2017-2023* (Fingal County Council, 2017).

11.10 Monitoring

11.10.1 European sites

All of the mitigation measures to be implemented on the proposed development site outlined in section 11.8.2.1 are to be monitored throughout the duration of construction to ensure that they are working effectively, to implement maintenance measures if required/applicable and to address any potential issues that may arise.

11.10.2 Nationally designated sites

All of the mitigation measures to be implemented on the proposed development site outlined in section 11.8.2.1 are to be monitored throughout the duration of construction to ensure that they are working effectively, to implement maintenance measures if required/applicable and to address any potential issues that may arise.

11.10.3 Habitats
All of the mitigation measures to be implemented on the proposed development site outlined in section 11.8.2.3 and are to be monitored throughout the duration of construction to ensure that they are working effectively, to implement maintenance measures if required/applicable and to address any potential issues that may arise.

11.10.4 Bats
All of the mitigation measures to be implemented on the proposed development site outlined in section 11.8.2.4 are to be monitored throughout the duration of construction to ensure that they are working effectively, to implement maintenance measures if required/applicable and to address any potential issues that may arise.

11.10.5 Terrestrial mammals (excluding bats)
All of the mitigation measures to be implemented on the proposed development site outlined in section 11.8.2.5 are to be monitored throughout the duration of construction to ensure that they are working effectively, to implement maintenance measures if required/applicable and to address any potential issues that may arise.

11.10.6 Breeding birds
Where feasible, the mitigation measures to be implemented on the proposed development site outlined in section 11.8.2.6 are to be monitored throughout the duration of construction to ensure that they are working effectively, to implement maintenance measures if required/applicable and to address any potential issues that may arise.

11.10.7 Wintering birds
There is no construction or construction phase mitigation required for the protection of wintering birds within the proposed development site and therefore no monitoring required.

11.11 Interactions
Biodiversity interacts with several environmental factors including water & hydrology, noise, air quality and climate chapters of the EIAR. Changes to these environmental factors could result in significant impacts on biodiversity such as the following:

Water & hydrology – interactions between water & hydrology and biodiversity including habitats, flora and fauna can occur through impacts to water quality either arising from an accidental pollution event or increased sedimentation during the construction stage or an accidental pollution event during the operational stage. This interaction has the potential to result in significant impacts on hydrologically connected habitats and sensitive fauna that rely on these habitats. Following the implementation of mitigation measures outlined in Section 11.8.2.1, impacts to habitats, flora and fauna, from water & hydrology interactions are not predicted to be significant.

Noise – interactions between noise and sensitive fauna, namely birds that occur in adjacent wetland habitats in Baldoyle Bay, can occur and arise from increased noise levels during the construction stage. As outlined in section 11.7.1.7, calculated noise levels for the nearest sensitive receptor for winter birds with all plant operating simultaneously were low. As such,

disturbance effects for general construction activities across the majority of the proposed development site would not be expected to extend beyond a distance of *c.* 140m, which is the distance of the closest sensitive receptor for winter birds, as noise levels associated with general construction activities would attenuate to close to background levels at that distance and beyond. Impacts to fauna from noise interactions are not predicted to be significant.

Air quality & climate – interactions between air quality and sensitive flora and fauna in adjacent habitats and designated sites can occur during the construction stage due to dust emissions arising from construction works. This interaction has the potential to result in significant impacts on biodiversity. However, once the dust minimisation measures outlined in Section 11.8.2.1 are implemented, impacts to flora and fauna are not predicted to be significant.

11.12 Summary of Mitigation & Monitoring

The Table below summarises the Construction Phase mitigation and monitoring measures.

Likely Significant Effect	Mitigation	Monitoring
European site	A suite of mitigation measures are laid out to protect European sites during the construction phase for release of hydrocarbons, polluting chemicals, sediment/ silt and contaminated waters control.	All mitigation measures implemented on site will be monitored throughout the duration of construction to ensure that they are working effectively, to implement maintenance measures if required/applicable and to address any potential issues that may arise
Nationally designated site	A suite of mitigation measures are laid out to protect nationally designated sites during the construction phase for release of hydrocarbons, polluting chemicals, sediment/ silt and contaminated waters control.	All mitigation measures implemented on site will be monitored throughout the duration of construction to ensure that they are working effectively, to implement maintenance measures if required/applicable and to address any potential issues that may arise
Habitats	A suite of mitigation measures, such as fences are laid out to protect habitats marked for retention during the construction phase from damage	Weekly checks of the fences will take place by the project ecologist and/or contractor.
Bats	Construction phase lighting designed by Ethos Engineering (2021) to be sensitive to the presence of commuting and foraging bats will be implemented	No monitoring is required
Terrestrial mammals (excluding bats)	No mitigation is required	No monitoring is required
Breeding birds	Where feasible, vegetation (e.g. hedgerows, trees, scrub and grassland) will not be removed, between the 1st March and the 31st August, to avoid direct impacts on nesting birds. Where the construction programme does not allow this seasonal restriction to be observed, then these areas will be inspected by a suitably qualified ecologist for the presence of breeding birds prior to clearance. Areas found not to contain nests will be cleared within 3 days of the nest survey, otherwise repeat surveys will be required.	Where the construction programme does not allow this seasonal restriction to be observed, then these areas will be inspected by a suitably qualified ecologist for the presence of breeding birds prior to clearance.
Wintering birds	No mitigation is required	No monitoring is required

Table 11.9 Summary of Construction Phase Mitigation and Monitoring

The Table below summarises the Operational Phase mitigation and monitoring measures.

Likely Significant Effect	Mitigation	Monitoring
European site	No mitigation is required	No monitoring is required
Nationally designated site	No mitigation is required	No monitoring is required
Habitats	No mitigation is required	No monitoring is required
Bats	Operational phase lighting designed by Ethos Engineering (2021) to be sensitive to the presence of commuting and foraging bats will be implemented	No monitoring is required
Terrestrial mammals (excluding bats)	There is no risk of the proposed development on terrestrial mammals (excluding bats), mitigation measures intended to avoid or reduce any harmful effects of the proposed development are not required. Increased urbanisation with hindered access to gardens by e.g. stonewalls has led to the decline of hedgehog populations in Ireland. To increase the urban habitat connectivity for hedgehogs, it is recommended that hedgehog holes measuring 13cm by 13cm[15] are left in boundary walls and fences where possible to facilitate their movement through the urban landscape.	No monitoring is required
Breeding birds	No mitigation is required	No monitoring is required
Wintering birds	No mitigation is required	No monitoring is required

Table 11.10 Summary of Operation Phase Mitigation and Monitoring

[15] More information on increasing habitat connectivity for hedgehog can be found at: https://www.hedgehogstreet.org/help-hedgehogs/link-your-garden/ [Accessed: 31/03/2021]

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CHAPTER 12
NOISE & VIBRATION

MAY 2021

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12 Noise & Vibration

12.1 Introduction

This chapter of the EIAR has been prepared by Byrne Environmental Consulting Ltd to identify and assess the potential noise and vibrational impacts associated with the proposed development during both the Construction and Operational Phases.

This document includes a comprehensive description of the receiving ambient noise climate in the vicinity of the subject site; a description of how the construction and operational phases may impact the existing ambient noise climate, the mitigation measures that shall be implemented to control and minimise the impact that the development may have on ambient noise levels and the proposed acoustic design features required to minimise the impact of external noise sources on the residential units.

Various elements of both the construction and operational phases of the proposed development have the potential to impact on the receiving on the local receiving noise environment, on adjacent residential properties and on human health. The likely potential impacts for both construction and operation of the proposed scheme prior to mitigation are described section. The mitigation measures are described in Section 12.9 and the residual impacts with the development in place and the mitigation measures incorporated in Section 12.10.

Ian Byrne, Principal Consultant, MSc Environmental Protection, Dip. Environmental & Planning Law, Member of the Institute of Acoustics has over 24 years' experience in the preparation of nose impact assessments for commercial, residential and industrial developments and conducted all aspects of the project works. Ian Byrne has recently prepared Material Assets -Waste Management EIAR Chapters for Strategic Housing Developments including :

- Glenveagh – Citywest Road Residential Development SHD ABP-306602-20
- Park Developments Group – Clayfarm Carrickmines Residential Development SHD ABP-301522-18
- CAIRN Homes – Farankelly Greystones Residential Development SHD ABP-305476-19
- Park Developments Group Glencairn Leopardstown Residential Development SHD ABP-302580-18

12.2 Proposed Development

The full description of the proposed development is outlined in **Chapter 2 – Development Description**, of this Environmental Impact Assessment Report.

The design rationale is to create and deliver a high quality, sustainable, strategic housing development which respects its setting and maximises the site's natural attributes while

achieving maximum efficiency of existing infrastructure. The Proposed Site Layout is illustrated on **Drawing No. 1101** contained within the architectural suite of drawings.

The development will consist of;

i. 162 no. residential units distributed across 3 no. blocks (A, B & C) ranging in height from 5-6 storeys, with a cumulative gross floor area (GFA) of 13,337.10 sq.m comprising;
    a. 29 no. 1-bedroom units, - 17.9%
    b. 104 no. 2-bedroom units and – 64.2%
    c. 29 no. 3-bedroom units – 17.9%
ii. 3 no. resident services and amenity rooms (1 no. in each block A-C) to accommodate co-working space, a community room and a meeting room (combined GFA 108 sq.m)
iii. 132 no. car parking spaces at basement level (underlying Blocks A & B) including 6 no. accessible spaces, 13 no. electric vehicle spaces and 4 no. car sharing spaces;
iv. 325 no. residents bicycle parking spaces (long-stay) at basement level, and 30 no. visitor bicycle parking spaces (short-stay) at surface level;
v. communal amenity space in the form of courtyards and roof gardens (combined 2,192 sq.m)
vi. public open space of 1,161 sq.m including a botanic garden and pocket park;
vii. a single storey ESB sub-station and switch room (45.5 sq.m);
viii. demolition of 2 no. sections of the existing demesne northern boundary wall to provide, a primary access (vehicular/pedestrian/cyclist) to the northwest and a separate pedestrian/cyclist access at the centre;
ix. restoration and refurbishment of the remaining extant northern and eastern demesne boundary wall;
x. change of use and regrading of part of the Deer Park Golf Course from active recreation use to passive amenity parkland and planting of a woodland belt on the southern boundary;
xi. undergrounding of existing ESB overhead lines, and, relocation of the existing gas main; and,
xii. all ancillary site development works including waste storage and plant rooms at basement level, drainage, landscaping/boundary treatment and lighting.

12.2.1 Aspects Relevant to Assessment

Short term noise exposure during the construction phase must be managed and controlled to acceptable levels. There are a number of existing noise sensitive receptors located in proximity to the development site boundaries. It is fundamental that the proposed development or any aspect of the proposed development must not adversely impact the existing noise levels

experienced at these receptors during both the short-term construction phase and the long-term operational phase.

12.3 Methodology

This chapter has been prepared having regard to the following Directives and guidelines;

- *Planning and Development Act 2000 (as amended);*
- *Planning and Development Regulations 2001(as amended);*
- *Directive 2011/92/EU;*
- *Directive 2014/52/EU;*
- *Preparation of guidance documents for the implementation of EIA directive (Directive 2011/92/EU as amended by 2014/52/EU) – Annex I to the Final Report (COWI, Milieu; April 2017);*
- *Guidelines on the information to be contained in environmental impact assessment reports, EPA, 2017 (Draft);*
- *Environmental Impact Assessment – Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment (2018; DoHPLG); and*
- *Environmental Impact Assessment of Projects Guidance on the preparation of the Environmental Impact Assessment Report (Directive 2011/92/EU as amended by 2014/52/EU)*

12.3.1 Baseline Noise Assessment Methodology

The existing ambient noise climate in the vicinity of the site has been characterised with information obtained from site specific baseline noise surveys conducted in the vicinity of the closest noise sensitive receptors to the subject site. Baseline noise surveys were conducted between 26th February and 2nd March 2021 in accordance with ISO 1996-1: 2017: Acoustics – Description, measurement and assessment of environmental noise and with regard to the EPA's 2016 Guidance Note for Noise: Licence Applications, Surveys and Assessments in Relation to Scheduled Activities (NG4).

The EPA' Round 3 2017 Strategic Noise Mapping of Aircraft, Road and Rail was reviewed to establish the specific impact that transportation related noise sources have on the proposed development site.

12.3.2 Noise Impact Assessment Methodology

The impact of the proposed development has been determined through prediction of future noise levels associated with the scheme using established calculation techniques.

Construction noise and vibration impacts have been assessed in accordance with Transport Infrastructure Irelands (TII) guidance document Good Practice Guidance for the Treatment of Noise during the Planning of National Road Schemes (March 2014). Indicative construction noise calculations have been undertaken using the methodology set out in BS 5228 Code of Practice for noise and vibration control of construction and open sites - Part 1: Noise 2009+A1 2014.

Impacts associated with road traffic movements on the development when operational have been assessed with regard to the NRA's Good Practice Guidance for the Treatment of Noise

during the Planning of National Road Schemes (March 2014). UK Department of Transport (Welsh Office) - Calculation of Road Traffic Noise [CRTN] and the Highways Agency Design Manual for Roads and Brides Part 7 HD 213/11 – Revision 1 Noise and Vibration.

The operational phase of the development has been assessed with regard the Department of the Environment, Building Regulations 2014, Technical Guidance Document E – Sound. Acoustic design of apartments refers to the 2018 Ministerial Guidelines "Sustainable Urban Housing – Design Standards for New Apartments. Paragraph 1.18 of the document refers specifically to the Building Regulations Technical Guidance Documents and states that the construction of the apartment building shall comply with all relevant requirements.

The inward noise impact that the external environment has been assessed with regard to Professional Guidance on Planning & Noise (ProPG), (IoA/ANC, 2017).

The Professional Guidance on Planning & Noise (ProPG) document May 2017 was prepared by a working group comprising members of the Association of Noise Consultants (ANC), the Institute of Acoustics (IOA) and the Chartered Institute of Environmental Health (CIEH) has been generally considered as a best practice guidance and has been widely adopted in the absence of equivalent Irish guidance.

The ProPG outlines a systematic risk based 2 stage approach for evaluating noise exposure on prospective sites for residential development. The two primary stages of the approach can be summarised as follows:

Stage 1 - Comprises a high-level initial noise risk assessment of the proposed site considering either measured and or predicted noise levels; and,

Stage 2 – Involves a full detailed appraisal of the proposed development covering four "key elements" that include:

Element 1 - Good Acoustic Design Process;

Element 2 - Noise Level Guidelines;

Element 3 - External Amenity Area Noise Assessment

Element 4 - Other Relevant Issues

The initial noise risk assessment is intended to provide an early indication of any acoustic issues that may be encountered. It calls for the categorisation of the site as a negligible, low, medium or high risk based on the pre-existing noise environment. **Figure 12.1** presents the basis of the initial noise risk assessment, it provides appropriate risk categories for a range of continuous noise levels either measured and/or predicted on site.

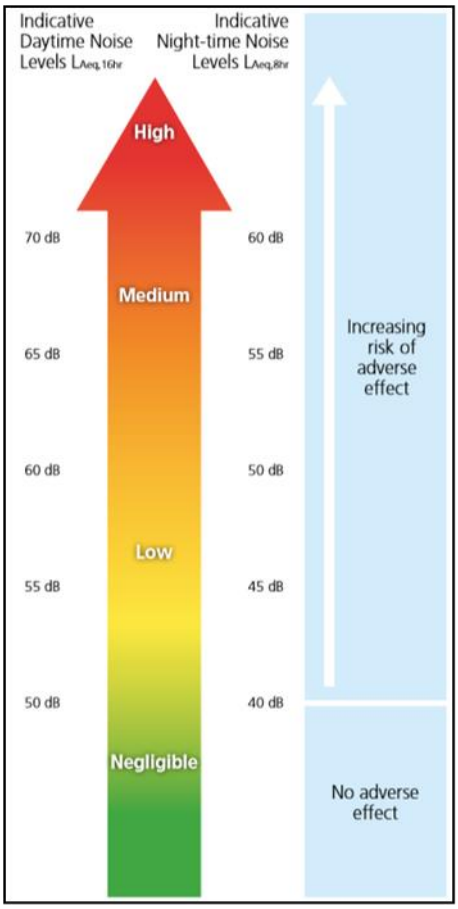

Figure 12.1 ProPG Stage 1 Initial Risk Assessment

A site should not be considered a negligible risk if more than 10dB(A) LAFmax events exceed 60 dB during the night period and the site should be considered a high risk if the LAFmax events exceed 80 dB more than 20 times a night.

With regard to the ProPG risk assessment conducted based on the baseline noise assessment, the development site may be classified as having a low risk in terms of the existing low-noise climate at the site, that is, there are no adverse pre-existing noise sources in proximity to the development site which may impact the residential units once developed and occupied by residents.

Element 2 of the ProPG document sets out recommended internal noise targets derived from BS 8233 (2014). The recommended indoor ambient noise levels are set out in **Table 12.1** and are based on annual average data levels.

Activity	Location	(07:00 to 23:00hrs)	(23:00 to 07:00hrs)
Resting	Living Room	35 dB $L_{Aeq, 16hr}$	-
Dining	Dining Room/Area	40 dB $L_{Aeq, 16hr}$	-
Sleeping (Daytime Resting)	Bedroom	35 dB $L_{Aeq, 16hr}$	30 dB $L_{Aeq, 8hr}$ 45 dB L_{AFmax}

Table 12.1 ProPG Internal Noise Levels

12.3.3 Construction Noise & Vibration Assessment Methodology

This section describes the methodologies used to assess the outward noise impact that the construction and operational phases of the proposed development may have on the receiving environment including local receptors.

The construction noise limits which are presented in **Table 12.2** are specified in British Standard BS 5228 – 1:2009+A1 2014 Code of practice for noise and vibration control on open sites: Part 1 Noise and are based on the noise measured at the external façade of a receptor.

BS5228 states that noise sensitive receptors (houses) are designated a category based on existing ambient noise levels. Each category is then assigned with a noise limit value.

Category A Threshold values when ambient noise levels are less than these values.

Category B Threshold values when ambient noise levels are the same as the Category A values.

Category C Threshold values when ambient noise levels are higher than the Category A values.

Category and Threshold Value Period LAeq dB(A)	Category A	Category B	Category C
Night 23:00 – 07:00	45	50	55
Evening 19:00 - 23:00 & Weekends	55	60	65
Day 07:00 – 19:00 & Sat 07:00 – 13:00	65	70	75

Table 12.2 Threshold of Potential Significant Effect at Dwelling

12.3.4 Operational Noise Assessment Methodology

The UK Design Manual for Roads and Bridges (DMRB, Volume 11, Section 3, Part 7) states that a change in noise level of 1dB LA10,18h is equivalent to a 25% increase or a 20% decrease in traffic flow, assuming other factors remain unchanged and a change in noise level of 3dB LA10,18h is equivalent to a 100% increase or a 50% decrease in traffic flow.

A change in traffic noise of less than 2dBA is generally not noticeable to the human ear whilst a change of 3dBA is generally considered to be just perceptible. Changes in noise levels of 3 to 5 dBA would however be noticeable and, depending on the final noise level, there may be a slight or moderate noise impact. Changes in noise level in excess of 6dBA would be clearly noticeable, and depending on the final noise level, the impact may be moderate or significant. However, a significant change in traffic volumes or traffic category i.e. increase in the use of a road by HGVs, would be required to result in such increases.

Traffic noise levels in excess of 60dBA (Lden) are considered to be potentially intrusive. LDEN is the day-evening-night composite noise indicator for assessing overall noise annoyance. For new roads projects the National Roads Authority design goal is to mitigate when predicted levels exceed 60dB Lden. However, for existing roads the Dublin Agglomeration, within the Noise Action Plan, have set a level of 70dB (Lday) and 55dB (Lnight) above which mitigation measures should be considered.

The World Health Organisation (WHO) in their 2018 publication entitled Environmental Noise Guidelines for the European Region has proposed new guidelines for community noise. In this guidance, a Lden threshold daytime noise limit of 53dB is suggested to protect against adverse health effects. Lnight Levels of 45dB or less are proposed at night-time to protect against adverse effects on sleep.

The operational phase of the development shall be assessed with regard to the 2018 WHO guidelines and appropriate acoustic design of residential units to ensure that they comply with the Department of the Environment, Building Regulations 2014, Technical Guidance Document E – Sound.

Professional Practice Guidance on Planning & Noise: New Residential Developments (ProPG) is considered in the assessment of the operational phase of the residential development in terms of ensuring that each residential unit in the Howth Castle development will not be adversely impacted by external related noise sources.

Change in sound level (L_{10})	Subjective reaction	Impact
<3	Inaudible	Imperceptible
3-5	Perceptible	Slight
6-10	Up to a doubling of loudness	Moderate
11-15	Over a doubling of loudness	Significant
>15		Profound

Table 12.3 Likely impact associated with change in traffic noise level

12.3.5 Construction Phase Vibration Assessment Methodology

Vibration standards come in two varieties: those dealing with human comfort and those dealing with cosmetic or structural damage to buildings. In both instances, it is appropriate to consider the magnitude of vibration in terms of Peak Particle Velocity (PPV).

Construction impacts have been assessed in accordance with BS 7385-2:1993 – Evaluation and Measurement for Vibration in Buildings: Part 2 – Guide to Damage Levels from Groundborne Vibration and BS 5228 Code of Practice for noise and vibration control of construction and open sites - Part 2: Vibration 2009+A1 2014.

Operational impacts have been assessed in accordance with the Transport Infrastructure Ireland, TII Guidelines for the Treatment of Noise & Vibration in National Road Schemes, 2014.

Table 12.4 details the limits above which cosmetic damage could occur for transient vibration. Minor damage is possible at vibration magnitudes which are greater than twice those shown in **Table 12.4**, and major damage to a building structure would only generally occur at values greater than four times the tabulated values. These values only relate to transient vibration. If there is a continuous vibration, the guide values shown in Table **12.3** shall be reduced by up to 50%.

This guidance is reproduced from BS 5228-2:2009+A1 2014 – Code of Practice for Noise and Vibration Control on Construction and Open Sites: Part 2 – Vibration and BS 7385-2:1993 –

Evaluation and Measurement for Vibration in Buildings: Part 2 – Guide to Damage Levels from Groundborne Vibration.

Type of building	PPV (mm/s) in frequency range of predominant pulse	
	4-15Hz	15Hz and above
Reinforced or framed structures. Industrial and heavy commercial buildings.	50mm/s at 4Hz and above.	50mm/s at 4Hz and above.
Unreinforced or light framed structures. Residential or light commercial buildings.	15mm/s at 4Hz increasing to 20mm/s at 15Hz.	20mm/s at 15Hz increasing to 50mm/s at 40Hz and above.

Table 12.4 Transient vibration guide values for cosmetic damage

Table 12.5, reproduced from *BS 5228 Code of Practice for noise and vibration control of construction and open sites - Part 2: Vibration 2009+A1 2014* outlines the vibration levels (in terms of PPV) from construction activities and their likely effect on humans.

Vibration Level (PPV)	Effect
0.14mm/s	Vibration might be just perceptible in the most sensitive situations for most vibration frequencies associated with construction. At lower frequencies, people are less sensitive to vibration.
0.30mm/s	Vibration might be just perceptible in residential environments.
1.0mm/s	It is likely that vibration of this level in residential environments will cause complaint, but can be tolerated if prior warning and explanation has been given to residents.
10mm/s	Vibration is likely to be intolerable for any more than a very brief exposure to this level.

Table 12.5 Guidance on the effect of construction vibration levels on humans

12.4 Difficulties Encountered

No difficulties were encountered during the baseline assessments or during the completion of this Chapter of the EIAR.

12.5 Consultation

This Chapter did not require direct consultation with Statutory or Non-Statutory bodies.

The guidelines referenced in this chapter provide sufficient direction to complete the chapter.

As the subject site is not within a Dublin Airport flight path, no consultation with the IAA was required.

12.6 Existing Environment

The subject site is located on undeveloped lands in an area which includes residential development, Deer Park golf course, Howth Caste, The National Transport Museum, St. Mary's Church and Deer Park Montessori School. The site is located off the Howth Road which carries a high volume of road traffic throughout the day.

The Dublin to Howth DART line is located c.140 north of the site and the Dublin Airport Zone C Flight Path is located c.1.8 km north of the site. Ambient noise levels reflect the nature of the existing noise climate which is typical of an urban environment.

12.6.1 Baseline Noise Climate Assessment

Baseline noise data in the vicinity of the closest residential receptors to the proposed development site boundaries has been obtained from noise monitoring surveys conducted by Byrne Environmental Consulting Ltd during February and March 2021 during periods when typical ambient noise sources were prevalent. A review of the Dublin Agglomeration Environmental Noise Plan 2018 - 2023 & EPA Round 3 Road, Rail and Aircraft Noise Mapping Assessment allows for a comparison of measured noise levels during a period of Covid19 restrictions and modelled data in order to establish the actual noise impact that transportation related noise may have on the proposed development.

12.6.2 Baseline Noise Measurement Locations

Attended baseline noise measurement surveys were conducted at 5 no. locations N1 - N5 as described in **Table 12.6** to **12.10** and as shown in **Figure 12.2** between 26th February to 2nd March 2021 during suitably dry and calm (<5mm/sec) wind conditions in accordance with *ISO 1996-2 2017 Acoustics – Description, Measurement and Assessment of Environmental Noise Parts 1-3* and the 2016 EPA publication, *"Guidance Note for Noise: Licence Applications, Surveys and Assessments in Relation to Scheduled Activities (NG4).*

The noise parameters used to describe the existing ambient noise climate are described as follows:

L_{Aeq}: *The equivalent continuous sound level. It is a type of average and is used to describe a fluctuating noise in terms of a single noise level over the sample period.*

L_{A10}: *The sound level that is exceeded for 10% of the sample period. It is typically used as a descriptor for traffic noise.*

L_{A90}: *The sound level that is exceeded for 90% of the sample period. It is typically used as a descriptor for background noise.*

L_{Amax}: *The instantaneous maximum sound level measured during the sample period.*

The L_{den} parameter is a descriptor of noise level based on energy equivalent noise level (L_{eq}) over a whole day with a penalty of 10dB(A) for nightime noise (23:00 – 07:00hrs) and an additional penalty of 5dB(A) for evening noise (19:00 – 23:00hrs).

The L_{night} parameter is a descriptor of noise level based on energy equivalent noise level (L_{eq}) over an 8-hour night period between (23:00 – 07:00hrs).

1/3 Octave band analysis The frequency analysis of a sound such that the frequency spectrum is subdivided into bands of one-third of an octave each. Used to determine tonal components of a sound source.

Noise levels are measured using a logarithmic noise scale (decibel) and are denoted dBA. The "A" indicates that a frequency weighting has been applied to allow for the variation in the sensitivity of the human ear.

Figure 12.2 Baseline Noise & Vibration Monitoring Locations (N1-N5

12.6.3 Baseline Noise and Vibration Measurement Results

The results of the 24-hour baseline noise surveys and vibration surveys are presented below.

Period 01.03.21 N1	Measured sound pressure levels dBA (re 20µPa)			
	$L_{Aeq,}$	L_{A10}	L_{A90}	L_{AMax}
Daytime period 08:00 – 11:00hrs 3-hr period	59	62	49	70
Nightime period 23:10 – 00:10hrs 1-hr period	52	55	42	65

Table 12.6 Location N1 North-western site boundary adjacent Tig Bhride residential receptor

The noise climate at N1 is dominated by traffic on Howth Road. No tonal or impulsive noise sources were observed.

Recorded vibration were negligible <0.100mm/sec PPV during the survey period at Location N1.

Period 02.03.21 N2	Measured sound pressure levels dBA (re 20µPa)			
	$L_{Aeq,}$	L_{A10}	L_{A90}	L_{AMax}
Daytime period 12:40 – 15:40hrs 3-hr period	57	59	48	72
Nightime period 00:45 – 01:45hrs 1-hr period	50	51	43	61

Table 12.7 Location N2 North-eastern site boundary

The noise climate at N2 is dominated by traffic on the Howth Road. No tonal or impulsive noise sources were observed.

Recorded vibration were negligible <0.100mm/sec PPV during the survey period at Location N2.

Period 26.02.21 N3	Measured sound pressure levels dBA (re 20µPa)			
	$L_{Aeq,}$	L_{A10}	L_{A90}	L_{AMax}
Daytime period 09:45 – 12:45hrs 3-hr period	51	54	44	65
Nightime period 05:20 – 06:20hrs 1-hr period	47	49	45	60

Table 12.8 Location N3 South-eastern site boundary

The noise climate at N3 is influenced by traffic on the Howth Road and intermittently by golf course maintenance machinery. No tonal or impulsive noise sources were observed.

Recorded vibration were negligible <0.100mm/sec PPV during the survey period at Location N3.

Period 26.02.21 N4	Measured sound pressure levels dBA (re 20µPa)			
	$L_{Aeq,}$	L_{A10}	L_{A90}	L_{AMax}
Daytime period 15:30 – 18:30rs 3-hr period	52	53	43	63
Nightime period 05:30 – 06:30hrs 1-hr period	45	46	43	61

Table 12.9 Location N4 Western site boundary adjacent Windwood Residential Receptor

The noise climate at N4 is influenced by traffic on the Howth Road and intermittently by golf course maintenance machinery. No tonal or impulsive noise sources were observed.

Recorded vibration were negligible <0.100mm/sec PPV during the survey period at Location N4.

Period 02.03.21 N5	Measured sound pressure levels dBA (re 20µPa)			
	$L_{Aeq,}$	L_{A10}	L_{A90}	L_{AMax}
Daytime period 14:00 – 17:00rs 3-hr period	57	**58**	51	68
Nightime period 23:30 – 00:30hrs 1-hr period	49	53	45	60

Table 12.10 Location N5 St Mary's Church 110m east of site

The noise climate at N5 is influenced by traffic on the Howth Road. No tonal or impulsive noise sources were observed.

Recorded vibration were negligible <0.100mm/sec PPV during the survey period at Location N5.

12.6.4 Dublin Agglomeration Environmental Noise Plan 2018 - 2023 & EPA Round 3 Road Noise Mapping Assessment

In order to further establish existing background noise levels associated with the identified dominant noise source identified as being transport related, the EPA's Round 3 noise mapping data was reviewed to assess L_{den} and L_{night} noise indicators been reviewed as part of this baseline assessment.

Figures 12.3 and **12.4** present the daytime L_{den} and nighttime L_{night} Noise Maps for road traffic on the Howth Road.

The L_{den} parameter is a descriptor of noise level based on energy equivalent noise level (L_{eq}) over a whole day with a penalty of 10dB(A) for nightime noise (23:00 – 07:00hrs) and an additional penalty of 5dB(A) for evening noise (19:00 – 23:00hrs).

The L_{night} parameter is a descriptor of noise level based on energy equivalent noise level (L_{eq}) over an 8-hour night period between (23:00 – 07:00hrs).

The Noise Action Plan for Fingal County 2019-2023 specifies desirable and undesirable sound levels are defined as follows:

Desirable Levels 24-hour Day-Evening-Night Noise Value <70dB(A) L_{den}
Desirable Nightime Noise Value <55 dB(A) L_{night}

The measured and modelled traffic noise data are within the daytime and nightime desirable noise values.

Passing Rail (DART) movements were measured to be 43 - 45 dB(A) $L_{Aeq,\ 1min}$ and are slightly audible in the distance at the northern site boundary.

The results of the baseline vibration surveys demonstrate that there are no existing inherent sources of vibration and that measured vibration levels were negligible.

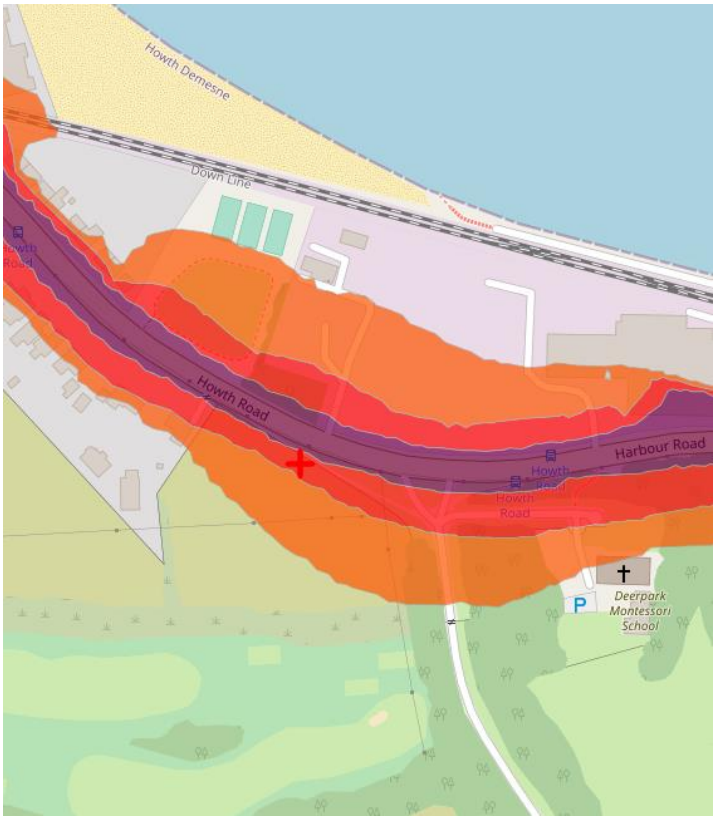

Figure 12.3 L_{den} **60 - 64dB**

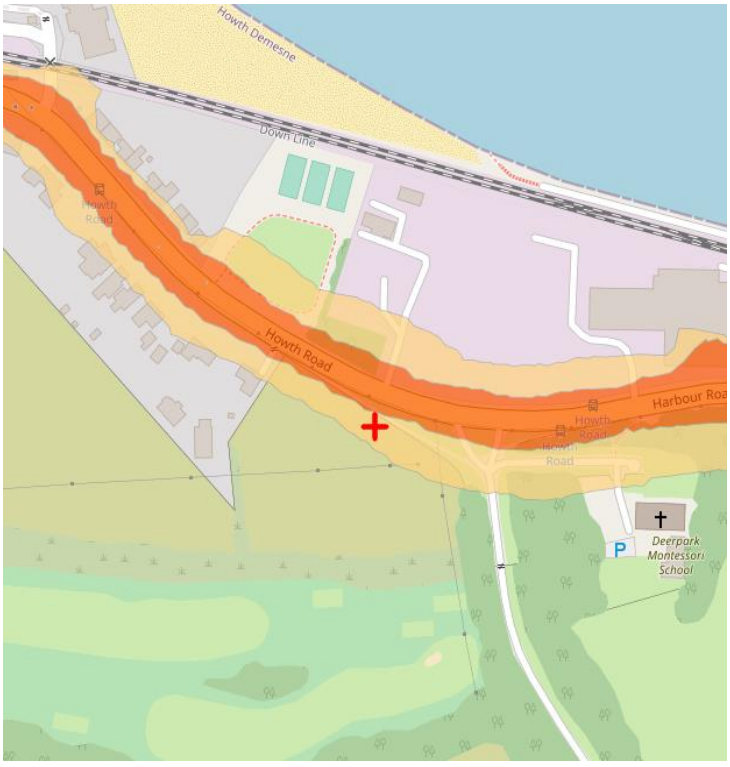

Figure 12.4 L_{night} **50 - 54dB**

The location of the site is c.2km south of the closest Dublin Airport flight path which is beyond Dublin Airport Zone C is shown in **Figure 12.5** below.

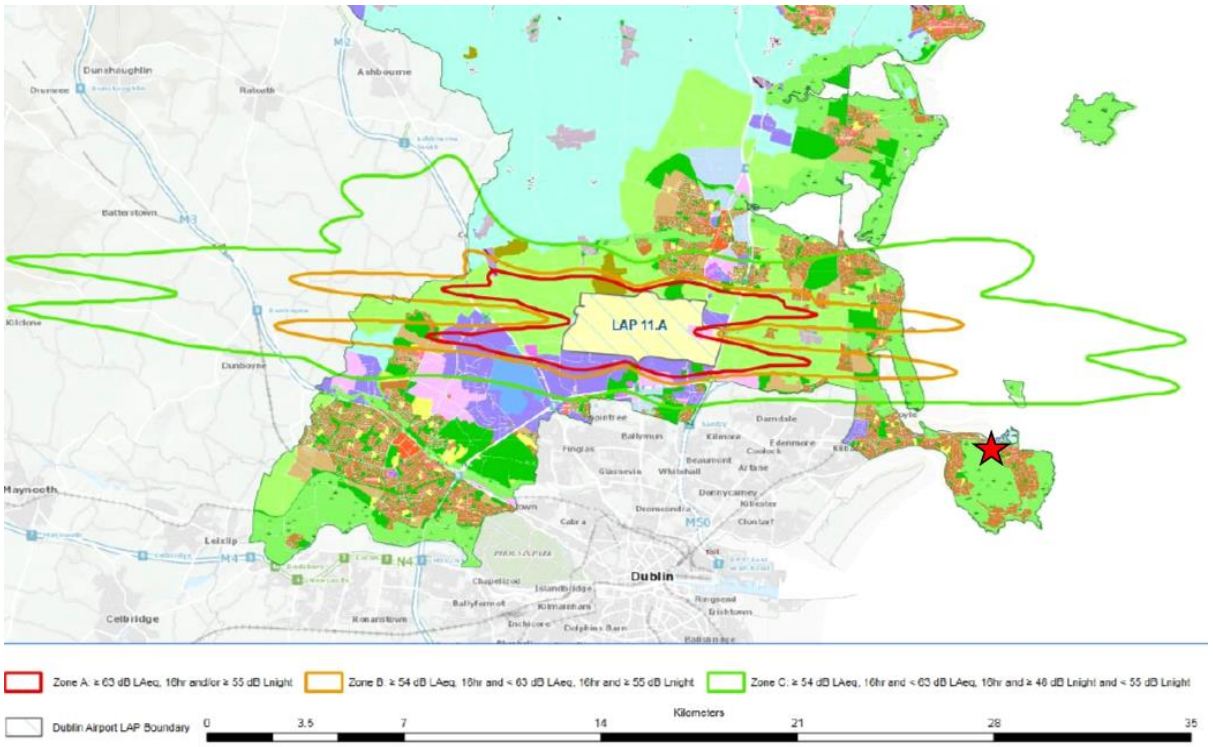

Figure 12.5 Location of development relative to Dublin Area Noise Zones. Site is outside Zone C Zone

12.6.5 Northern Parallel Runway (NPR)

The Dublin Airport Authority are progressing the development of the NPR which will be operational by 2025. The impact of the additional aircraft flight noise must therefore be considered as part of this assessment to ensure that the design of the proposed development is future-proofed against any additional potential noise associated with the NPR.

The NPR will be located approximately 2.5km further north of the proposed development site. The Environmental Impact Statement that accompanied the Planning Application for the NPR has been reviewed and the noise contour map for runway Option 7b confirms that the location of the site will be outside the daytime 54dB $L_{Aeq,16hr}$ noise contour as shown below in **Figure 12.6** and outside the night 48dB $L_{Aeq,8hr}$ noise contour as shown below in **Figure 12.7**. It may therefore be concluded that the operation of the NPR given its extended location from the proposed development site will not increase noise levels over existing to any noticeable extent over the current Dublin Airport flightpath noise contours at the site.

Figure 12.6 NPR Day $L_{Aeq,16hr}$ noise contours

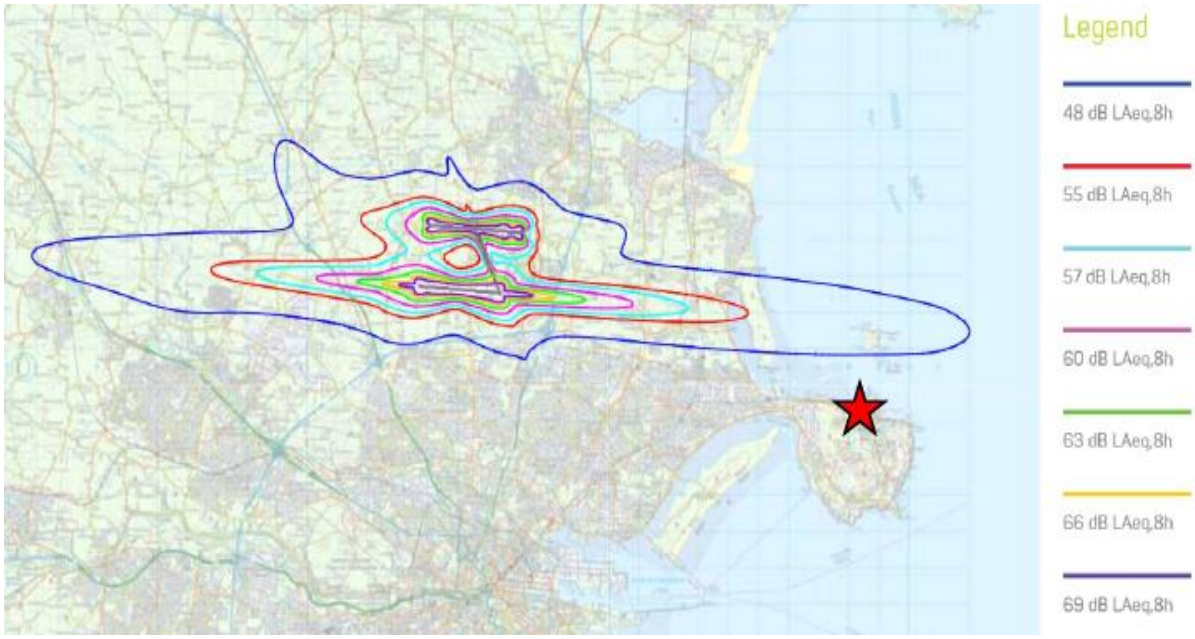

Figure 12.7 NPR Night $L_{Aeq,8hr}$ noise contours

12.6.6 Summary of baseline noise and vibration assessment

The results of the baseline noise assessment demonstrate that the noise climate at the closest receptors to the site are relatively low during the daytime and night-time periods and are not adversely impacted by local noise sources identified to be primarily passing road traffic on the Howth road.

Baseline noise measurements conducted at the subject development site similarly demonstrate that the existing noise climate is low and is not adversely impacted by local noise sources identified primarily to be passing road traffic on the Howth road. The operation of golf course maintenance vehicles during the early morning period are short-term events which do not have an adverse inward noise impact on the subject development site.

The daytime and night-time noise levels are within the Noise Action Plan for Fingal County 2019-2023 desirable sound level values.

The movement of DART trains and aircraft do not have an adverse noise impact on the development site.

12.7 Do Nothing Scenario

Should the subject development not proceed, it is likely that another residential development may be applied for in the future as the subject site is zoned for residential development. Should the site remain undeveloped it will have a neutral long term imperceptible noise impact on the local receiving environment.

12.8 Likely Significant Effects

The potential effects of the proposed development are considered for the short-term construction phase (effects lasting between 1 and 7 years) and permanent operational phase (effects lasting 60+ years). These are set out in the following sections.

12.8.1 Construction Phase

The development of the site will be conducted in the following phased stages:

i. Enabling works	1.5months
ii. Basement excavation	3 months
iii. Construction of buildings	15 months
iv. Mechanical & electrical installation	2.5 months
v. Cladding & building fit out	3 months
vi. Services installation and connections	2 months
vii. Landscaping, roads and footpaths	3 months
viii. BCAR and project handover	1 month

12.8.1.1 Enabling works - Site Set Up and Clearance

Works activities associated with the 'Site set up' will be undertaken prior to construction works commencing. The setting up of the site shall involve the construction of site security hoarding and site compounds, site offices, materials and waste storage areas and staff welfare facilities. These short-term activities will have a minimal potential to generate excessive noise levels.

The proposed development involves the ground clearance of the existing site to facilitate the proposed development including buildings, internal roads and hard standing areas, services and landscaped areas.

Site clearance, levelling and an element of ground excavation shall also occur at this stage. A variety of items of plant will be in use during site clearance and ground excavation. These will include excavators, dump trucks, compressors and generators, pneumatic breakers and piling plant. The operation of these items of plant has the potential to generate short term elevated noise levels beyond the site boundary.

During the site clearance works and the basement bulk dig, the movement of trucks to and from the site shall result in an increase in the volume of HGV's within the immediate area and along the proposed haul routes which will generate additional noise levels.

12.8.1.2 Basement Piling Works

Basement construction will involve the insertion of piles around the perimeter of the proposed apartment block buildings using rotary piling plant. Once the secant pile wall is complete, the basement area will be dug out by excavators. Excavations will not require the use of rock breakers.

12.8.1.3 General Construction Works

During the construction phase there will be extensive site works, involving construction machinery, construction activities on site, and construction traffic, which will all generate noise. The highest noise levels will be generated during the general construction activities. The construction noise levels will be of relatively short-term duration and will only occur during daytime hours which will serve to minimise the noise impacts at local existing receptors.

There is potential that the construction phases shall result in a short-term moderate increase in noise levels in the area as well as introducing tonal and impulsive noise as a result of construction activities such as pneumatic breaking, cutting, excavating, vehicle movements and general manual construction activities.

The proposed construction phase noise mitigation measures as detailed in Section 12.9 shall ensure that all construction activities are controlled and managed and audited by an independent acoustic consultant to confirm that the mitigation measures are implemented throughout the construction phase.

12.8.1.4 Predicted Construction Phase Impacts

The predicted construction noise levels that will be experienced at the nearest residential receptors as a result of construction activities have been calculated using the activity LAeq method outlined in BS 5228 1:2009+A1 2014 – Code of Practice for noise and vibration control on construction and open sites – Part 1 Noise.

Tables 12.11 to **12.13** detail assumed plant items during the key phases of construction with the associated source reference from BS 5228: 2009+A1 2014. The closest residential properties to the proposed development site are located at distances ranging from approximately 4m (Tig Bhride) - 12m (Windwood). Construction noise calculations have therefore been conducted without noise mitigation at distances of 4 to 12m for site preparation works and at distances of 22m at N1 and 40m at N4 during piling works.

Plant Item	BS 5228 Reference	Construction Noise Level L_{Aeq} dB
Generator (enclosed)	C.4 Ref 76	61
Tracked Excavator	C.2 Ref 29	79
Articulated dump truck	C.2 Ref 33	81
Dozer	C.2 Ref 11	79
Calculated sound pressure levels LAeq dB at distances from receptors		
$L_{Aeq,1hr}$ at N1 @ 4m No mitigation		87
$L_{Aeq,1hr}$ at N1 @ 4m With mitigation		70
$L_{Aeq,1hr}$ at N4 @ 12m No Mitigation		75
$L_{Aeq,1hr}$ at N4 @ 12m With mitigation		60

Table 12.11 Predicted construction noise predictions associated with Site Enabling works

The predictions are based on the operation of all plant simultaneously at the specified distances from the closest noise sensitive receptors, N1 “Tig Bhride” and N4 “Windwood” located opposite the western site boundary.

Plant Item	BS 5228 Reference	Construction Noise Level LAeq dB
Rotary Piling	C.3 Ref 14	83
Concrete Pump	DC.3 Ref 25	78
Tracked Excavator	C.2 Ref 29	79
Calculated sound pressure levels LAeq dB at distances from receptors		
$L_{Aeq,1hr}$ at N1 @ 22m No mitigation		77
$L_{Aeq,1hr}$ at N1 @ 22m With mitigation		62
$L_{Aeq,1hr}$ at N4 @ 40m No mitigation		71
$L_{Aeq,1hr}$ at N4 @ 40m With mitigation		56

Table 12.12 Predicted construction noise predictions associated with Piling works

The predictions are based on the operation of all plant simultaneously at the specified distances from the closest noise sensitive receptors, N1 “Tig Bhride” and N4 “Windwood” located opposite the western site boundary.

Plant Item	BS 5228 Reference	Construction Noise Level LAeq dB
Generator (enclosed)	C.4 Ref 76	61
Dumper truck	c.4 Ref 4	76
Tracked Excavator	C.2 Ref 29	79
Lorry	C.2 Ref 34	80
Telescopic handler	C.4 Ref 54	79
Cement mixer truck pumping concrete	C.4 Ref.25	82
Tower Crane	C.4 Ref.48	76
Calculated sound pressure levels LAeq dB at distances from receptors		
$L_{Aeq,1hr}$ at N1 @ 22m No mitigation	77	
$L_{Aeq,1hr}$ at N1 @ 22m With mitigation	59	
$L_{Aeq,1hr}$ at N4 @ 40m No mitigation	71	
$L_{Aeq,1hr}$ at N4 @ 40m With mitigation	56	

Table 12.13 Predicted construction noise predictions associated with building construction works

The predictions are based on the operation of all plant simultaneously at the specified distances from the closest noise sensitive receptors, N1 “Tig Bhride” and N4 “Windwood” located adjacent to the western site boundary. The impact of construction noise will be lower at all other local receptors as a result of the attenuation of sound as a function of distance between source and receiver.

It is noted that existing ambient noise levels at the noise sensitive receptors surrounding the site boundaries have been determined to be relatively low (see section 12.6.6) which will increase the potential noise impact of the construction activities at these receptors.

The results of the assessment conclude that provided all mitigation measures including site hoarding are implemented, the BS5228 guidance construction day time noise limit of 70dB LAeq, 1hr can be complied with during site enabling, piling and general construction works. It is also important to note that the impact due to construction activities will be transient in nature and the noise levels detailed in **Tables 12.11** to **12.13** represent worst case scenarios when all items of plant are operating simultaneously.

The proposed construction phase noise mitigation measures as detailed in Section 12.9 shall ensure that all construction activities are controlled and managed and audited by an independent acoustic consultant to confirm that the mitigation measures are implemented throughout the construction phase.

Construction noise impacts will be short-term, locally negative with a significance ranging from moderate to significant.

12.8.1.5 Construction Traffic Noise

The maximum volume of construction traffic will be associated with the bulk excavation which will occur over a 9 week period with up to 70 HGV movements per day on the haul routes to and from the site along public roads, the resulting average predicted traffic noise level at the closest receptors is calculated as follows:

The predicted noise levels at any receptor located within 5m of the haul route road has been calculated using a standard international acoustical formula as described below.

LAeq, T = SEL + 10log10(N) - 10log10(T) + 20log10(r1/r2) dB

where

LAeq, Tis the equivalent continuous sound level over time period (T) (3600 sec);

SEL is the A weighted Sound Exposure Level of the noise event (77dB);

N is the number of events over the time period T (70);

r1 is the distance at which SEL is assessed (5m)

r2 is the closest distance to the receptor from the road (10m)

The calculations are based on a 10-hour working day a maximum, a Sound Exposure Level of 77dBA for the trucks and the minimum distance between the local road passing by each of the nearest noise sensitive receptors to the public road (10m). No attenuation, above geometric spreading, has been considered within these calculations may be considered the worst case scenario.

The maximum predicted LAeq, period values as a result of the HGV traffic movements at the nearest noise sensitive receptors located along the haul route roads is predicted to be 54dBA, LAeq, period.

It is not expected that the predicted short-term increase in HGV movements associated with the construction phase of the development will have an adverse impact on the existing noise climate of the wider area or on local receptors.

Construction traffic noise impacts will be short-term, locally negative and not significant.

12.8.1.6 Construction Generated Vibration

The most significant potential sources of ground borne vibrations that may be generated during the construction phase of the development will be generated by the following practices:

- Movement of site vehicles bulldozers, tracked excavators and dump trucks on ground surfaces
- Hard core surfaces and haul road compaction with vibro-rolling vehicles
- Road construction surface vibro-rolling

Vibration impacts have been considered from any particular plant items that have the potential to generate perceptible levels of vibration.

The closest residential receptors will be c. 4m at Tig Bhride and c.12m from Windwood opposite the western site boundary. Depending on the methods of construction, there is the possibility of construction related vibration impacts on human beings as a result of ground

preparation and concrete foundation excavation activities. However, such sources of vibration shall be temporary and intermittent.

It is predicted that vibration levels associated with construction activities at the closest receptors to the site will not exceed 1.5mm/sec PPV and will have an insignificant, negative, short-term impact on the structures of the buildings. Human response to groundborne vibrations will be perceptible at levels between 0.14 to 1.0 mm/sec PPV.

Construction vibrational impacts will be short-term, negative and moderate.

12.8.2 Operational Phase

The operational noise aspects associated with the completed development can be classified as follows:

- Outward noise impacts on the receiving environment and existing receptors
- Inward noise impacts on the development from other external noise sources

12.8.2.1 Outward Traffic Noise Impact

The main potential for altering the noise environment once the development is operational, and thus impacting neighbouring residential receptors, will be associated with increased traffic movement in the area.

The Traffic & Transport Assessment [Barret Mahony Consulting Engineers] submitted with this application includes a detailed assessment of the traffic impact associated with the proposed development. As part of this assessment, detailed traffic flow information as Annual Average Daily Traffic flows (AADT) has been derived for the existing road network junctions up to the 2038 Design Year. The % increases in traffic associated with the 4 junctions that will serve the development are presented below in **Tables 12.14** and **12.15**.

AM Peak	Sutton Cross	Church Rd/ Howth Rd	Offington Pk / Howth Rd	Harbour Rd/ Church St	Development Entrance
Traffic Increase	9.4%	13.8%	15.4%	13.2%	20%
Increase dB(A)	<1	<1	<1	<1	<1
Impact	Imperceptible	Imperceptible	Imperceptible	Imperceptible	Imperceptible

Table 12.14 Maximum % Increase in AM Peak Traffic Movements

AM Peak	Sutton Cross	Church Rd/ Howth Rd	Offington Pk / Howth Rd	Harbour Rd/Church St	Development Entrance
Traffic Increase	14.2%	16.8%	17.9%	17.5%	23%
Increase dB(A)	<1	<1	<1	<1	<1
Impact	Imperceptible	Imperceptible	Imperceptible	Imperceptible	Imperceptible

Table 12.15 Maximum % Increase in PM Peak Traffic Movements

The UK Design Manual for Roads and Bridges (DMRB, Volume 11, Section 3, Part 7) states that it takes a 25% increase or a 20% decrease in traffic flows in order to get a 1dBA change in traffic noise levels. On this basis, the traffic flow increases associated with the fully

completed development to the design year of 2038 will result in an increase of <1dB(A) over existing traffic noise levels.

This increase in operational traffic flows will result in a long-term neutral imperceptible impact.

12.8.2.2 On-Site Noise Sources

Internal Residential Traffic Noise

The development includes the provision of basement level car parking spaces for the residential units. Vehicles within the residential areas will generally travel at speeds <20kmph as a result of speed limit signage and speed reducing ramps throughout the development which result in relatively low noise levels being generated by internal vehicle movements.

Neighbourhood Noise

Within the proposed development, sounds generated by everyday domestic activities including waste collection activities, pedestrians, children, and use of open spaces, are part of everyday living, and are not considered “noise” in the sense of a potential nuisance. These activity noises would not have any potential to cause an adverse noise impact beyond the boundaries of the site or within the site itself.

Operational Phase noise impacts will be long-term, neutral and imperceptible.

Roof Gardens

Each of the 3no. apartment blocks will have a roof garden amenity for residents located at 5th floor level.

Noise generated in this area will be limited to speech from residents using the spaces. The sound level of conversational speech ranges from 55 – 60 decibels which will be attenuated as a result of distance between the source and the 2. No closest existing residential receptors, N1 “Tig Bhride” at a distance of 22m and N4 “Windwood” at a distance of 40m located opposite the western site boundary. It is predicted that a maximum of 33 decibels and 28 decibels respectively would be experienced at the closest receptors which would not result in an intrusive noise level at the receptors.

Operational Vibration

As a vehicle travels along a road, vibration can be generated in the road and subsequently propagate towards nearby buildings. Such vibration is generated by the interaction of a vehicle’s wheels and the road surface and by direct transmission through the air of energy waves. Some of these waves arise as a function of the size, shape and speed of the vehicle, and others from pressure fluctuations due to engine, exhaust and other noises generated by the vehicle.

Ground vibrations produced by residential road traffic are unlikely to cause perceptible, cosmetic or structural vibration in properties located near to well-maintained and smooth road surfaces. Vibration impacts associated with road traffic in particular commercial van and trucks can therefore be largely avoided by good maintenance of the road surface.

It has been assessed that vibration levels related to road traffic movements would be significantly lower than those levels required to lead to disturbance of occupiers or to cause cosmetic or structural damage to buildings and the vibrational impact will be negligible.

Operational Phase vibration impacts will be long-term, neutral and imperceptible.

12.8.2.3 Inward Noise Impact

The Professional Guidance on Planning & Noise (ProPG) document May 2017 was prepared by a working group comprising members of the Association of Noise Consultants (ANC), the Institute of Acoustics (IOA) and the Chartered Institute of Environmental Health (CIEH) has been generally considered as a best practice guidance and has been widely adopted in the absence of equivalent Irish guidance.

A site should not be considered a negligible risk if more than 10dB(A) LAFmax events exceed 60 dB during the night period and the site should be considered a high risk if the LAFmax events exceed 80 dB more than 20 times a night.

With regard to the ProPG risk assessment conducted based on the baseline noise assessment, the development site may be classified as having a low risk in terms of the existing low-noise climate at the site, that is, there are no adverse pre-existing noise sources in proximity to the development site which may impact the residential units once developed and occupied by residents.

Element 2 of the ProPG document sets out recommended internal noise targets derived from BS 8233 (2014). The recommended indoor ambient noise levels are set out in **Table 12.16** and are based on annual average data levels.

Activity	Location	(07:00 to 23:00hrs)	(23:00 to 07:00hrs)
Resting	Living Room	35 dB $L_{Aeq, 16hr}$	-
Dining	Dining Room/Area	40 dB $L_{Aeq, 16hr}$	-
Sleeping (Daytime Resting)	Bedroom	35 dB $L_{Aeq, 16hr}$	30 dB $L_{Aeq, 8hr}$ 45 dB L_{AFmax}

Table 12.16 ProPG Internal Noise Levels

Road Traffic Noise

Existing road traffic noise has been established from a combination of on-site noise surveys and the review of published EPA Round 3 Road Noise Mapping data. The proposed development will be located within the Lden noise map 65-69dB contour which is within the desirable <70dB(A) Lden level. The development is located within the Lnight 60 - 64 dB contour which exceeds the desirable nightime 55 dB(A) Lnight. value.

The inward impact of road traffic noise on the development will be negative long-term and not significant.

Aircraft Noise

The impact of Dublin airport aircraft noise has been established from a combination of on-site baseline noise surveys and a review of the Fingal Noise Action Plan Dublin Airport Aircraft

Mapping data. The proposed development will be outside the 55 dB Lden noise contour and outside the 50dB Lnight noise contour.

The inward impact of aircraft noise on the development will be neutral long-term and not significant.

DART (train) Noise

The inward impact of Dart noise on the development will be neutral long-term and not significant.

12.8.3 Cumulative Impact

In accordance with Schedule 6, Part 2(c) of the Planning and Development Regulations 2001-2018, this section has considered the cumulative impact of the proposed development in conjunction with future development in the vicinity of the subject site. This section relates to the cumulative impact on the subject site itself and on surrounding sites.

The potential and predicted impacts of the operational phases of the proposed development have been individually assessed.

A permitted development at the former Techrete site at Claremont, Howth Road included a EIAR as part of the application process. The EIAR includes a detailed assessment of the noise and vibration impacts and associated mitigation measures for the construction and operational phases which in summary concludes that the residual impacts will be negative, moderate and short-term.

It has been determined that there will be negative, moderate and short-term cumulative impacts in terms of noise associated with the construction phase of the subject development and the Techrete site should construction activities at each site occur at the same time.

12.8.4 Worst-case Scenario

A worst-case scenario would arise if the noise and vibration mitigation measures are not implemented during the construction phase of the development. This would result in the generation of uncontrolled noise and vibration from the site which would result in an unacceptable impact on local receptors and the receiving environment.

Worst case traffic flows from the subject site and the Claremont site have been considered in the Traffic Impact Assessment.

12.8.5 Summary

The Table below summarises the identified likely significant effects of the proposed development in the absence of mitigation during the construction phase.

Likely Significant Effect	Quality	Significance	Extent	Probability	Duration	Type
Construction Noise	Negative	Moderate to significant	Local	Likely	Short-Term	Worst Case
Construction vibration	Negative	Moderate	Local	Likely	Short-Term	Worst Case
Construction Traffic	Negative	Imperceptible	Local	Likely	Short-Term	Worst Case

Table 12.17 Summary of Construction Phase Likely Significant Effects without Mitigation

The Table below summarises the identified likely significant effects of the proposed development in the absence of mitigation during the operational phase.

Likely Significant Effect	Quality	Significance	Extent	Probability	Duration	Type
Operational Noise	Neutral	Imperceptible	Local	Likely	Long-Term	Worst-Case
Operational Traffic Noise	Neutral	Not Significant	Local	Likely	Long-Term	Worst-Case
Operational Vibration	Neutral	Imperceptible	Local	Unlikely	Long-Term	Worst-Case

Table 12.18 Summary of Operational Phase Likely Significant Effects without Mitigation

12.9 Mitigation

12.9.1 Incorporated Design Mitigation

External noise can enter rooms within dwellings through windows, ventilators, walls, roof and doors. In most cases, however, windows provide the main path and therefore, mitigation by design has focused on this building element to ensure that their insulation is adequate. All apartments shall have external windows shall have acoustically rated windows to prevent breakthrough of external noise. In addition, Heat Recovery and Mechanical Ventilation systems will be incorporated into the design thus there will be no requirement for passive air vents.

12.9.1.1 Acoustic Design requirements for residential buildings

Windows

In order to ensure a sufficient level of sound insulation is provided for all dwellings within the development, the following lists the minimum sound insulation performance of windows and window frame sets in terms of the in-situ weighted sound reduction index (R_W):

40dB R_W for Living rooms & Bedrooms

37dB R_W for Kitchen – Dining Rooms.

The acoustic performance specifications detailed are the minimum requirements which shall apply to the overall glazing system when installed on site. In the context of the acoustic performance specification the 'glazing system' is understood to include any and all of the component parts that form part of the glazing element of the façade, i.e., glass, frames, seals, openable elements etc. All exterior wall and door frames should be sealed tight to the exterior wall construction.

Ventilation Systems

The ventilation strategy for the development will be in accordance with Part F of the Building Regulations. The apartment units shall include mechanical heat recovery ventilation systems which will negate the requirement for passive wall vents in bedrooms and living spaces which would otherwise allow the transfer of external noise into the building through the air gaps in the passive vents. However, windows may remain openable for rapid or purge ventilation, or at the occupant's choice.

Wall Constructions

The wall construction typically provides the highest level of sound insulation performance to a residential building. The residential dwellings will be built using either masonry or a timber framed construction. The minimum sound insulation performance of the chosen wall construction will be 55dB Rw.

Roof Construction

The insulated roof constructions proposed across the site will provide an adequate level of sound insulation to the properties within the development site. A minimum sound insulation value of 40dB Rw should be used for roof spaces.

At the earliest stage during the construction phase, residential test units shall be constructed to their finished level and shall be tested by a suitably qualified independent Acoustic Engineer to ensure that they comply with *Department of the Environment, Building Regulations 2014, Technical Guidance Document E – Sound.* **Table 12.19** below provides detail on the recommended sound insulation values that shall be achieved to ensure acoustic privacy between adjoining residential units and to assess compliance with external noise intrusion criteria as defined in *BS 8233: 2014: Guidance on Sound Insulation and Noise Reduction for Buildings*.

The operational phase of the development is predicted not to have an adverse noise impact on the receiving environment or on existing residential developments adjacent to the site during the operational phase of the scheme. Therefore, no mitigation measures additional to those set out above are proposed.

12.9.1.2 Internal Noise Control – Residential Units

At the earliest stage during the construction phase, test apartments and houses shall be constructed to their finished level and shall be tested by a suitably qualified independent Acoustic Engineer to ensure that they comply with *Department of the Environment, Building*

Regulations 2014, Technical Guidance Document E – Sound. **Table 12.19** provides detail on the recommended sound insulation values that shall be achieved to ensure acoustic privacy between adjoining residential units.

Dwellings	Airborne Sound Insulation D_{nTw} (dB)	Impact Sound Insulation L_{nTw} (dB)
Floors and Stairs	53	58
Walls	53	N/A

Table 12.19 Recommended sound insulation values for internal party walls / floors

For other non-traffic related sources appropriate guidance on internal noise levels for dwellings is contained within *BS 8233: 2014: Guidance on Sound Insulation and Noise Reduction for Buildings.* This British Standard sets out recommended noise limits for indoor ambient noise levels in dwellings as detailed in **Table 12.20.** All residential units shall be designed to achieve the specified ambient noise design range.

Situation	Design Range, $L_{Aeq,T}$ dB	
	Daytime $L_{Aeq,16hr}$ (07:00 to 23:00hrs)	Night-time $L_{Aeq,8hr}$ (23:00 to 07:00hrs)
Living / Dining	35 / 40	**n/a**
Bedrooms	**35**	**30**

Table 12.20 Recommended Indoor Ambient Noise Levels from BS 8233:2014

12.9.2 Construction Phase Mitigation

The following noise management measures shall be implemented at the site from the outset of site activities to control and manage noise levels during the construction phase of the proposed development:

Noise Mitigation Measures Site Management

Site hoarding comprised of 18mm marine plyboard extending to a height of 4m shall be installed from the outset of site activities along the western site boundary adjacent residential receptors.

Noise complaints shall be investigated by site management.

Construction Works Noise Control & Mitigation

Noise-related mitigation methods are described below and will be implemented for the project in accordance with best practice. These methods include:

- no plant used on-site will be permitted to cause an ongoing public nuisance due to noise;

- the best means practicable, including proper maintenance of plant, 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 barriers as necessary around items such as generators or high duty compressors; and situate any noisy plant as far away from sensitive properties as permitted by site constraints.

Vibration Mitigation Measures

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

- Choosing alternative, lower-impact equipment or methods wherever 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.

In order to protect the amenities enjoyed by nearby residents and a Construction and Environmental Management Plan (CEMP) (including traffic management) shall be included in the application documentation The CEMP which will include the mitigation measures set out in this section.

12.9.3 Operational Phase Noise Mitigation

Roof Garden

The Facility Management Company shall be responsible for the maintenance and security of the 5th floor roof garden amenity spaces.

12.10 Residual Impact Assessment

12.10.1 Construction Phase

Residual Noise Impact

The impact of the construction phase will result in an increase in daytime noise levels at the closest receptors to the site. With mitigation measures in place, it is predicted that the guideline construction noise limit of 70dB(A) $L_{Aeq,\ 1\text{-}hour}$ can be complied with.

The residual construction noise impact will be negative, temporary to short-term and moderate to significant.

Residual Vibration Impact

Site activities, in particular ground clearance and piling works will generate perceptible vibration at the closest residential receptors located west of the site. It is predicted that vibration levels associated with construction activities at the closest receptors to the site will not exceed 15 mm/sec PPV. Human response to groundborne vibrations will be perceptible at levels between 0.14 to 1.0 mm/sec PPV.

The residual construction vibration impact will be negative, short-term and not significant.

12.10.2 Operational Phase

12.10.2.1 Residual Noise Impact

The operational phase of the development will not adversely impact the existing noise climate at local receptors.

The residual operational noise impact will be neutral, long-term and not significant.

12.10.2.2 Residual Vibration Impact

The operational phase of the development will not generate ground borne vibration levels.

The residual operational vibration impact will be neutral, long-term and imperceptible.

12.10.3 Cumulative

The cumulative noise and vibration impacts associated with the proposed development and the permitted development at the former Techrete site will not result in an increased impact on the closest receptors to the proposed development site.

12.10.4 Summary

The Table below summarises the identified likely significant effects of the proposed development during the construction phase post application of mitigation measures.

Likely Significant Effect	Quality	Significance	Extent	Probability	Duration	Type
Construction Phase Noise	Negative	Moderate to significant	Local	Likely	Temporary to Short-Term	Residual
Construction Phase Vibration	Negative	Not Significant	Local	Likely	Short-Term	Residual

Table 12.21Summary of Construction Phase Likely Significant Effects with Mitigation

The Table below summarises the identified likely significant effects of the proposed development during the operational phase post application of mitigation measures.

Likely Significant Effect	Quality	Significance	Extent	Probability	Duration	Type
Operational Phase Noise	Neutral	Not Significant	Local	Likely	Long-Term	Residual.

Table 12.22 Summary of Operational Phase Likely Significant Effects with Mitigation

12.11 Interactions

Interactions between the noise and vibration assessment and traffic assessment. With increased traffic movements, the noise levels in the surrounding area increase. The impacts of the proposed development on the noise environment are assessed by reviewing the change in traffic flows on roads close to the site. In this assessment, the impact of the interactions between traffic and noise are considered to be imperceptible due to the low level changes in traffic flows associated with the proposed development.

12.12 Monitoring

12.12.1 Construction Phase Noise Monitoring

This section describes the noise monitoring methodologies that shall be implemented at the site to ensure that construction site activities do not cause excessive nuisance at local receptors and to demonstrate how live monitoring systems will assist construction management to comply with noise limit criteria.

Prior to the commencement of the site construction activities, a programme of continuous noise monitoring at the closest receptors to the site shall be undertaken to assess and manage the impact that site activities may have on ambient noise levels at receptors.

These surveys will establish the noise impact of site activities at the closest noise sensitive receptors to assess compliance with the specified construction noise limit criteria and to ensure that mitigation and control measures are being implemented as required.

All noise monitoring data will be compiled into a monthly technical monitoring report which will include a full assessment of the potential noise impacts arising from site construction activities.

The environmental noise measurements will be completed in accordance with the requirements of ISO 1996-1: 2017: Acoustics – Description, measurement and assessment of environmental noise and with regard to the EPA's 2016 Guidance Note for Noise: Licence Applications, Surveys and Assessments in Relation to Scheduled Activities (NG4). The measurement parameters to be recorded include LAeq, LA90, LA10 and LAmax , and 1/3 Octave Frequency analysis to allow tonal noise to be identified.

All live noise monitoring systems shall be programmed to include audio recording to allow construction management identify the source of high noise. The systems shall be capable of transmitting live text and email alerts to nominated construction staff should a noise limit be approached or exceeded.

Noise monitoring shall be conducted in proximity to the closest residential receptors to the site.

The construction noise monitoring locations (CN) in proximity to the closest receptors are shown below in **Figure 12.8**.

12.12.2 Construction Phase Vibration Monitoring

In order to ensure that site construction activities are conducted to minimise the vibration impacts on the receiving environment, it is proposed that structural vibration monitoring shall be implemented during the course of the piling phase. It is proposed that vibration monitoring will be conducted at the closest adjacent residential properties opposite the western site boundaries and at the gate structure at the entrance to Howth Castle using live data logging vibration monitors and geophones with live text and email alert functionality to ensure that if vibration levels approach or exceed the specified warning and limit values, nominated construction staff shall be instantly alerted to cease at the earliest instance and appropriate mitigation measures may then be implemented to minimise the ongoing impact on the monitored structures.

The monitoring points chosen for locating the geophone of the vibration measuring instrument will be determined according to the guidelines in British Standard BS 7385:, Evaluation and measurement for vibration in buildings, Part1 1990 Guide for measurement of vibrations and evaluation of their effects on buildings and Part 2 1993 Guide to damage levels arising from groundborne vibration.

The construction vibration monitoring locations (CV) in proximity to the closest receptors and structure are shown below in **Figure 12.8**.

Figure 12.8 Construction Phase Noise (CN) & Vibration (CV) Monitoring Locations

12.13 Summary of Mitigation & Monitoring

The Table below summarises the proposed construction phase mitigation and monitoring measures.

Likely Significant Effect	Mitigation	Monitoring
Site preparation, piling works, general construction works	Best Practice Noise Mitigation in accordance with BS5228 Part 1	Continuous live noise surveys for duration of construction phase
Site preparation, piling works, general construction works	Best Practice Noise Mitigation in accordance with BS5228 Part 2	Continuous live vibration surveys for duration of construction phase

Table 12.23 Summary of Construction Phase Mitigation and Monitoring

12.14 References and Sources

- Dublin Agglomeration Noise Action Plan 2018 – 2023 (NAP).
- Design Manual for Roads & Bridges – Volume 11 Section 3.
- Professional Guidance on Planning & Noise (ProPG), (IoA, 2017).
- British Standard BS 5228 (2009 +A1 2014): Code of Practice for Control of Noise and Vibration on Construction and Open Sites Part 1: Noise & Part 2: Vibration.
- British Standard BS 7385 (1993): Evaluation and measurement for vibration in buildings Part 2: Guide to damage levels from ground borne vibration.
- British Standard BS 8233: 2014: Guidance on sound insulation and noise reduction for buildings.
- British Standard BS 4142: 2014: Methods for Rating and Assessing Industrial and Commercial Sound
- Calculation of Road Traffic Noise, Department of Transport Welsh Office, HMSO, 1988.
- ISO 1996-2: 2017: Acoustics – Description, measurement and assessment of environmental noise.
- ISO 9613 (1996): Acoustics – Attenuation of sound during propagation outdoors, Part 2: General method of calculation.

CHAPTER 13
AIR QUALITY & CLIMATE

MAY 2021

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13 Air Quality & Climate

13.1 Introduction

This chapter of the EIAR has been prepared by Byrne Environmental Consulting Ltd to identify and assess the potential air quality and climate impacts associated with the proposed development during both the Construction and Operational Phases.

The assessment includes a comprehensive description of the existing air quality in the vicinity of the subject site, a description and assessment of how construction activities and the operation of the development may impact existing air quality and climate, the mitigation measures that will be implemented to control and minimise the impact that the development may have on local ambient air quality and finally to demonstrate how the development shall be constructed and operated in an environmentally sustainable manner.

Ian Byrne, Principal Consultant, MSc Environmental Protection, Dip. Environmental & Planning Law, Member of the Institute of Acoustics has over 24 years' experience in the preparation of air quality and climate impact assessments for commercial, residential and industrial developments and conducted all aspects of the project works.

Ian Byrne has recently prepared Material Assets -Waste Management EIAR Chapters for Strategic Housing Developments including :

- Glenveagh – Citywest Road Residential Development SHD ABP-306602-20 Permission Granted
- Park Developments Group – Clayfarm, Carrickmines Residential Development SHD ABP-301522-18 Permission Granted
- CAIRN Homes – Farankelly Greystones Residential Development SHD ABP-305476-19 Permission Granted
- Park Developments Group Glencairn Leopardstown Residential Development SHD ABP-302580-18 Permission Granted

13.2 Proposed Development

The full description of the proposed development is outlined in **Chapter 2 – Development Description**, of this Environmental Impact Assessment Report.

The design rationale is to create and deliver a high quality, sustainable, strategic housing development which respects its setting and maximises the site's natural attributes while achieving maximum efficiency of existing infrastructure. The Proposed Site Layout is illustrated on **Drawing No. 1101** contained within the architectural suite of drawings.

The development will consist of;

i. 162 no. residential units distributed across 3 no. blocks (A, B & C) ranging in height from 5-6 storeys, with a cumulative gross floor area (GFA) of 13,337.10 sq.m comprising;
    a. 29 no. 1-bedroom units, - 17.9%
    b. 104 no. 2-bedroom units and – 64.2%
    c. 29 no. 3-bedroom units – 17.9%
ii. 3 no. resident services and amenity rooms (1 no. in each block A-C) to accommodate co-working space, a community room and a meeting room (combined GFA 108 sq.m)
iii. 132 no. car parking spaces at basement level (underlying Blocks A & B) including 6 no. accessible spaces, 13 no. electric vehicle spaces and 4 no. car sharing spaces;
iv. 325 no. residents bicycle parking spaces (long-stay) at basement level, and 30 no. visitor bicycle parking spaces (short-stay) at surface level;
v. communal amenity space in the form of courtyards and roof gardens (combined 2,192 sq.m)
vi. public open space of 1,161 sq.m including a botanic garden and pocket park;
vii. a single storey ESB sub-station and switch room (45.5 sq.m);
viii. demolition of 2 no. sections of the existing demesne northern boundary wall to provide, a primary access (vehicular/pedestrian/cyclist) to the northwest and a separate pedestrian/cyclist access at the centre;
ix. restoration and refurbishment of the remaining extant northern and eastern demesne boundary wall;
x. change of use and regrading of part of the Deer Park Golf Course from active recreation use to passive amenity parkland and planting of a woodland belt on the southern boundary;
xi. undergrounding of existing ESB overhead lines, and, relocation of the existing gas main; and,
xii. all ancillary site development works including waste storage and plant rooms at basement level, drainage, landscaping/boundary treatment and lighting.

13.2.1 Aspects Relevant to Assessment

The construction phase of the development has the potential to generate short term fugitive dust emissions and engine exhaust emissions associated with construction vehicles and plant. However, these emissions will be controlled by appropriate mitigation techniques and through the implementation of a construction phase air quality management and monitoring plan throughout the duration of the construction phase. The predicted construction phase residual impacts on air quality and climate will be negative, not-significant and short-term.

The construction phase will involve the removal of green space and trees from its current greenfield status to facilitate the development of a residential development. The development

will include the replanting of trees appropriate to the local area and the development of green roof's on the apartment blocks.

The operational phase of the development will see the functioning of modern, well insulated thermally efficient buildings in which energy efficiency shall be achieved by implementing sustainable features into the development's buildings and infrastructure design. The proposed development has been designed to minimise the impact on climate where possible in line with the most recent development guidelines (Nearly Zero Energy Building (NZEB) Part L of the Building Regulations, 1997 to 2020) and in reference to measures within the National Mitigation Plan[1]. The design of the residential units will ensure their operation will have a minimum impact on the receiving climate and that their design will withstand future potential extreme weather events associated with climate change.

The predicted impacts of domestic heating and traffic generated air pollutants associated with the development will not exceed the ambient air quality standards and the impact of the development on ambient air quality and climate been determined to be imperceptible and long-term.

The inclusion of climate friendly design and the promotion of more sustainable modes of transport such as public transport, cycling and walking will benefit climate in the long term.

[1] Department of Communications, Climate Action and Environment (DCCAE) (2017)

13.3 Methodology

This chapter has been prepared having regard to the following Directives and guidelines;

- *Planning and Development Act 2000 (as amended);*
- *Planning and Development Regulations 2001(as amended);*
- *Directive 2011/92/EU;*
- *Directive 2014/52/EU;*
- *Preparation of guidance documents for the implementation of EIA directive (Directive 2011/92/EU as amended by 2014/52/EU) – Annex I to the Final Report (COWI, Milieu; April 2017);*
- *Guidelines on the information to be contained in environmental impact assessment reports, EPA, 2017 (Draft);*
- *Environmental Impact Assessment – Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment (2018; DoHPLG); and*
- *Guidance for Consent Authorities regarding Sub-threshold Development (2003; DoEHLG).*
- *Environmental Impact Assessment of Projects Guidance on the preparation of the Environmental Impact Assessment Report (Directive 2011/92/EU as amended by 2014/52/EU)*

13.3.1 Baseline Air Quality Assessment Methodology

Existing ambient air quality in the vicinity of the site has been characterised with information obtained from site specific baseline air quality surveys for Nitrogen Dioxide and Sulphur Dioxide over a 20-day period and a dust deposition survey over a 30-day period between February and March 2021 and by reviewing the EPA's 2019 Annual Report "Air Quality in Ireland". This EPA report provides detailed monitoring data collected from a number of monitoring locations throughout Ireland on an annual basis to assess national compliance with National Air Quality Regulations.

Given the location of the site it is characterised as a Zone A area within the Dublin Conurbation as defined by the EPA.

13.3.2 Air Quality & Climate Assessment Methodology

13.3.2.1 Air Quality Assessment Methodology

Air quality standards and guidelines are available from a number of sources. The guidelines and standards referenced in this report include those from Ireland and the European Union.

In order to reduce the risk to health from poor air quality, National and European statutory bodies have set limit values in ambient air for a range of air pollutants. These limit values or "Air Quality Standards" are health or environmental-based levels for which additional factors may be considered. For example, natural background levels, environmental conditions and socio-economic factors may all play a part in the limit values as defined in **Table 13.1**.

Air quality significance criteria are assessed on the basis of compliance with the appropriate standards or limit values. The applicable standards in Ireland include the National Air Quality Standards Regulations 2011 (S.I No. 180 of 2011), which implement European Commission Directive 2008/50/EC which has set limit values for the pollutants SO2, NO2, PM10, benzene and CO. Council Directive 2008/50/EC replaces the previous Air Quality Framework Directive (96/62/EC) and its subsequent daughter directives (including 1999/30/EC and 2000/69/EC).

Provisions are also made for the inclusion of new ambient limit values relating to PM2.5. The European 2008/50/EC Clean Air for Europe (CAFÉ) Directive is the current air quality directive for Europe which supersedes the European Directives 1999/30/EC and 2000/69/EC. The Directive is implemented by the Air Quality Standards Regulations 2011 which replace the Air Quality Standards Regulations 2002 (S.I. No. 271 of 2002), the Ozone in Ambient Air Regulations 2004 (S.I. No. 53 of 2004) and S.I. No. 33 of 1999.

In order to assess a wider range of air pollutants in the development area it is necessary to review current air quality monitoring data from published sources such as the most recent EPA's 2019 Annual report entitled Air Quality in Ireland. This EPA report provides detailed monitoring data collected from a number of monitoring locations throughout Ireland on an annual basis to assess national compliance with National Air Quality Regulations. Given the location of the site in the Dublin Conurbation it is characterised as a Zone A area as defined by the EPA.

EU legislation on air quality requires that Member States divide their territory into zones for the assessment and management of air quality. The zones in place in Ireland in 2019 are as follows:

- Zone A is the Dublin conurbation,
- Zone B is the Cork conurbation
- Zone C comprising 23 large towns in Ireland with a population >15,000.
- Zone D is the remaining area of Ireland.

The air quality in each zone is assessed and classified with respect to upper and lower assessment thresholds based on measurements over the previous five years. Upper and lower assessment thresholds are prescribed in the legislation for each pollutant. The number of monitoring locations required is dependent on population size and whether ambient air quality concentrations exceed the upper assessment threshold, are between the upper and lower assessment thresholds, or are below the lower assessment threshold. A summary of the EPA's Annual report entitled Air Quality in Ireland 2019 is detailed below in **Table 13.1**.

Pollutant	Regulation	Limit Criteria	Tolerance	Limit Value
Nitrogen Dioxide	2008/50/EC	Hourly limit for the protection of human health – not to be exceeded more than 18 times/year	40% until 2003 reducing linearly to 0% by 2010	200 µg/m3
		Annual limit for the protection of human health	40% until 2003 reducing linearly to 0% by 2010	40 µg/m3
		Annual limit for the protection of vegetation	None	400 µg/m3 NO & NO2
Lead	2008/50/EC	Annual limit for the protection of human health	100%	0.5 µg/m3
Sulphur Dioxide	2008/50/EC	Hourly limit for protection of human health – not to be exceeded more than 24 times/year	150 µg/m3	350 µg/m3
		Daily limit for protection of human health – not to be exceeded more than 3 times/year	None	125 µg/m3
		Annual and Winter limit for the protection of ecosystems	None	20 µg/m3
Particulate Matter PM10	2008/50/EC	24-hour limit for protection of human health – not to be exceeded more than 35 times/year	50%	50 µg/m3
		Annual limit for the protection of human health	20%	40 µg/m3
Particulate Matter PM2.5 Stage 1	2008/50/EC	Annual limit for the protection of human health	20% from June 2008. Decreasing linearly to 0% by 2015	25 µg/m3
Particulate Matter PM2.5 Stage 2	2008/50/EC	Annual limit for the protection of human health	None	20 µg/m3
Benzene	2008/50/EC	Annual limit for the protection of human health	20% until 2006. Decreasing linearly to 0% by 2010	5 µg/m3
Carbon Monoxide	2008/50/EC	8-hour limit (on a rolling basis) for protection of human health	60%	10 mg/m3
Dust Deposition	German TA Luft Air Quality Standard Note 1	30 Day Average	None	350 mg/m2/day

Table 13.1 Air Quality Standards Regulations 2011 (based on EU Council Directive 2008/50/EC)

Note 1 Dust levels in urban atmospheres can be influenced by industrial activities and transport sources. There are currently no national or European Union air quality standards with which these levels

of dust deposition can be compared. However, a figure of 350 mg/m^2-day (as measured using Bergerhoff type dust deposit gauges as per German Standard Method for determination of dust deposition rate, *VDI 2129*) is commonly applied to ensure that no nuisance effects will result from industrial or construction activities.

Pollutant	EPA 2016 Assessment Classification
NO_2	
Zone A & B	Above lower assessment threshold
Zone C & D	Below lower assessment threshold
SO_2	
Zone A & B	Below lower assessment threshold
Zone C & D	Below lower assessment threshold
CO	
Zone A & B	Below lower assessment threshold
Zone C & D	Below lower assessment threshold
Ozone	
Zone A & B	Below long term objective
Zone C & D	Above long term objective
PM_{10}	
Zone A & B & C	Above lower assessment threshold
Zone D	Below lower assessment threshold
$PM_{2.5}$	
Zone A & B	Below lower assessment threshold
Zone C & D	Above lower assessment threshold
Benzene	
Zone A & B	Below lower assessment threshold
Zone C & D	Below lower assessment threshold
Heavy Metals (As, Ni, Cd, Pb)	
Zone A & B	Below lower assessment threshold
Zone C & D	Below lower assessment threshold
Poly Aromatic Hydrocarbons (PAH)	
Zone A & C & D	Above lower assessment threshold
Zone B	Above upper assessment threshold

Table 13.2 EPA 2019 Assessment Zone Classification

13.3.2.2 Climate Assessment Methodology

Climate has implications for many aspects of the environment from soils to biodiversity and land use practices. The proposed development may impact on both the macro-climate and micro-climate. The macro-climate is the climate of a large geographic area such as Ireland. The micro-climate refers to the climate in the immediate area.

With respect to microclimate, green areas are considered to be sensitive to development. Development of any green area is generally associated with a reduction in the abundance of vegetation including trees and a reduction in the amount of open, undeveloped space. The

removal of vegetation or the development of man-made structures in these areas can intensify the temperature gradient.

To assess the impacts of converting vegetative surfaces to hard-standing with residential buildings and its significance, the amount of vegetative surfaces associated with the proposed development that will be converted to residential buildings and hard-standing has been considered.

The impact of the proposed scheme upon the macro-climate is assessed through the consideration of the change in CO_2 emissions that will occur due to the changes in traffic flow that occur in response to the proposed scheme.

The Conference of the Parties to the Convention (COP25) occurred in December 2019 and focussed on advancing the implementation of the Paris Agreement. The Paris Agreement was established at COP21 in Paris in 2015 and is an important milestone in terms of international climate change agreements. The "Paris Agreement", agreed by 200 nations, has a stated aim of limiting global temperature increases to no more than 2°C above pre-industrial levels with efforts to limit this rise to 1.5°C. The aim is to limit global GHG emissions to 40 gigatonnes as soon as possible whilst acknowledging that peaking of GHG emissions will take longer for developing countries. Contributions to greenhouse gas emissions will be based on Intended Nationally Determined Contributions (INDCs) which will form the foundation for climate action post 2020. Significant progress has also been made on elevating adaption onto the same level as action to cut and curb emissions. The EU, on the 23/24th of October 2014, agreed the "2030 Climate and Energy Policy Framework" (EU, 2014). The European Council endorsed a binding EU target of at least a 40% domestic reduction in greenhouse gas emissions by 2030 compared to 1990. The target will be delivered collectively by the EU in the most cost-effective manner possible, with the reductions in the ETS and non-ETS sectors amounting to 43% and 30% by 2030 compared to 2005, respectively. Secondly, it was agreed that all Member States will participate in this effort, balancing considerations of fairness and solidarity. The policy also outlines, under "Renewables and Energy Efficiency", an EU binding target of at least 27% for the share of renewable energy consumed in the EU in 2030.

European Commission Directive 2001/81/EC, the National Emissions Ceiling Directive (NECD) (2014), prescribes the same emission limits as the 1999 Gothenburg Protocol. A National Programme for the progressive reduction of emissions of these four transboundary pollutants has been in place since April 2005 (DEHLG, 2007a; 2004). Data available from the EU in 2010 indicated that Ireland complied with the emissions ceilings for SO2, VOCs and NH3 but failed to comply with the ceiling for NOX (EEA, 2012). Directive (EU) 2016/2284 "On the Reduction of National Emissions of Certain Atmospheric Pollutants and Amending Directive 2003/35/EC and Repealing Directive 2001/81/EC" was published in December 2016.The Directive will apply the 2010 NECD limits until 2020 and establish new national emission reduction commitments which will be applicable from 2020 and 2030 for SO_2, NO_X, NMVOC, NH_3, PM2.5 and CH4. In relation to Ireland, 2020-29 emission targets are for SO2 (65% below 2005 levels), for NO_X (49% reduction), for VOCs (25% reduction), for NH_3 (1% reduction) and for PM2.5 (18% reduction). In relation to 2030, Ireland's emission targets are

for SO_2 (85% below 2005 levels), for NO_X (69% reduction), for VOCs (32% reduction), for NH_3 (5% reduction) and for PM2.5 (41% reduction).

The following guidelines and EU Directives relating to Climate Change aspects of EIA reports have been applied to this assessment in order to determine the potential impacts that the proposed development may have an climate change.

- 2017 EPA Draft Guidelines on information to be contained in Environmental Impact Assessment Reports.
- European Union (Planning & Development)(Environmental Impact Assessment) Regulations 2018 (SI No. 296 of 2018)
- European EIA Directive 2014/52/EU
- The Irish Building Regulations Technical Guidance Document L – Conservation of Fuel & Energy – Dwellings amended in 2017 includes requirements for all residential dwellings to be "Nearly Zero Energy Buildings" (NZEB's) by 31st December 2020.

Irelands National Energy and Climate Plan 2021 - 2030

13.3.3 Construction Air Quality Impact Assessment Methodology

The Institute of Air Quality Management – Guidance on the Assessment of Dust from Demolition and Construction (IAQM, 2014) classifies demolition and construction sites according to the risk of impacts and to identify mitigation measures appropriate to the risk. The main air quality impacts that may arise are:

- Dust Deposition resulting in the soiling of surfaces
- Visible dust plumes, which are evidence of dust emissions
- Elevated PM_{10} concentrations as a result of dust generating activities on site
- Increase in airborne particles and NO_2 from diesel fuelled site vehicles and plant

The risk assessment considers the following site activities and their associated potential impacts:

- Demolition activities
- Earthworks
- Construction works
- Trackout (vehicle movements)

The risk assessment considers the following dust related impacts:

- Annoyance due to dust soiling
- The risk to health from exposure to PM_{10}
- Harm to Ecological receptors.

The magnitude of the potential dust emission requires the scale of the works to be classified as Small, Medium or Large which are defined as follows:

Demolition Works

Large Building Volume >50,000m^3
Medium Building Volume 20,000m^3 – 50,000m^3
Small Building Volume <50,000m^3

Site Volume Small <50,000m^3

Sensitivity of Area	Dust Emission Magnitude		
	Large	Medium	Small
High	High Risk	Medium Risk	Low Risk
Medium	Medium Risk	Medium Risk	Low Risk
Low	Low Risk	Low Risk	Low Risk

Table 13.3 Risk of Dust Impacts Demolition

Earthworks

Large Site Area >10,000m^2
potentially dusty soil prone to suspension (e.g. clays)
>10 earth moving vehicles operating simultaneously
Medium Site Area 2500m^2 – 10,000m^2
moderately dusty soil (e.g. silts)
5- 10 earth moving vehicles operating simultaneously
Small Site Area <2500m^2
Large grain size (e.g. sands)
<5 earth moving vehicles operating simultaneously

Site Area Large Volume >10,000m^2

Sensitivity of Area	Dust Emission Magnitude		
	Large	Medium	Small
High	High Risk	Medium Risk	Low Risk
Medium	Medium Risk	Medium Risk	Low Risk
Low	Low Risk	Low Risk	Low Risk

Table 13.4 Risk of Dust Impacts Earthworks

Construction Works

Large Total Building Volume >100,000m^3
Medium Total Building Volume 25,000m^3 - 100,000m^3
Small Total Building Volume <25,000m^3

Building Volume Medium Volume 24,000 - 100,000m^2

Sensitivity of Area	Dust Emission Magnitude		
	Large	Medium	Small
High	High Risk	Medium Risk	Low Risk
Medium	Medium Risk	Medium Risk	Low Risk
Low	Low Risk	Low Risk	Low Risk

Table 13.5 Risk of Dust Impacts Construction

Trackout

Large >50 HGV outward movements per day of potentially dusty clays on unsealed road >100m

Medium 10 - 50 HGV outward movements per day of potentially dusty clays on unsealed road 50 - 100m

Small <10 HGV outward movements per day of potentially dusty clays on unsealed road >50m

Trackout Movements *Large Volume <50 HGV/day*

Sensitivity of Area	Dust Emission Magnitude		
	Large	Medium	Small
High	High Risk	Medium Risk	Low Risk
Medium	Medium Risk	Medium Risk	Low Risk
Low	Low Risk	Low Risk	Low Risk

Table 13.6 Risk of Dust Impacts Trackout

The dust risk assessment for soiling, health and ecology completed for each of the four aspects of dust emissions has been determined from the characteristics of the development as detailed above. **Table13.7** presents the dust risk for each aspect.

Sensitivity of Area High	Dust Emission Magnitude			
	Demolition	Earthworks	Construction	Trackout
Soiling	Low Risk	High Risk	High Risk	High Risk
Human Health	Low Risk	High Risk	High Risk	High Risk
Ecology	Low Risk	Medium Risk	Medium Risk	Medium Risk

Table 13.7 Dust Risk Assessment to Define Site-Specific Mitigation Measures

In order to reduce the risk that generated dusts and particulate matter as PM_{10} may have on the receiving environment, an appropriately high degree of mitigation measures will be required for the duration of the construction phase.

The German TA-Luft standard for dust deposition (non-hazardous dust) (German VDI, 2002) sets a maximum permissible emission level for dust deposition of 350 mg/(m^2*day) averaged over a one month period at any receptors outside the site boundary. Recommendations from the Department of the Environment, Health & Local Government (DOEHLG, 2004) apply the Bergerhoff limit value of 350 mg/(m^2*day) to the site boundary of quarries. This limit value can

also be implemented with regard to potential dust impacts from construction of the proposed development.

In relation to construction related traffic, air quality significance criteria are assessed on the basis of compliance with the appropriate standards air limit values. The Air Quality Standards Regulations 2011 replace the Air Quality Standards Regulations 2002 (S.I. No. 271 of 2002), the Ozone in Ambient Air Regulations 2004 (S.I. No. 53 of 2004) and S.I. No. 33 of 1999.

13.3.3.1 Ecological Assessment

For routes that pass within 2 km of a designated area of conservation (either Irish or European designation) the TII requires consultation with an Ecologist (2011). However, the TII guidance (2011) states that in practice the potential for impact to an ecological site is highest within 200 m of the proposed scheme and when significant changes in AADT (>5%) occur.

Transport Infrastructure Ireland's *Guidelines for Assessment of Ecological Impacts of National Road Schemes* (2009) and *Appropriate Assessment of Plans and Projects in Ireland – Guidance for Planning Authorities* (DEHLG, 2010) provide details regarding the legal protection of designated conservation areas.

If both of the following assessment criteria are met, an assessment of the potential for impact due to nitrogen deposition shall be conducted:

- A European designated area of conservation is located within 200 m of the proposed development; and
- A significant change in AADT flows (>5%) will occur.

Baldoyle Bay Special Area of Conservation (SAC) is within 200m of the proposed development site.

A generated traffic flow increase of up to 5.2% at the development entrance has been predicted in the Traffic & Transport Assessment (Prepared by Barrett Mahony).

A committed traffic flow increase of up to 23% at the development entrance has been predicted in the Traffic & Transport Assessment (Prepared by Barrett Mahony).

Therefor an assessment of the impact of the proposed development on NOx concentrations and nitrogen deposition is required.

The impact of vehicle movements associated with the development on ambient air quality and local ecology including SAC is assessed with regard to the increase in Nitrogen Oxide (NO_X) with reference Transport Infrastructure Ireland (TII) provides a methodology for the conversion of NOx to NO_2 in "Guidelines for the Treatment of Air Quality During the Planning and Construction of National Road Schemes"(2011) and which refers to the UK DEFRA calculation model.

13.3.4 Operational Air Quality Assessment Methodology

Once operational, the proposed residential development may impact on air quality as a result of the requirements of new buildings to be heated and with the increased traffic movements associated with the development.

Air quality significance criteria are assessed on the basis of compliance with the national air quality limit values. The Air Quality Standards Regulations 2011 replace the Air Quality Standards Regulations 2002 (S.I. No. 271 of 2002), the Ozone in Ambient Air Regulations 2004 (S.I. No. 53 of 2004) and S.I. No. 33 of 1999.

13.4 Difficulties Encountered

No difficulties were encountered during the baseline assessments or during the completion of this Chapter of the EIAR.

13.5 Consultation

This Chapter did not require direct consultation with Statutory or Non-Statutory bodies. Consultation was conducted with the Project Ecologist as per 2011 guidance.

13.6 Existing Environment

The subject site is located on undeveloped lands in an urban area which includes residential development, Deer Park golf course, Howth Caste, The National Transport Museum, St. Mary's Church and Deer Park Montessori School. The site is located off the Howth Road which carries a high volume of road traffic throughout the day. The Dublin to Howth DART line is located c.140 north of the site and the Dublin Airport Zone C Flight Path is located c.1.8 km north of the site.

13.6.1 Baseline Air Quality Assessment

A site-specific short-term monitoring study was conducted at the site for Nitrogen Dioxide (NO_2) and Sulphur Dioxide (SO_2) and dust deposition during February 2021. NO_2 and SO_2 were measured at site location A1 using a passive diffusion tube over a two-week period. Dust deposition was measured using a Bergerhoff Dust Deposition Gauge over a four-week period. **Figure 13.1** identifies the monitoring locations.

The monitoring location was chosen in order to obtain short-term sample concentrations for the identified parameters from the principal sources of pollution i.e. vehicle exhaust emissions and home heating fossil fuel emissions from the Howth Road and local residential development.

The survey was indicative only and results obtained cannot be used to demonstrate compliance with short-term or annual limit values detailed in **Table 13.1** above. The survey does, however, aid in identifying the influence of sources in the vicinity of the proposed development site. The results from the baseline air quality surveys are presented in **Table 13.8**.

The concentrations of SO_2, NO_2 and dust deposition levels measured during the short-term measurement survey were significantly below their respective annual limit values and comparable with levels reported by the EPA.

Pollutant	Sampling period	Location A1	Assessment criteria
Sulphur dioxide	February 2021	<1.74 µg/m^3	125 µg/m^3 (as annual average)
Nitrogen dioxide	February 2021	7.37 µg/m3	40 µg/m^3 (as annual average)
Dust	February 2021	17 mg/m^2-day	350 mg/m^2-day (as a monthly average)

Table 13.8 Results of site air quality monitoring at the proposed development site

Dublin Conurbation EPA Air Quality Data 2019

Annual air quality monitoring programs have been undertaken in recent years by the EPA and Local Authorities. The most recent annual report on air quality "Air Quality in Ireland 2019 (Published September 2020) details the range and scope of monitoring undertaken throughout Ireland. The Dublin Conurbation is categorised as Zone A.

The most recent 2019 EPA publication includes a number of Zone A monitoring locations which would be comparable to the expected air quality at the subject site. The various Zone A air quality monitoring stations within Dublin provide a comprehensive range of air quality monitoring data sets which have been selected as part of this assessment to describe the existing ambient air quality at the subject site.

Nitrogen Dioxide

The Air Quality Standards Regulations 2011 specify a limit value of 40 µg/m3, for the protection of human health, over a calendar year. The standard, taken from the 2008 CAFÉ Directive 2000/69/EC, came into force in 2011.

Long term NO2 monitoring was carried out at ten Zone A locations in 2019. The NO2 annual mean in 2019 for these sites ranged from 15 - 43 µg/m3 compared against the annual average limit of 40 µg/m3.

The monitoring of NO2 during 2019 at St John Road in Dublin reported an exceedance (43ug/m3) of the EU Air Quality Annual Limit of 40ug/m3. The EPA 2019 Reports states that heavy road traffic along St John Road was the cause of the elevated concentrations of NO2.

Sulphur Dioxide

The Air Quality Standards Regulations 2011 specify a daily limit value of 125 µg/m3 for the protection of human health. The standard, taken from the 2008 CAFÉ Directive 2000/69/EC, came into force in 2011.

Long term SO2 monitoring was carried out at four Zone A locations in 2019. The daily SO2 daily means in 2019 for these sites ranged from 0.8 – 2.5 µg/m3. Therefore, 5-year long term averages were below the daily limit of 125 µg/m3.

Based on review of previously published EPA annual report on Irelands air quality, the annual mean SO2 concentrations in Ireland have being declining since 2003 . This trend is reflective in the shift in fuel choice across Ireland in both residential heating and the energy production sector.

Carbon Monoxide

The Air Quality Standards Regulations 2011 specify an 8-hour limit value (on a rolling basis) for the protection of human health of 10,000 µg/m3. The standard, taken from the 2008 CAFÉ Directive 2000/69/EC, came into force in 2011.

Long term CO monitoring was carried out at one Zone A location in 2019. The 8-hour CO concentrations was 0.2 – 0.3mg/m3 which is below the 8-hour limit value (on a rolling basis) of 10 mg/m3. This data is based on review of previously published EPA annual report on Irelands air quality.

Particulate Matter PM_{10}

The Air Quality Standards Regulations 2011 specify a PM10 limit value of 40 µg/m3 over a calendar year. The standard, taken from the 2008 CAFÉ Directive 2000/69/EC, came into force in 2011.

Long term PM10 monitoring was carried out at thirteen Zone A locations in 2019. The PM10 annual mean in 2019 for these sites ranged from 11 - 19µg/m3. Therefore, long term averages were below the annual average limit of 40 µg/m3.

Particulate Matter $PM_{2.5}$

The Air Quality Standards Regulations 2011 specify a PM2.5 limit value of 25 µg/m3 over a calendar year.

Long term PM2.5 monitoring was carried out at ten Zone A locations in 2019. The PM2.5 average in 2019 for these sites ranged from 8 - 11µg/m3. Therefore, long term averages were below the target value 25 µg/m3.

Pollutant	Regulation	Limit type	Limit value	EPA monitoring data 2019
Nitrogen dioxide	2008/50/EC	Annual limit for protection of human health	40 µg/m^3	15 – 43* µg/m^3
Sulphur dioxide	2008/50/EC	Daily limit for protection of human health (not to be exceeded more than 3 times per year)	125 µg/m^3	0.8 – 2.5 µg/m^3
Carbon monoxide	2008/50/EC	8-hour limit (on a rolling basis) for protection of human health (Zone C)	10,000 µg/m^3	300 µg/m^3
Particulate matter (as PM_{10})	2008/50/EC	Annual limit for protection of human health	40 µg/m^3	11 – 19 µg/m^3
Particulate matter (as $PM_{2.5}$)	2008/50/EC	Annual limit for protection of human health	25 µg/m^3	8 - 11 µg/m^3
Benzene	2008/50/EC	Annual limit for protection of human health	5 µg/m^3	< 0.21µg/m^3

Table 13.9 Summary of the 2019 Air Quality data obtained from Zone A area

13.6.2 Summary of Baseline Air Quality Assessment

Based on the most recent published EPA air quality data for 2019 for the Zone A (Dublin) area in which the subject site is located together with site specific monitoring data, it may be concluded that the existing baseline air quality at the subject site may be characterised as being good with no exceedances of the National Air Quality Standards Regulations 2011 (S.I No. 180 of 2011) limit values of individual pollutants. There is therefore currently sufficient atmospheric budget to accommodate the development without adversely impacting existing ambient air quality. The quality of existing air quality at the subject site must be maintained and improved where possible as a result of the proposed development to ensure that local human health and the ecological environment is not adversely affected.

Figure 13.1 Baseline Air Quality Monitoring Location A1

13.6.3 Description of the Existing Climate

EU2020 Strategy - EU's Effort Sharing Decision (ESD), 406/2009/EC1 address Ireland's GHG emissions, of which one of the biggest contributors is transport .

Long-term projected decrease in greenhouse gas emissions as a result of inclusion of new climate mitigation policies and measures that formed part of the National Development Plan (NDP). Implementation of these are classed as a "*With Additional Measures scenario*" for future scenarios. A change from generating electricity using coal and peat to wind power and diesel vehicle engines to electric vehicle engines are envisaged under this scenario.

EPA - Ireland is projected to cumulatively exceed its compliance obligations with the EU's Effort Sharing Decision (Decision No. 406/2009/EC) 2020 targets by approximately 10 Mt CO_2eq under the "With Existing Measures" scenario and 9 Mt CO_2eq under the "With Additional Measures" scenario (EPA, 2019c). There may be further up dates for 2020

The nearest synoptic meteorological station to the subject site is at Dublin Airport which is located approximately 11km north-west of the proposed development site and as such, long-term measurements of wind speed/direction and air temperature for this location are representative of prevailing conditions experienced at the subject site. Recent meteorological

data sets for Dublin Airport were obtained from Met Éireann for the purposes of this assessment study.

Rainfall

Precipitation data from the Dublin Airport meteorological station for the period 2011-2020 indicates a mean annual total of about 762 mm. This is within the expected range for most of the eastern half of the Ireland which has between 750 mm and 1000 mm of rainfall in the year.

Temperature

The annual mean temperature at Dublin Airport (2011-2019) is 9.5ºC with a mean maximum of 15.3ºC and a mean minimum of 4.0ºC. Given the relatively close proximity of this meteorological station to the proposed development site, similar conditions would be observed. **Table 13.10** sets out meteorological data for Dublin Airport from 2011-2020.

Wind

Wind is of key importance for both the generation and dispersal of air pollutants. Meteorological data for Dublin Airport indicates that the prevailing wind direction, in the Dublin area, is from the West and Southwest and blows Northeast across the proposed development. The mean annual wind speed in the Dublin area between 2009 - 2019 is 5.7 m/s.

Year	Period	Rainfall (mm)	Maximum mean Temperature (⁰C)	Minimum mean Temperature (⁰C)	Mean Temperature (⁰C)
2011	Annual Mean	672	16.7	3.1	9.4
2012	Annual Mean	850	15.3	5.4	9.3
2013	Annual Mean	764	14.0	3.6	9.9
2014	Annual Mean	870	15.8	5.4	10.6
2015	Annual Mean	766	14.0	4.0	9.0
2016	Annual Mean	725	15.7	4.4	10.1
2017	Annual Mean	661	15.0	5.3	9.9
2018	Annual Mean	709	14.8	4.8	9.7
2019	Annual Mean	886	15.9	5.1	9.6
2020	Annual Mean	749	15.7	5.0	9.6
Mean		767	15.3	4.0	9.5

Table 13.10 Meteorological Data for Dublin Airport 2011-2020

13.7 Do Nothing Scenario

Should the subject development not proceed, it is likely that another residential development may be applied for in the future as the subject site is zoned for residential development. Should the site remain undeveloped it will have a neutral long term imperceptible impact on local air quality or on micro or macro climate conditions.

13.8 Likely Significant Effects

Various elements of both the construction and operational phases of the proposed development have the potential to impact on the receiving environment and on human health. The likely potential impacts for both construction and operation of the proposed scheme prior to mitigation are described in this section. The mitigation measures are described in Section 13.9 and the residual impacts with the development in place and the mitigation measures incorporated are set out in Section 13.10.

13.8.1 Air Quality & Climate Construction Phase

The development of the site will be conducted in the following phased stages:

i. Enabling works	1.5months
ii. Basement excavation	3 months
iii. Construction of buildings	15 months
iv. Mechanical & electrical installation	2.5 months
v. Cladding & building fit out	3 months
vi. Services installation and connections	2 months
vii. Landscaping, roads and footpaths	3 months
viii. BCAR and project handover	1 month

Construction impacts associated with these phased stages are discussed below.

Enabling works - Site Set Up and Clearance

Works activities associated with the 'Site set up' will be undertaken prior to construction works commencing in each sub-phase. The setting up of the site shall involve the construction of site security hoarding and site compounds, site offices, materials and waste storage areas and staff welfare facilities. These temporary activities will have a minimal potential to generate fugitive dust emissions or combustion gas emissions.

Site clearance and ground excavation works will be undertaken in separate phases and these activities have the potential to generate fugitive windblown dust emissions during dry and windy weather arising from the operation of mechanical plant such as dozers, excavators and tipper trucks and the movement of these vehicles on exposed surfaces at the site.

With regard to the volume of waste material (top and sub soils) generated during site clearance, there will be a requirement for HGV trucks to remove the material from the site. Trucks shall be loaded with material on-site by mechanical excavators and loading shovels which will generate fugitive dust emissions as a result of the transfer of the excavated materials comprised principally of soils and stones from stockpile to truck.

The movements of construction vehicles on the site shall also generate windblown dust emissions. Where dusty material is loaded onto exposed open trucks, fine dusts may be released as the truck travels along public roads.

Building and Site Infrastructure Construction Works

During the construction phase there will be extensive site works, involving construction machinery, construction activities on site which have the potential to generate fugitive windblown dust emissions.

Construction equipment including generators and compressors will also give rise to diesel and petrol engine exhaust emissions.

Construction traffic to and from the site shall result in a short-term increase in the volume of diesel fuelled HGV's along the local road network which will generate additional hydrocarbon and particulate emissions from the vehicle exhausts.

Site activities during the construction phase in the absence of mitigation have the potential to impact local air quality, human health, the local ecological environment and cause the soiling of property and vegetation resulting in a short-term-transient, negative, minor impact.

Climate

During the construction phase NO_2 and CO_2 will be released into the atmosphere as a result of the movement of construction vehicles and the use of construction plant, vehicles and generators.

The Institute of Air Quality Management document *Guidance on the Assessment of Dust from Demolition and Construction* (IAQM, 2014) states that site traffic and plant is unlikely to make a significant impact on climate.

Human Health

With regard to the Institute of Air Quality Management – Guidance on the assessment of dust from demolition and construction, 2014, the sensitivities of local population to dust soiling and PM_{10} and $PM_{2.5}$ exposure in the local area may be classified as a High.

13.8.2 Air Quality & Climate Operational Phase

Air quality

The operational phase of the proposed development has the potential to have a neutral impact on local air quality as a result of the requirements for new buildings to be heated and with the increased traffic movements associated with the development.

Traffic movements associated with the development have been evaluated and assessed as part of the Traffic Impact Assessment for the development up to 2038 (Opening Year + 15) which includes parking for vehicles which will enter and exit the site. The split in am and pm peak traffic movements may increase the impact on local air quality at the junctions.

The results of the NO_2 impact for the 2038 design year have been determined using the UK DEFRA methodology and a Road NO_2 value of 1.91ug/m^3 has been determined giving a Total NO2 value of 9.61 ug/m^3. These values are below the Air Quality Standards Regulations 2011 40ug/m^3 limit value for the protection of human health and the 30ug/m^3 for the protection of vegetation . The impact will be long-term, localised, neutral and imperceptible.

Climate

The overall site area of the development lands is c. 1.74 hectares will include open space, and landscaped areas. The overall development includes the construction of buildings and roadways which may have the potential effect of marginally raising localised air temperatures, especially in summer.

Motor vehicles are a major source of atmospheric emissions which contribute to climate change and vehicle exhaust emissions may have a potential to impact the macro-climate.

Climate change has the potential to alter weather patterns and increase the frequency of rainfall. The subject site is located within flood Zone C which details the probability of flooding occurring at less than 0.1% and there is no history of flooding on site. Adequate attenuation and drainage have been provided for to account for increased rainfall in future years as part of the design of this development. Therefore, the impact will be long-term, localised, neutral and imperceptible.

Human Health

It has been predicted that there will be a negligible impact on local air quality as a result of increased traffic movements associated with the proposed development. National and European Air Quality Standard limit criteria designed for the protection of human health will not be exceeded. The operational phase impact associated with traffic movements will be long-term, localised, neutral and imperceptible.

13.8.3 Cumulative Impact

In accordance with Schedule 6, Part 2(c) of the Planning and Development Regulations 2001-2018, this section has considered the cumulative impact of the proposed development in conjunction with future development in the vicinity of the subject site. This section relates to the cumulative impact of the subject site itself and on surrounding sites (Claremont development).

A permitted development, Claremont, at the former Techrete site at Claremont, Howth Road included a EIAR as part of the application process. The EIAR includes a detailed assessment of the air quality and climate impacts and associated mitigation measures for the construction and operational phases which in summary concludes that the residual impacts will be insignificant, local and short-term for the construction phase and negligible and long-term for the operational phase.

It has been determined that there will be negative, insignificant and short-term cumulative impacts on local air quality associated with the construction phase of the subject development

and the former Techrete site should construction activities at each site occur at the same time. However, it is predicted that there will be an overall long term positive cumulative impact as a result of the proposed developments, due to the modern residential buildings, electric vehicle charging infrastructure, public open spaces and amenity areas and facilities that are being provided for future residents of the area.

13.8.4 Worst-case Scenario

A worst-case scenario would arise if the mitigation measures were not implemented during the construction phase of the development. This would result in the generation of uncontrolled vehicle and dust emissions and from the site which would result in an unacceptable impact on local receptors and the receiving environment.

13.8.5 Summary

The Table below summarises the identified likely significant effects of the proposed development in the absence of mitigation during the construction phase.

Likely Significant Effect	Quality	Significance	Extent	Probability	Duration	Type
Construction Dust	Negative	Moderate	Local	Likely	Short-Term	Worst Case
Construction NO_2, CO_2	Negative	Not Significant	Local	Likely	Short-Term	Worst Case
Construction Traffic Dust	Negative	Not Significant	Local	Likely	Short-Term	Worst Case

Table 13.11 Summary of Construction Phase Likely Significant Effects without Mitigation

The Table below summarises the identified likely significant effects of the proposed development in the absence of mitigation during the operational phase.

Likely Significant Effect	Quality	Significance	Extent	Probability	Duration	Type
Operational Heating Emissions	Neutral	Imperceptible	Local	Likely	Long-Term	Worst-Case
Operational Traffic	Neutral	Imperceptible	Local	Likely	Long-Term	Worst-Case

Table 13.12 Summary of Operational Phase Likely Significant Effects without Mitigation

13.9 Mitigation

This section of the Chapter details the measures that shall be implemented during the construction and operational phases of the development and into the design of the development to minimise the impacts on ambient air quality in the receiving environment, on local population and human health, on local flora and fauna and on climate.

13.9.1 Incorporated Design Mitigation

Air Quality & Climate Impact Mitigation Measures by Design

- Energy Efficiency – All residential units shall be designed and constructed in accordance with The Irish Building Regulations Technical Guidance Document L – Conservation of Fuel & Energy – Dwellings amended in 2017 includes requirements for all residential dwellings to be “Nearly Zero Energy Buildings” (NZEB’s) by 31st December 2020.
- Energy Consumption - The following key design features have been integrated into the design and construction of the residential units to reduce energy consumption:
- U-values for floor and roof will exceed the building regulation backstops
- Using Glazing U-Value target outlined in this report
- Better performance air permeability than the backstop, adding to building air tightness
- High performance thermal bridging
- Mechanical extract ventilation with heat recovery via heat pump
- Exhaust air source heat pump to provide space heating (via radiators) and domestic hot water.
- Mechanical ventilation heat recovery and air source heat pump heating for the landlord areas and tenant amenities.
- Proximity of Public Transport including Dublin Bus and DART services will reduce dependence on private vehicles
- Provision of open landscaped areas, to encourage residents to avail of active lifestyle options and which will contribute albeit in a minor way to the adsorption of Carbon Dioxide from the atmosphere and the release of Oxygen into the atmosphere

13.9.2 Construction Phase Air Quality & Climate Mitigation

- Avoid unnecessary vehicle movements and manoeuvring, and limit speeds on site so as to minimise the generation of airborne dust.
- Use of rubble chutes and receptor skips during construction activities.
- During dry periods, dust emissions from heavily trafficked locations (on and off site) will be controlled by spraying surfaces with water and wetting agents.
- Hard surface roads will be swept to remove mud and aggregate materials from their surface while any un-surfaced roads will be restricted to essential site traffic only.
- Re-suspension in the air of spillages material from trucks entering or leaving the site will be prevented by limiting the speed of vehicles within the site to 10kmh and by use of a mechanical road sweeper.
- The overloading of tipper trucks exiting the site shall not be permitted.
- Aggregates will be transported to and from the site in covered trucks.
- Where the likelihood of windblown fugitive dust emissions is high and during dry weather conditions, dusty site surfaces will be sprayed by a mobile tanker bowser.
- Wetting agents shall be utilised to provide a more effective surface wetting procedure.
- Exhaust emissions from vehicles operating within the construction site, including trucks, excavators, diesel generators or other plant equipment, will be controlled by the contractor by ensuring that emissions from vehicles are minimised by routine servicing of vehicles and plant, rather than just following breakdowns; the positioning of exhausts at a height to ensure adequate local dispersal of emissions, the avoidance of engines running unnecessarily and the use of low emission fuels.
- All plant not in operation shall be turned off and idling engines shall not be permitted for excessive periods.
- Material handling systems and site stockpiling of materials will be designed and laid out to minimise exposure to wind. Water misting or sprays will be used as required if particularly dusty activities are necessary during dry or windy periods.
- Material stockpiles containing fine or dusty elements including top soils shall be covered with tarpaulins.
- Where drilling or pavement cutting, grinding or similar types of stone finishing operations are taking place, measures to control dust emissions will be used to prevent unnecessary dust emissions by the erection of wind breaks or barriers. All concrete cutting equipment shall be fitted with a water dampening system.
- A complaints log shall be maintained by the construction site manager and in the event of a complaint relating to dust nuisance, an investigation shall be initiated.
- Dust netting and site hoarding shall be installed along the north, south, east and western site boundaries to minimise the propagation of fugitive windblown dust emissions falling on third party lands and existing residential areas.
- In order to protect the amenities enjoyed by nearby residents and a Construction and Environmental Management Plan (CEMP) (including traffic management) is included in the application documentation. The appointed contractor will adopt the CEMP.

13.10 Residual Impact Assessment

13.10.1 Construction Phase

Residual Impact

Various elements associated with the construction phase of the proposed development have the potential to impact local ambient air quality, human health and climate. However, the potential construction phase impacts shall be mitigated as detailed above to ensure there is no adverse impact on ambient air quality for the duration of all construction phase works. It is predicted that the construction phase of the development will not generate air emissions that would have an adverse impact on local ambient air quality or on local human health or on the local micro-climate or the wider macro-climate.

The predicted construction phase residual impacts on air quality will be negative, not-significant and short-term.

13.10.2 Operational Phase

The sustainable features that are incorporated into the design of all residential units will ensure that the operational phase of the development will not have an adverse impact on human health, local air quality or on local or global climate patterns. The residential units will be designed to ensure that they can withstand the potential changes in climate which may generate more extreme and prolonged meteorological events in the future.

It is predicted that fossil fuel combustion gas emissions including Carbon Dioxide, Sulphur Dioxide, Nitrogen Oxides, Carbon Monoxide and hydrocarbon particulate emissions will be slight and will not have an adverse significant impact on the existing ambient air quality in the vicinity of the proposed development site.

Motor vehicles are a major source of atmospheric emissions which contribute to climate change, however, vehicle exhaust emissions generated from vehicles associated with the development will have a negligible impact on the macro-climate given modern technological developments in cleaner and more efficient vehicle engines. Current trends suggest that vehicle manufacturers are ceasing the manufacture of large diesel engines for private cars and instead adopting hybrid engine and all electric technologies which will contribute to the reduction of engine exhaust emissions including particulate matter, Nitrogen Oxides, Sulphur Dioxide, Carbon Dioxide and Carbon Monoxide.

To further reduce the climatic impact of the operational phase of the development, electric vehicle charging points shall be installed in dedicated parking spaces and cycle parking shall be provided to facilitate residents who own electric vehicles and to encourage other residents to purchase electric vehicles.

The scheme has been designed to provide thermally efficient buildings which will reduce the consumption of fossil fuels within each individual dwelling. This will reduce the impact the operational phase of the development will have on the micro and macro climate. In particular, there will be no “traditional” passive air vents in the apartments which are both thermally and acoustically inefficient. Exhaust Air Heat Pump systems shall be incorporated into the design of all units. These efficient energy reducing systems together with thermally rated window sets

will reduce the potential future impacts that the external climate will have in terms of wind and changing temperatures on the internal environment within the residential units. These design features will ensure the units are thermally efficient thus reducing the use of fossil fuels leading to a reduction of the impact on the micro and macro climate.

The thermal efficiency of the buildings will ensure that the development will be sustainable and will be protected against the impacts of future climate change which may include storm events and prolonged colder periods during the winter season. These factors will contribute to reducing the impact the operational development has on the local and global climate which will ultimately contribute in a positive manner in reducing the impact on local and further afield human health.

The residual operational phase impacts on air quality and climate will be imperceptible and long-term.

13.10.3 Cumulative

The cumulative air quality impact of the proposed development and the permitted Claremont scheme on the former Techrete site is assessed with regard to having established the baseline air quality and then predicting the impact that the proposed developments will have on the baseline air quality and climate. Together the combined impact can be assessed to determine if there is sufficient "atmospheric budget" to facilitate the proposed developments.

The residual cumulative impacts on air quality and climate associated with the construction phase of the proposed development and the former Techrete site development are short-term, negative and not-significant.

The residual cumulative impacts on air quality and climate associated with the operational phase of the proposed development and the former Techrete site development will be imperceptible and long-term.

13.10.4 Summary

The Table below summarises the identified likely significant effects of the proposed development during the construction phase post application of mitigation measures.

Likely Significant Effect	Quality	Significance	Extent	Probability	Duration	Type
Construction Phase Air Quality	Negative	Slight	Local	Likely	Short-Term	Residual
Construction Phase Climate	Negative	Imperceptible	Local	Likely	Short-Term	Residual

Table 13.13 Summary of Construction Phase Likely Significant Effects with Mitigation

The Table below summarises the identified likely significant effects of the proposed development during the operational phase post application of mitigation measures.

Likely Significant Effect	Quality	Significance	Extent	Probability	Duration	Type
Operational Phase Air Quality	Negative	Imperceptible	Local	Likely	Long-Term	Residual
Operational Phase Climate	Negative	Imperceptible	Local	Likely	Long-Term	Residual

Table 13.14 Summary of Operational Phase Likely Significant Effects with Mitigation

13.11 Interactions

The principal interactions between Air Quality and Climate, Human Beings, Biodiversity and Traffic have been addressed in this chapter.

Construction Phase

Best practice mitigation measures are proposed for the construction phase of the proposed development which will focus on the pro-active control of dust and other air pollutants to minimise generation of emissions at source. The mitigation measures that will be put in place during construction of the proposed development will ensure that the impact of the development complies with all EU ambient air quality legislative limit values which are based on the protection of human health. Therefore, the impact of construction of the proposed development is likely to be negative, short-term and imperceptible with respect to human health.

Operational Phase

Operational traffic emissions as a result of the proposed development are compliant with all National and EU ambient air quality limit values which are set for the protection of human health and therefore, will not result in an adverse or harmful impact on human health.

13.12 Monitoring

This section describes the dust monitoring methodologies that shall be implemented at the site during the construction phases to ensure that dust, particulate matter (PM_{10} and $PM_{2.5}$) and construction vehicle exhaust emissions as NO_2 generated by site activities do not cause nuisance or cause adverse health effects to resident, sensitive receptors or the local flora and fauna located in the vicinity of the site boundaries.

The construction air quality monitoring locations are shown below in **Figure 13.2**.

Figure 13.2 Construction Phase Dust (D) Particulate Matter (PM) and Nitrogen Dioxide (N) Monitoring Locations

Dust Deposition Monitoring Methodology

Dust deposition levels will be monitored to assess the impact that site construction site activities may have on the local ambient air quality and to demonstrate that the environmental control measures in place at the site are effective in minimising the impact of construction site activities on the local receiving environment including existing residential developments and lands bordering the site. The following procedure shall be implemented at the site on commencement of site activities:

The dust deposition rate will be measured by positioning Bergerhoff Dust Deposit Gauges at strategic locations near the boundaries of the site for a period of 30 +-2 days. Monitoring shall be conducted on a monthly basis during the construction phase. The proposed monitoring locations (D1 – D4) are shown in **Figure 13.2**.

The selection of sampling point locations will be completed after consideration of the requirements of Method VDI 2119 with respect to the location of the samplers relative to obstructions, height above ground and sample collection and analysis procedures. The optimum locations will be determined by a suitably qualified air quality expert to ensure that the dust gauge locations are positioned in order to best determine potential dust deposition in the vicinity of the site boundaries and existing on-site buildings.

After each (30 +-2 days) exposure period, the gauges will be removed from the sampling location, sealed and the dust deposits in each gauge will be determined gravimetrically by an accredited laboratory and expressed as a dust deposition rate in mg/m2-day in accordance with the relevant standards.

Technical monitoring reports detailing all measurement results, methodologies and assessment of results shall be subsequently prepared and maintained by the Site Manager. Monitoring reports shall be made available to the Local Authority as requested.

A dust deposition limit value of 350 mg/m2-day (measured as per German Standard Method VDI 2119 – Measurement of Particulate Precipitations – Determination of Dust Precipitation with Collecting Pots Made of Glass (Bergerhoff Method) or Plastic. is commonly specified by Local Authorities and by the EPA to ensure that no nuisance effects will result from specified activities and it is to this Best Practice standard method that this programme of dust monitoring and control has been prepared.

The German Federal Government Technical Instructions on Air Quality Control - TA Luft specifies an emission value for the protection against significant nuisances or significant disadvantages due to dustfall. This limit value is 350 mg/m2-day and it is to this limit value that all measured dust deposition levels shall be assessed. This limit value is commonly specified by Local Authorities at construction sites.

PM_{10} & $PM_{2.5}$ Monitoring Methodology

Fine particulate matter as PM_{10} and $PM_{2.5}$ shall be monitored using continuous data logging air quality monitoring instrumentation for the duration of the construction phase. The monitoring system shall be located at the closest residential receptor (Tig Bhride) adjacent to the western site boundary at location PM as shown in **Figure 13.2**. Measured levels of PM_{10} and $PM_{2.5}$ shall be assessed against the limit criteria specified in National Air Quality Standards Regulations 2011 (S.I No. 180 of 2011) which specify a PM_{10} 24-hour limit value of 50 µg/m^3, and WHO Guidelines that specify a $PM_{2.5}$ 24-hour limit value of 25 µg/m^3.

NO_2 Monitoring Methodology

In order to assess the impact on existing air quality that vehicle and plant exhaust emissions associated with the construction phase of the development may have, it is proposed that a programme of passive Nitrogen Dioxide monitoring shall be undertaken on a quarterly basis for the duration of the construction phase at locations N1 and N2 as shown in **Figure 13.2**. The purpose of this monitoring programme will be to verify the effectiveness of the various construction phase mitigation measures and to quantify by measurement, the concentration of NO_2 in the ambient air to allow for the assessment of measured NO_2 levels against levels measured in EPA Zone A areas over a similar period. NO_2 levels shall also be assessed against the annual limit value NO_2 as defined in National Air Quality Standards Regulations 2011 (S.I No. 180 of 2011) which specify an annual limit value of 40 µg/m3, for the protection of human health, over a calendar year.

13.13 Summary of Mitigation & Monitoring

The Table below summarises the proposed construction phase mitigation and monitoring measures.

Likely Significant Effect	Mitigation	Monitoring
Site preparation, general construction works	Best Practice Dust suppression and control methods	Continuous Dust Deposition, PM_{10} & $PM_{2.5}$ and NO_2 surveys for duration of construction phase

Table 13.15 Summary of Construction Phase Mitigation and Monitoring

13.14 References and Sources

Air Quality Regulations 2011, SI 180 of 2011

European Union Directive (2008/50/EC).

German Federal Government Technical Instructions on Air Quality Control - TA Luft 2002

German Standard Method for determination of dust deposition rate, VDI 2129.

Greater London Authority – The Control of dust emissions from construction and demolition Best Practice Guidelines, Nov 2006.

Transport Infrastructure Ireland (TII) 2011 Guidelines for the Treatment of Air Quality during the Planning and Construction of National Road Schemes Revision 1.

The Irish Building Regulations Technical Guidance Document L – Conservation of Fuel & Energy – Dwellings

EPA 2019 Air Quality in Ireland

WHO Air Quality Guidelines, 2006

UK Highways Agency Design Manual for Roads and Bridges, 2007

Institute of Air Quality Management – Guidance on the assessment of dust from demolition and construction 2016

CHAPTER 14
CULTURAL HERITAGE: ARCHAEOLOGY

MAY 2021

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14 Cultural Heritage: Archaeology

14.1 Introduction

This section of the Environmental Impact Assessment Report (EIAR) assesses the impact of the proposed development of a strategic housing development (SHD) at Deer Park, Howth, Co. Dublin on the archaeological resource of the site and its environs. It is noted that Architectural Heritage is assessed in Chapter15 of this EIAR.

The proposed development is named 'Kenelm'. The name was chosen having regard to the local heritage resource. At Howth Castle there is a tower called Kenelm's Tower. The tower is named after a fascinating member of the St Lawrence family - Kenelm Lee Guinness, a formula one racing driver, yachtsman - his mother was a Gaisford St Lawrence and married a member of the Guinness family. In front of the castle there was an elm called 'The Family Tree', it is now gone but there is a round stone construction marking its position. Legend had it that when the tree died the family would also die. Despite supporting it up for years it finally did and so did the direct St Lawrence line.

This chapter is informed by a desktop study and a site inspection including a geophysical survey. The desktop section of the report was compiled using: The Records of Monuments and Places; buildings of Ireland, Excavations Bulletin; historic maps; aerial photographs; place names and historic books and journals. The information gathered informed the impact assessment which outlines the likely significant effects of the proposed development. The mitigation and monitoring strategy is designed to avoid or reduce adverse impacts.

This chapter was prepared by John Purcell Archaeological Consultancy. Field walking was undertaken by John Purcell BA. John Purcell has been excavation licence eligible with the DAHC since 2002 and has worked consistently since then in the area of archaeology. Recent Cultural Heritage assessments as part of an EIAR include an assessment as part of an EIAR for Kilcock Car Dismantlers, Laragh, Co. Kildare (Ref 19/1377). This involved the extension of a car recycling facility and permission has been granted. A Cultural Heritage chapter was undertaken for a Strategic Housing Development (SHD) at Lissywollen, Athlone, Co. Westmeath (Bord Pleanála Ref 305726). This is a development of over 500 social houses and associated works. The application is currently being resubmitted.

14.2 Proposed Development

The full description of the proposed development is outlined in **Chapter 2 – Development Description**, of this Environmental Impact Assessment Report.

The design rationale is to create and deliver a high quality, sustainable, strategic housing development which respects its setting and maximises the site's natural attributes while achieving maximum efficiency of existing infrastructure. The Proposed Site Layout is illustrated on **Drawing No. 1101** contained within the architectural suite of drawings.

The development will consist of;

i. 162 no. residential units distributed across 3 no. blocks (A, B & C) ranging in height from 5-6 storeys, with a cumulative gross floor area (GFA) of 13,337.10 sq.m comprising;
    a. 29 no. 1-bedroom units, - 17.9%
    b. 104 no. 2-bedroom units and – 64.2%
    c. 29 no. 3-bedroom units – 17.9%
ii. 3 no. resident services and amenity rooms (1 no. in each block A-C) to accommodate co-working space, a community room and a meeting room (combined GFA 108 sq.m)
iii. 132 no. car parking spaces at basement level (underlying Blocks A & B) including 6 no. accessible spaces, 13 no. electric vehicle spaces and 4 no. car sharing spaces;
iv. 325 no. residents bicycle parking spaces (long-stay) at basement level, and 30 no. visitor bicycle parking spaces (short-stay) at surface level;
v. communal amenity space in the form of courtyards and roof gardens (combined 2,192 sq.m)
vi. public open space of 1,161 sq.m including a botanic garden and pocket park;
vii. a single storey ESB sub-station and switch room (45.5 sq.m);
viii. demolition of 2 no. sections of the existing demesne northern boundary wall to provide, a primary access (vehicular/pedestrian/cyclist) to the northwest and a separate pedestrian/cyclist access at the centre;
ix. restoration and refurbishment of the remaining extant northern and eastern demesne boundary wall;
x. change of use and regrading of part of the Deer Park Golf Course from active recreation use to passive amenity parkland and planting of a woodland belt on the southern boundary;
xi. undergrounding of existing ESB overhead lines, and, relocation of the existing gas main; and,
xii. all ancillary site development works including waste storage and plant rooms at basement level, drainage, landscaping/boundary treatment and lighting.

14.2.1 Aspects Relevant to Assessment

The proposed development site is located with the Demesne for Howth Castle. The castle is located to the south and includes a number of archaeological monuments. Howth Town, which has evidence of settlement from prehistoric times, is located to the east. The proposed development will require excavation of material across the entire site and excavation to facilitate the basement development and services required for the operational phase. The

excavation level for the basement and foundations is at an average level of +3.500 mAOD (i.e., construction depth c. 4-6 mbgl).

The northern and eastern boundary includes a section of the demesne wall, a protected structure. It is proposed to develop 2 no. access points in the northern boundary wall to facilitate vehicular and pedestrian access. This impact if dealt with in the Architectural Heritage Section of the EIAR.

14.3 Methodology

14.3.1 Definitions

In order to assess, distil and present the findings of this study, the following definitions apply:

'Cultural Heritage' where used generically, is an over-arching term applied to describe any combination of archaeological and cultural heritage features, where;

- the term 'archaeological heritage' is applied to objects, monuments, buildings or landscapes of an (assumed) age typically older than AD 1700 (and recorded as archaeological sites within the Record of Monuments and Places)
- the term 'cultural heritage', where used specifically, is applied to other (often less tangible) aspects of the landscape such as historical events, folklore memories and cultural associations. This designation can also accompany an archaeological or architectural designation.

14.3.2 Relevant Legislation & Guidelines

This chapter has been prepared having regard to the following guidelines;

- Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment (Department of Housing, Planning & Local Government, 2018)
- Environmental Impact Assessment of Projects: Guidance on the preparation of the Environmental Impact Assessment Report (European Commission, 2017)
- Guidelines on the Information to be Contained in Environmental Impact Assessment Reports – Draft (EPA, 2017)
- Frameworks and Principles for the protection of Archaeological Heritage (Department of Arts, Heritage, Gaeltacht and the Islands, 1999)
- Architectural Heritage (National Inventory) and Historic Monuments and the Local Government (Planning and Development) Act 2000
- National Monuments Acts, 1930-2014
- The Planning and Development Act 2000, as amended
- Heritage Act 1995, as amended

14.3.3 Fingal Development Plan 2017-2023

The Fingal Development Plan (FDP) 2017–2023 recognises the statutory protection afforded to all Record of Monuments and Places (RMP) sites under the National Monuments Acts (1930–2014). Section 10.2 sets out objectives that are relevant to this chapter

- **Objective CH02** Favour the preservation in situ or at a minimum preservation by record, of archaeological sites, monuments, features or objects in their settings. In securing such preservation the Council will have regard to the advice and recommendations of the National Monuments Service of the Department of the Arts, Heritage, Regional, Rural and Gaeltacht Affairs.
- **Objective CH03** Protect all archaeological sites and monuments, underwater archaeology, and archaeological objects, which are listed in the Record of Monuments and Places and all sites and features of archaeological and historic interest discovered subsequent to the publication of the Record of Monuments and Places, and to seek their preservation in situ (or at a minimum, preservation by record) through the planning process.
- **Objective CH05** Ensure archaeological remains are identified and fully considered at the very earliest stages of the development process, that schemes are designed to avoid impacting on the archaeological heritage.
- **Objective CH06** Require that proposals for linear development over one kilometre in length; proposals for development involving ground clearance of more than half a hectare; or developments in proximity to areas with a density of known archaeological monuments and history of discovery; to include an Archaeological Impact Assessment and refer such applications to the relevant Prescribed Bodies.
- **Objective CH07** Ensure that development within the vicinity of a Recorded Monument or Zone of Archaeological Notification does not seriously detract from the setting of the feature, and is sited and designed appropriately.
- **Objective CH11** Encourage reference to or incorporation of significant archaeological finds into development schemes, where appropriate and sensitively designed, through layout, displays, signage, plaques, information panels and by using historic place names and the Irish language where appropriate.
- **Objective CH12** Promote best practice for archaeological excavation by ensuring that they are undertaken according to best practice as outlined by the National Monuments Service, Department of Arts, Heritage, Regional, Rural and Gaeltacht Affairs, The National Museum and the Institute of Archaeologists of Ireland.
- **Objective CH13** Actively support the dissemination of the findings of archaeological investigations and excavations through the publication of excavation reports thereby promoting public awareness and appreciation of the value of archaeological resources.

14.3.4 Study Methodology

This assessment consists of a paper survey identifying all recorded sites within the vicinity of the proposed development and a site inspection including a geophysical survey. The methodology has been conducted based on the guidelines from the Department of Culture, Heritage and the Gaeltacht (DAHG).

14.3.4.1 Desktop Survey

- The desktop survey undertaken consisted of a document and cartographic search utilising a number of sources including the following: **Record of Monuments and Places** (RMP); The RMP records are known upstanding archaeological monuments, the original location of destroyed monuments and the location of possible sites identified through, documentary, cartographic, photographic research and field inspections. The RMP consists of a list, organised by county and subdivided by 6" map sheets showing the location of each site. The RMP data is compiled from the files of the Archaeological Survey.
- **National Inventory of Architectural Heritage**; The inventory of architectural heritage lists all post 1700 structures and buildings in the country. This includes structures of architectural, historical, archaeological, artistic, cultural, social, scientific or technical importance.
- **County Development Plans**; The Development Plan was consulted to ascertain if any structures listed in the Record of Protected Structures (RPS) and/or any Architectural Conservation Areas (ACAs). The Record of Protected Structures lists all protected structures and buildings in Fingal. This includes structures of architectural, historical, archaeological, artistic, cultural, social, scientific or technical importance.
- **Cartographic Sources**; The following maps were examined: Down Survey, 1st edition Ordnance Survey Maps (1836-1846) and 2nd edition Ordnance Survey Maps (1908), Rocque Map and the Cassini Map.
- **Literary Sources**; Various published sources, including local and national journals, were consulted to establish a historical background for the proposed development site. Literary sources are a valuable means of completing the written record of an area and gaining insight into the history of the environs of the proposed development. Principal archaeological sources include: The Excavations Bulletin; Local Journals; Published archaeological and architectural inventories; Peter Harbison, (1975). Guide to the National Monuments of Ireland; and O'Donovan's Ordnance Survey Letters. A comprehensive list of all literary sources consulted is given in the bibliography.

14.3.4.2 Site Inspection

An archaeological field inspection survey seeks to verify the location and extent of known archaeological features and to record the location and extent of any newly identified features. A field inspection should also identify any areas of archaeological potential with no above ground visibility. In certain cases archaeological monitoring of excavation works can be used to examine the sub surface potential of a site. Many monument types do not leave surface

markers. Wooden sites such as prehistoric house or burials may only be recorded through excavation works.

As part of the works a geo physical survey was undertaken by JML Surveys in August 2020 and March 2021 (Licence Number 20R0118). This non invasive method was used to identify sub surface remains at the site. No features indicative of archaeological remains were identified during this survey.

14.3.5 Assessment Criteria

The effects of the proposed development have been rated according to Table 3.3 of the EPA draft guidelines (2017), full details are presented in Chapter 1.

The criteria used to assess the significance of the impact of a development on an archaeological landscape, site, feature, monument or complex are defined as follows:

- **Profound** Applies where mitigation would be unlikely to remove adverse effects. Reserved for adverse, negative effects only. These effects arise where an archaeological site is completely and irreversibly destroyed by a proposed development.
- **Significant** An impact which, by its magnitude, duration or intensity, alters an important aspect of the environment. An impact like this would be where part of a site would be permanently impacted upon, leading to a loss of character, integrity and data about the archaeological feature/site.
- **Moderate** A moderate direct impact arises where a change to the site is proposed which though noticeable, is not such that the archaeological integrity of the site is compromised, and which is reversible. This arises where an archaeological feature can be incorporated into a modern-day development without damage and that all procedures used to facilitate this are reversible.
- **Slight** An impact which causes changes in the character of the environment which are not significant or profound and do not directly impact or affect an archaeological feature or monument.
- **Imperceptible** An impact capable of measurement but without noticeable consequences.

14.4 Difficulties Encountered

No difficulties that could hinder the archaeological assessment were encountered.

14.5 Consultation

The Opinion from An Bord Pleanála received on foot of the tripartite meeting identified that an Archaeological Impact Assessment should accompany the application.

The Opinion set out the bodies to be notified of the application including the Department of Culture, Heritage and the Gaeltacht and The Heritage Council. It is confirmed that a copy of the application has been issued to both bodies at the time of making the application.

14.6 Existing Environment

The proposed development site (see **Figure 14.1**) of approx. 1.7 hectares encompasses two distinct areas, the northern section (approx. 0.5 ha) is within Golf Club and is zoned High Amenity. The south is a small field of approx. 1.2 ha in pasture (Plates 14.01-14.08).

The proposed 3 no. buildings and all ancillary infrastructure will be contained within the southern field that is zoned for residential development.

The golf club is delineated by a mature copse of deciduous trees. The eastern boundary is delineated by a stone wall (protected structure) the lower sections are random rubble with concrete forming the upper levels. The southern field is greenfield, it is bounded by a random rubble wall (protected structure) at the north and immediately to the north of the wall is the Howth Road, the R105. The access to Howth Castle and the golf club is to the east. Howth Castle is to the north and the Architectural Conservation Area (ACA) abuts the eastern extent of the proposed development site. Howth Village is located to the east.

Figure 14.1 Proposed Development Site

14.6.1 Brief Archaeological Background

The name Howth is derived from a modification of the Scandinavian word hoved, meaning 'head'. The Irish name for Howth, Ben Edair, translates as the 'Hill of Edar'. This is widely believed to refer to Edar a chieftain of the mythical Dé Dannan who was reputedly buried on the hill of Howth. There is evidence for constant habitation in Howth from prehistoric period onwards (Stout and Stout, 1992). A synopsis of this is outlined below;

Prehistory

Mesolithic Period

The Sites and Monuments Record (SMR) lists a number of prehistoric sites in and around Howth and along the entire east coast. The Mesolithic period (c. 9000-4000BC) contains the earliest evidence for the human occupation of north Co. Dublin The closest site dating to this period is the large shell midden site DU015-024, located 1.2km west of the proposed development in Burrow townland. These sites are situated on or close to the shoreline and are typical of the evidence for hunter-gatherer society at this time.

Neolithic Period

By the Neolithic period (4,200-2,500BC) communities became more stable with the introduction of agricultural practices. The more permanent settlement allowed communities to construct large ceremonial sites. The closest example of these to the study area is a portal tomb located 800m to the south within Howth Demesne (DU015-032).

Bronze Age

The bronze age marks the introduction of metal working to Ireland. This allowed for more efficient farming and hunting techniques. It also allowed for small industry and trade to take place between communities. Barrows are a common form of monument in this area from this period. They are associated with the Bronze/Iron Age burial tradition (c. 2400 BC - AD 400) and are defined by an artificial mound of earth or earth and stone, normally constructed to contain or conceal burials. These sites vary in shape and scale and can be variously described as bowl-barrow, ditch barrow, embanked barrow, mound barrow, pond barrow, ring-barrow and stepped barrow. Prehistoric settlements sites are generally not visible at ground level and can only be uncovered as a result of ground works. There are no monuments associated with the Bronze Age adjacent to the study area.

14.6.2 Iron Age to Early Medieval Period

In late Bronze Age Ireland the use of the metal reached a high point with the production of high quality decorated weapons, ornament and instruments, often discovered from hoards or ritual deposits. The Iron Age however is known as a 'dark age' in Irish prehistory. Iron objects are found rarely, but there is no evidence for the warrior culture of the rest of Europe, although the distinctive La Tené style of art with animal motifs and spirals was adopted. Political life in the Iron Age seems to have been defined by continually warring petty kingdoms vying for power. These kingdoms, run on an extended clan system, had their economy rooted in mixed farming and, in particular cattle. Settlement was typically centred on a focal hillfort.

Another more domestic site common to the Bronze Age is the *fulachta fiadh*. These are located along the edges of streams or in damp areas. They consist of a mound of charcoal enriched soil with fragmented burnt rocks. They usually are accompanied by a wooden or stone lined trough. These were used seasonally possibly for cooking or may have been used for recreational purposes.

Settlement in the Early Medieval Period is defined by the ringfort. The country was a patchwork of competing kingdoms during this period numbering up to 150. Ringforts were a farmstead surrounded by one or more earthen banks. These are the commonest monument across Co. Dublin and have been frequently recorded in the area. These are generally located in areas with commanding views over the countryside to provide security.

The introduction of Christianity to Ireland in the fifth century had a profound impact on Gaelic society, not in the least in terms of land ownership and the development of churches and the development of a large number of religious houses. The earliest churches were constructed of wood and mortar and wattle walls. By the ninth and tenth centuries these were being replaced by stone structures. These settlements became very important around the country and became small towns. Many of these sites were surrounded large earthen enclosures.

There are no monuments from the Iron Age or the Early Medieval Period within or adjacent to Howth Demesne.

14.6.3 Historic Period

The settlement at Howth was founded by the Vikings. Sitric built a church here in the early 11th century. Following Clontarf Battle the Norse troops regrouped at Howth and remainder in control of the area with the local Irish until the arrival of the Anglo Norman. The village became an important Anglo Norma settlement with a castle to protect the harbour. Howth Village is located 1.1km to the east of the study area.

14.6.4 Howth Castle

Since 1180 the St. Lawrence family were the feudal lords of Howth. The castle was originally built in 1464. In the mid-16th century a gate house was added to the complex. The house includes in its southern range a massive three-storey tower house with corner towers. Attached to the east is a seventeenth century two storey hall. Classical style alterations to the central hall date from the early eighteenth century when the castle was enlarged and modernised by William St. Lawrence.

14.6.5 Post Medieval Ireland

Seventeenth century Ireland saw massive upheaval a result of the Confederate wars, the Cromwellian response and the Wars of the two kings. It is estimated that up to a third of the population was wiped out because of famine, disease and war. Soldiers were given land as payment resulting in further upheaval of the local population and the establishment of large estates. These came to dominate the landscape from this period onwards. Religious intolerance in other parts of Europe resulted in the expulsion of the Huguenot from France which were welcomed by the English Crown into Ireland.

14.6.6 Industrial Period

In 1766 the official census of Howth showed the population consisted of 29 protestant and 202 catholic families in Howth and Baldoyle.

The eighteenth century saw considerable industrial growth across the country. In Howth this was visible in the form of a series of quarries to support the expanding city to the south. Fishing was another mainstay of the local economy. The development of an industrial base led to increased urbanisation and population growth across the county.

14.6.7 Howth Park Racecourse

In 1829 a racecourse was established in the castle grounds by Thomas St Lawrence, 3rd Earl of Howth. The course was known as *Howth Park Racecourse* and ran from the back gate lodge of the castle on Carrickbrack Road down to the corner of the grounds of Seafield House until 1842. The site of the proposed development is located within the eastern sweep of the race track.

Figure 14.2 Extract from OSI 6 Inch Map

14.6.8 Archaeological Monuments in the Environs of the Study Area

The proposed development site does not include any registered monuments. However, this area has a number of monuments centred on Howth Castle. These are listed below (details taken from archaeology.ie).

RMP	Classification	Townland	Distance
DU 015 026	Church	Howth Demesne	80m
DU 015 027/03	Armorial Plaque	Howth Demesne	130m
DU 015 027/02	Gatehouse	Howth Demesne	162m
DU 015 027/01	Castle	Howth Demesne	185m
DU 015 042	Graveyard	Howth Demesne	130m
DU015-032	Portal Tomb	Howth Demesne	800m

Table 14.1 Record of Monuments and Places within Howth Castle Demesne
(See Figures 14.6 and 14.7)

DU015-026----
Class: Chapel
Townland: HOWTH DEMESNE
Located on the grounds of Howth Castle north of the stableyard and west of the driveway, the church is surrounded by overgrowth and ivy covered. This large medieval chapel is rectangular in plan (int. dims. L 12.20m, Wth.4.50m) and built of randomly coursed sandstone masonry with dressed quoins. Originally entered through opposed doorways (blocked) which have almost flat segmental arches at W end of nave. The remains of a pointed arched opening in west end forms the entrance. The arch has been modified at the base, stone removed and brick inserted. Tufa has been used for one of the southern jambs. An impressive E window has a pointed arch with dressed sandstone hood and roll moulding internally. Draw bar holes are present. There are blocked up, flat, segmental arched windows at E end of N and S walls. Appears to be some dumping of material internally.

DU015-027001-
Class: Castle - tower house
Townland: HOWTH DEMESNE
Located in grounds on the north side of Howth Head overlooking Irelands Eye. A fine gatehouse *DU015-027002-) is attached by a battlemented wall to Howth Castle which incorporates in its southern range a massive three-storey tower house with corner towers. Attached to the east of this is a two-storey hall of 17th century date. Classical style alterations to the central hall date from the early 18th-century when the castle was enlarged and modernised by William St. Lawrence (Bence-Jones 1988, 155-156; Dawson 1976, 122-132; Mc Cready 1893, 447). Re-rendered c.1990.

The ground floor of the tower house (L 677m, Wth 5.60m, T 1.55m) is entered off the central hall through an opening in a later partition wall that creates a corridor within the original ground floor chamber. There is a dual vault over the ground floor with an intervening wall (Wth 0.66m) that has an opening midway along (Wth 1.02m). Partial remains of a projecting angle tower with a corbelled roof survive in the NE. A spiral stairway (diam. 1.08m) in a square projecting tower off the NW angle provides access to the upper floors. The stairs have been replaced and cut across the window opes. The first floor has been re-modelled with later window opes in the S and W. The SW angle has a tower which may have originally contained a garderobe.

The second floor (L8.12m, Wth 6.40m) is entered through a pointed arch doorway (Wth 0.90m). There are window opes in the E and S walls of the main chamber which contain s a corbelled recess in the SW angle tower. This is lit by a single slit loop (L 1.81, Wth 1.52m). There is a squinch in the SE corner which would have been needed to carry a corner tower at battlement level. The spiral stairs provides access to the battlement level with a wall walk connecting four projecting angle towers. A double pitched slate roof is set behind a crow-stepped crenellated parapet.

Architectural fragments have been incorporated into the surrounding buildings including a carved dragon built into the wall at the entrance to the garden and an inscribed Sixteenth-century Tablet at the entrance to stable yard N of castle (Ball 1917, 7, 8, 70, 71 Mc Cready 1893, 447).

DU015-027002
Class: Gatehouse
Townland: HOWTH DEMESNE
The gate house is located on the north side of a courtyard attached to Howth Castle (DU015-027001-) by a rubble stone bawn wall, c.1525, with round headed integral carriageway, gun loops and crow stepped crenellated parapet (NIAH). It stands three storeys high with a battlemented parapet and a NE tower which projects above parapet level. Built of randomly coursed rubble with dressed quoins. A studded wooden gate is still present on the E side of the gateway below a round arch formed from sandstone and limestone which alternate to create a banding effect. The gateway has a segmental arched vault running E-W. There are buttresses to first floor level on the E and S sides. Two high vaulted chambers are entered off the N side of entrance passage through round-arched passages. Their interior is lit by single slit opes (L 6.40m, Wth 4.20m). The S side is defended by a musket hole. Entrance to upper floors is through the attached outbuildings in the W.

The NE tower contains a stone spiral staircase which is entered through a square-headed doorway of chamfered limestone. There is a fireplace with plain segmental arch on N side on the first floor. The east window is a double-light with a mullion and transom and cusped ogee-heads and a crack in the base of the window arch. A mural chamber off the first floor is lit by plain rectangular windows. Second floor is entered through a pointed arched doorway of chamfered limestone. The fireplace in the NW corner is a later insertion. There is an ogee-headed window on W side. Along the W side of the parapet there is a pointed arched window incorporated into battlements. Renovated 1738.

DU015-027003-
Class: Armorial plaque (present location)
Townland: HOWTH DEMESNE
An armorial plaque (DU019-001002-) was originally set into an external wall of Watermill cottage (DU019-001001-). The armorial plaque is now concreted into the northern façade of the stable block above an entranceway at Howth Castle. It shows the arms of the St. Lawrence

family, Howth, 20th Baron of Howth and wife Elizabeth (Plunkett), the initials C.S. and E.P. and a date 1572 (Bowen 1963, 75-76).

DU015-042----
Class: Burial ground
Townland: HOWTH DEMESNE
According to Fr. Shearman human remains were uncovered during the construction of the modern Protestant Church. St Mary's church (1866) was built on the site of an earlier church and is located west Evora Bridge, the site of a great battle. Finds included sword fragments and a jet ring (Shearman 1922, 65). Monitoring (Licence no. 03E0935) of the insertion of a new gas supply to the north of St Mary's church was undertaken. A 55m long slot trench on the higher ground within the church grounds, revealed at least three situ human burials and evidence for disarticulated remains (D 0.50m). No excavation of the human remains took place (Scally, G. 2003).

DU015-032----
Megalithic tomb - portal tomb
HOWTH DEMESNE
The tomb is situated by a pathway under tree cover at the edge of Deer Park golf course at the foot of Muck Rock on the north side of Howth Head. There is an entrance in SE to a single chamber (L 2.6m; Wth 1.1m). This is indicated by two portals (H 2.75m and 2.45m respectively). The doorstone has partially collapsed into the chamber. The large roofstone (L 5.2m; Wth 4.2m; D 1.9m) still rests on the upper edge of the portals above the collapsed chamber (Borlase 1897, 2, 376-9; Ó Nualláin 1983, 82, 96).

14.6.9 Previous Archaeological Works

No excavation is listed for Howth Demesne on the database of Irish excavations (excavations.ie). 23 excavations are located in Howth Town, approx. 800m to the east of the study area. There may be other archaeological material in the area that has not yet been recorded. Houses constructed in the Medieval Period were generally made of stone and wood once this decayed the remains can be detected during excavation works. Similarly, burial sites may not have any surface markers and remain undetected below the surface. Ground disturbance may uncover buried archaeological sites, features or artefacts.

14.6.10 Geo Physical Survey

A geophysical survey was undertaken by Joanna Leigh in August 2020 and March 2021 (Appendix 14.1, Volume III). The survey covered the full extent of the proposed development site. The geophysical survey data is dominated by modern magnetic disturbance, largely the result of the landscaping and design of the golf course and the presence of multiple modern services. Some possible isolated pit-type responses have been identified; however, an archaeological interpretation is highly tentative. Possible former agricultural activity is suggested by multiple linear trends. The results of the geophysical survey negated the need for archaeological testing.

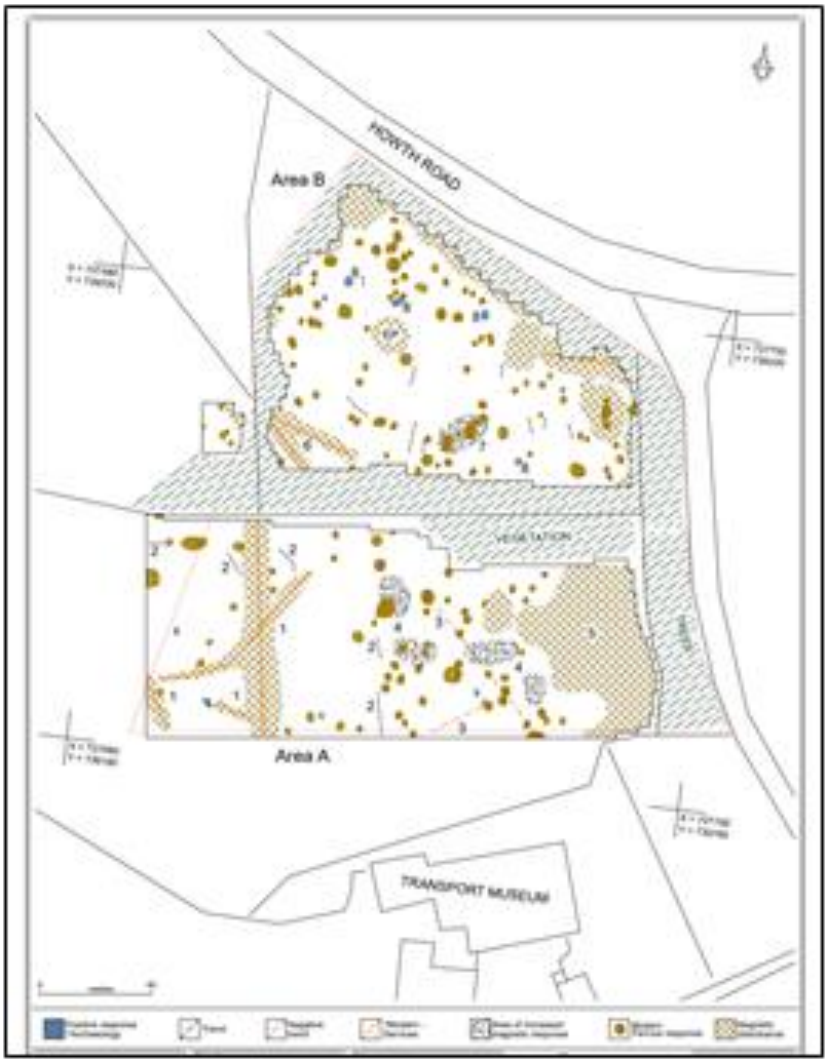

Figure 14.3 Result of the geophysical survey

Cartographic Evidence

The Down Survey of Ireland was undertaken in the years 1656-1658 (**Figure 14.4**). The survey sought to measure all the land to be forfeited by the Catholic Irish in order to facilitate its redistribution in what became known as the Cromwellian Plantation. The map shows the Howth castle and the town of Howth to the east.

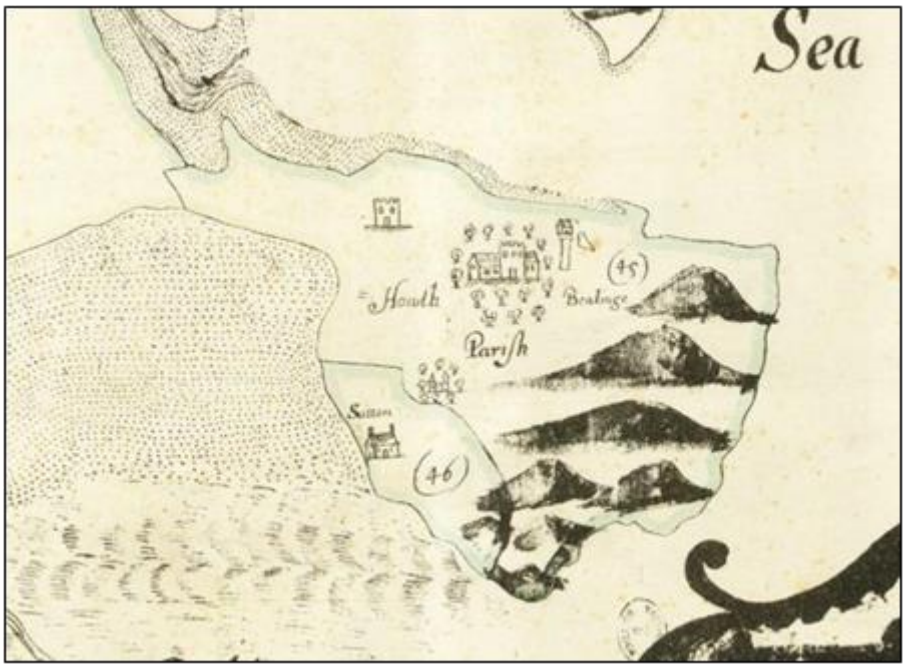

Figure 14.4 Downe Survey extract for the proposed development

Rocque's 1757 map (**Figure 14.5**) provides more detail of the castle and its formal gardens. The area of the proposed development site is depicted as open farmland.

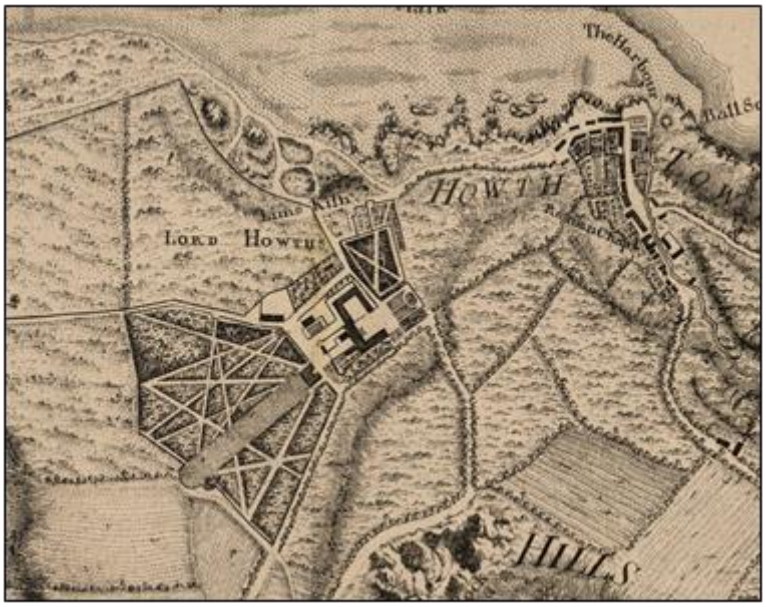

Figure 14.5 Rocque map of Howth Castle

The first edition of the Ordnance Survey undertaken in 1838 (**Figure 14.6**) depicts Howth village as being similar to its present layout. The area to the north of Howth Castle is marked as Deer Park. The proposed development site is occupied by Howth Park Racecourse.

Figure 14.6 First edition OS map with the site marked

Figure 14.7 25 inch map for the site

The 25" map or second edition OS map of the early 20th century shows the site as an enlarged field with no features or anomalies (**Figure 14.7**).

Aerial photographs for the site did not reveal any anomalies or features indicative of archaeological remains.

Site Survey

The proposed development can be divided into two sections for the purposes of this report. Area A forms part of the Dear Park Golf Club. This section of the study area is surrounded by mature trees on the north south and east. This area has been heavily landscaped to form greens for the golf club. The geo physical survey identified a number of modern drainage channels in this area. No potential archaeological remains were identified during this survey. A site visit did not reveal any anomalies or features indicative or sub surface archaeological remains in this area.

Area B forms the northern section of the site. This is currently in use as rough pasture and is surrounded by mature trees at the east and north. The geophysical survey did not identify any archaeological remains in this area. A number of anomalies at the north of the area have some archaeological potential but an archaeological interpretation is tentative. Given the level of modern disturbance within the area, it is more likely that they represent more deeply buried ferrous material. A site visit did not reveal any anomalies or features indicative or sub surface archaeological remains in this area.

Plate 14.01: Looking east over the proposed site

Plate 14.02: Looking north over the proposed site

Plate 14.03: Looking west over the proposed site

Plate 14.04: Looking southeast over the eastern section of the proposed site

Plate 14.05: Looking east over the golf club and the boundary wall

Plate 14.06: Looking east at boundary wall

Plate 14.07: Looking southeast over the study area

Plate 14.08: Looking west over the northern section of the study area

14.7 Do Nothing Scenario

Should the development not proceed this will not impact on or enhance the archaeological heritage of the site. Should this development not proceed, given that the site is a brownfield site in an area zoned for residential development it is likely that development of a similar nature would occur at some time and the impact and effects would likely be similar to that of this proposed development.

14.8 Likely Significant Effects

14.8.1 Construction Phase

The proposed development will have no direct or indirect impact on recorded archaeological features. The proposed development is at a remove from the recorded archaeological monuments and construction will have no negative impact on them. Construction access to the site will be at the northwest, at the furthest distance from the recorded archaeological monuments in the area. No subsurface remains were identified during a geophysical survey of the site. This survey showed modern disturbance across the study area.

The effect on the archaeological landscape is determined to be unlikely and negligible.

14.8.2 Operational Phase

Having regard to the information gathered to determine the baseline archaeological environment, here are no potential impacts on archaeological cultural heritage expected as a result of the operational phase of the proposed development. Therefore the effect is determined to be unlikely and neutral.

14.8.3 Cumulative

A significant development, Claremont, is permitted (Ref. ABP-306102-19) to the south of the Howth Road. It comprises a mixed-use development of residential (512 no. units), retail/restaurant/cafe uses and a creche across 4 no. blocks. The Board concluded that the development is not likely to have a significant effect on cultural heritage.

The EIAR that accompanied that application included the following construction phase mitigation measures;

Established mitigatory measures involve the excavation under licence of a series of test trenches across the site post-demolition. Should archaeological deposits be encountered, a report detailing the extent and nature of the material will be submitted to the statutory authorities for further consideration. With the agreement of the statutory authorities the area can be opened up and the material excavated by hand.

Should there be no archaeological material recorded over the programme of test trenching, a monitoring brief to be undertaken over the course of development will establish (or not) the presence of archaeological deposits on the site. Where archaeological material is found to be present, development work will cease across the area identified and any deposits will be excavated by hand, subject to agreement with the statutory authorities.

Condition 14 of the permission relates to archaeology and states;

The developer shall facilitate the preservation, recording and protection of archaeological materials or features that may exist within the site. In this regard, the developer shall: (a) notify the planning authority in writing at least four weeks prior to the commencement of any site operation (including hydrological and geotechnical investigations) relating to the proposed development, (b) employ a suitably qualified archaeologist who shall monitor all site investigations and other excavation works, and (c) provide arrangements, acceptable to the planning authority, for the recording and for the removal of any archaeological material which the authority considers appropriate to remove. In default of agreement on any of these requirements, the matter shall be referred to An Bord Pleanála for determination.

Reason: In order to conserve the archaeological heritage of the site and to secure the preservation and protection of any remains that may exist within the site.

There will be no cumulative impact on the archaeological resource locally.

It is assumed that any Grant of Permission for this subject development would include a similar condition. Thus, should any archaeological remains be identified on the proposed development site, they will be preserved by record, mitigating any negative impacts and adding to the understanding of the historical development of this area.

14.8.4 Summary

The Table below summarises the identified likely significant effects of the proposed development in the absence of mitigation during the construction phase.

Likely Significant Effect	Quality	Significance	Extent	Probability	Duration	Type
Church	Neutral	Imperceptible	n/a	n/a	n/a	n/a
Armorial Plaque	Neutral	Imperceptible	n/a	n/a	n/a	n/a
Gatehouse	Neutral	Imperceptible	n/a	n/a	n/a	n/a
Castle	Neutral	Imperceptible	n/a	n/a	n/a	n/a
Graveyard	Neutral	Imperceptible	n/a	n/a	n/a	n/a
Portal Tomb	Neutral	Imperceptible	Local	Unlikely	n/a	n/a
Unidentified sub surface remains	Negative	Profound	Site specific	Likely	Permanent	Direct

Table 14.2 Summary of Construction Phase Likely Significant Effects without Mitigation

14.9 Mitigation

14.9.1 Construction Phase Mitigation

A suitably qualified archaeological consultant shall be appointed to undertake monitoring of works during the construction phase.

Licenced archaeological monitoring of the excavation of topsoil during the construction phase of the development. This will be under license from the National Monuments Service of the Department of Culture, Heritage and the Gaeltacht.

Should archaeological or architectural heritage features, deposits or structures be uncovered these will be cleaned by hand, investigated and recorded. The DCHG and the NMI should be contacted and a strategy to resolve these finds should be formulated. This could include preservation in situ or preservation by record.

14.9.2 Operational Phase Mitigation

As there will be no impact on any archaeological remains during the operation phase of the proposed development, no mitigation measures are required.

14.10 Residual Impact Assessment

14.10.1 Construction Phase

Subject to the implementation of appropriate archaeological mitigation measures, no residual impacts on archaeology or cultural heritage are predicted as should any archaeological remains be identified they will be subject to full resolution (i.e. archaeological excavation), thereby being preserved by record.

14.10.2 Operational Phase

There is no predicted residual impact on the archaeological landscape during the operational phase of the development.

14.10.3 Cumulative

There is no predicted cumulative impact on the archaeological landscape as a result of the development.

14.11 Interactions

There is a potential interaction between Land & Soils and Archaeology and Built Heritage and Archaeology. These chapters have been fully reviewed and cross referenced during the course of the compilation of this chapter.

14.12 Monitoring

A suitably qualified archaeological consultant shall be appointed to undertake licenced archaeological monitoring of the excavation of topsoil during the construction phase of the development. This will be under license from the National Monuments Service of the Department of Culture, Heritage and the Gaeltacht.

14.13 Summary of Mitigation & Monitoring

The Table below summarises the proposed construction phase mitigation and monitoring measures.

Likely Significant Effect	Mitigation	Monitoring
In the event that unidentified sub surface remains are present: significant negative impact	Licensed archaeological monitoring of topsoil stripping	Assessment and consultation with DCHG and NMI

Table 14.3 Summary of Construction Phase Mitigation and Monitoring

The Table below summarises the proposed operational phase mitigation and monitoring measures.

Likely Significant Effect	Mitigation	Monitoring
None	None required	n/a

Table 14.4 Summary of Operational Phase Mitigation and Monitoring

14.14 References and Sources

(1) Department of Arts, Heritage, Gaeltacht & the Islands, 1999, Policy & Guidelines on Archaeological Excavation.

(2) Bennett, I. (ed.) 1987−2010 Excavations: Summary Accounts of Archaeological Excavations in Ireland. Bray. Wordwell.

(3) Environmental Protection Agency 2017 Draft Guidelines on the information to be contained in Environmental Impact Assessment Reports.

(4) Harbison, 1975, Guide to the National Monuments of Ireland, Gill and Macmillan.

(5) Mallory, J.P. and McNeill, T.E. (1991) The archaeology of Ulster from colonization to plantation. Institute of Irish Studies, Queens University Belfast.

(6) National Monuments Acts 1930-2004. The Stationary Office. Dublin.

(7) National Roads Authority and Department of Arts, Heritage, Gaeltacht & the Islands, 2000, Code of Practice.

(8) O'Donovan, 1839, Letters containing information relative to the Antiquities of the Dublin County collected during the progress of the Ordnance Survey in 1840.

(9) Thomas, A. 2006. The Walled Towns of Ireland. Irish Academic Press. Dublin.

(10) Department of Arts, Heritage, Gaeltacht & the Islands, 1999, Framework & Principles for the Protection of the Archaeological Heritage.

www.archaeology.ie

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CHAPTER 15
CULTURAL HERITAGE: BUILT HERITAGE

MAY 2021

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15 Cultural Heritage: Built Heritage

15.1 Introduction

This chapter of the environmental Impact Assessment Report (EIAR) provides an assessment of the built heritage significance of the subject site at Deer Park, Howth, Co. Dublin, its setting and context, and the built heritage elements within the wider context, including Protected Structures, the Howth Castle Environs Architectural Conservation Area (ACA), and significant views within the area.

Clare Hogan MRIAI was the appointed conservation architect for the scheme and prepared the Architectural Heritage Impact Assessment (AHIA) that accompanied the Pre-Application Consultation stage of this application. On appointment, we undertook a review of this AHIA and carried out independent research and analysis. This research and analysis found largely in agreement with the AHIA drafted by Clare Hogan, with the exception of the status of the historic demesne wall. Hogan considered this wall to be part of the curtilage of Howth Castle, however this assessment considers that the curtilage of the Castle is defined in the Howth Castle ACA and as such considers the wall to be outside of the curtilage and part of the attendant grounds of the Castle. Content from Hogan's report is used to support this chapter and the full report is appended to the EIAR (see Appendix 15.5, Volume III of the EIAR).

This chapter does not relate to archaeological significance, which is covered in Chapter 14 of the EIAR.

The chapter identifies any special architectural and historic character of the subject site, and any other features which are of note. An evaluation of the chronology of the site is also included.

The chapter assesses and evaluates any existing built heritage, both on site and in the immediate setting of the site, which could potentially be impacted by the proposed residential development on a site of approx. 1.7 hectares immediately south of Howth Road and west of the entrance to Howth Castle demesne.

The extent of the study area was established with regard to visual impact on Protected Structures and Architectural Conservation Areas in the wider context, and also encompasses the potential visual impact on key views and landmark buildings within the setting.

The impact of the proposed new residential blocks on significant views and vistas within the Howth Castle Environs ACA and the impact of the proposed development on the setting of the neighbouring Protected Structures at Howth Castle and St. Mary's Church will be assessed.

The subject site is within the historic demesne of Howth Castle, and the historic estate walls runs along the northern and eastern boundary of the site. This is the only feature of built heritage existing at the application area.

The boundary walls of the Howth Demesne, including the northern boundary wall of the subject site, are included on the National Inventory of Architectural Heritage, Reg. Ref. 11358027. This record refers to the Entrance Gateway, Walls and Railings to the Castle Demesne from the Howth Road. The description provided in the NIAH record reads: "*WALLS: Limestone ashlar to pedestrian gateways; undulating profiles to piers; moulded capping (broken in parts).*" The boundary wall on the subject site does not fit this description, and is constructed of rubble limestone rather than ashlar.

Within the immediate environs, the Fingal County Council Record of Protected Structures includes three listings within the demesne of Howth Castle;

- RPS No.0556 Howth Castle - Medieval castle (with later additions and alterations) including wings, towers, stables and 19th century entrance gates
- RPS No.0557 Church (ruin), medieval chapel in grounds of Howth Castle.
- RPS No.0594 St. Mary's Church (C of I) Howth Demesne, Gothic-style mid-19th century Church of Ireland church with spire.

These structures, and the demesne lands of Howth Castle are also included in Fingal County Council's Howth Castle and Demesne Architectural Conservation Area. This ACA extends to include St. Mary's Church, a Protected Structure to the northeast of Howth Castle, along Howth Road.

The boundary wall on the northern boundary of the subject site is a historic demesne wall of Howth Castle. It is not included in the description of the Howth Castle listing on the Record of Protected Structures, nor is it included within the boundary of the Howth Castle ACA. The curtilage of Howth Castle is described in the Howth Castle ACA, and as such it is considered that the historic demesne walls on the subject site are not part of the curtilage of the Protected Structure. It is considered that the wall is part of the attendant grounds of Howth Castle and as such has no statutory protection. The wall will nonetheless be treated with consideration and protected and retained within the proposed scheme, with limited intervention and conservation works to the fabric to be carried out.

There are four National Monuments on the Howth Castle demesne; the Chapel (Ref. No: DU015-026), the Castle Tower-House (Ref. No: DU015-027001), the Gate-House Tower (Ref. No: DU015-027002), an Armorial Plaque on the Castle (DU015-027003), and the Burial Ground at St. Mary's Church (Ref. No: DU015-042).

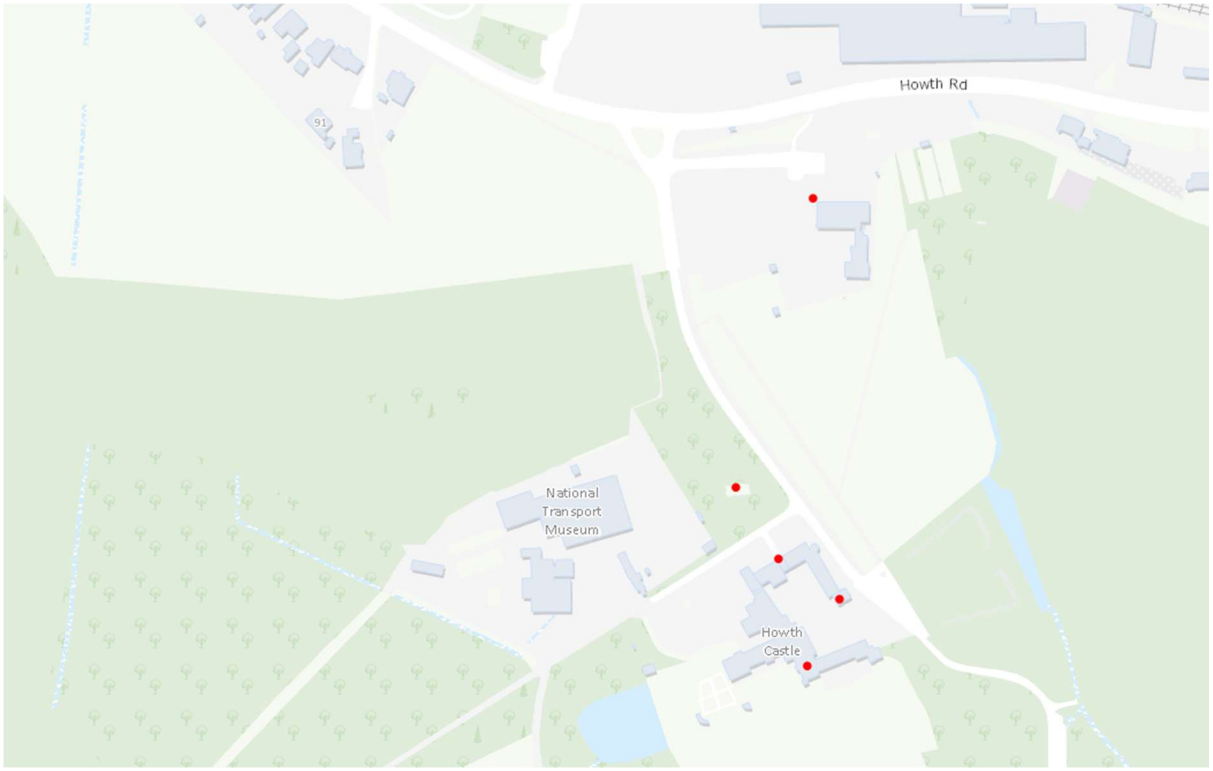

Figure 15.1: Map extract from Heritage Maps website, with red dots indicating National Monuments in the vicinity of the subject site.

15.2 Relevant Experience and Expertise

This chapter has been prepared by James Slattery, MRIAI, Principal at David Slattery Conservation Architects Ltd. James Slattery completed a BArch in 2001, and a Dip ABRCons in 2008. He is a member of the Royal Institute of the Architects of Ireland.

Relevant experience includes the preparation of the Built Heritage Chapter within an EIAR for the former Bailey Gibson Site, South Circular Road; the Dart Underground Project; the Luas Line Extension; the ESB Headquarters on Fitzwilliam Street; Heuston South Quarter; the redevelopment of the Boland's Quay site;, and the redevelopment of the RTE Campus. Ongoing projects on similar SHD developments include the former Player Wills site on the South Circular Road, the redevelopment of the Holy Cross College lands at Clonliffe Road, Dublin 3, and the former Tedcastles Site, Dun Laoghaire.

15.3 Proposed Development

A full description of the proposed development is set out in **Chapter 2** of this EIAR.

The design rationale is to create and deliver a high quality, sustainable, strategic housing development which respects its setting and maximises the site's natural attributes while achieving maximum efficiency of existing infrastructure. The Proposed Site Layout is illustrated on **Drawing No. 1101** contained within the architectural suite of drawings.

The development will consist of;

i. 162 no. residential units distributed across 3 no. blocks (A, B & C) ranging in height from 5-6 storeys, with a cumulative gross floor area (GFA) of 13,337.10 sq.m comprising;
    a. 29 no. 1-bedroom units, - 17.9%
    b. 104 no. 2-bedroom units and – 64.2%
    c. 29 no. 3-bedroom units – 17.9%
ii. 3 no. resident services and amenity rooms (1 no. in each block A-C) to accommodate co-working space, a community room and a meeting room (combined GFA 108 sq.m)
iii. 132 no. car parking spaces at basement level (underlying Blocks A & B) including 6 no. accessible spaces, 13 no. electric vehicle spaces and 4 no. car sharing spaces;
iv. 325 no. residents bicycle parking spaces (long-stay) at basement level, and 30 no. visitor bicycle parking spaces (short-stay) at surface level;
v. communal amenity space in the form of courtyards and roof gardens (combined 2,192 sq.m)
vi. public open space of 1,161 sq.m including a botanic garden and pocket park;
vii. a single storey ESB sub-station and switch room (45.5 sq.m);
viii. demolition of 2 no. sections of the existing demesne northern boundary wall to provide, a primary access (vehicular/pedestrian/cyclist) to the northwest and a separate pedestrian/cyclist access at the centre;
ix. restoration and refurbishment of the remaining extant northern and eastern demesne boundary wall;
x. change of use and regrading of part of the Deer Park Golf Course from active recreation use to passive amenity parkland and planting of a woodland belt on the southern boundary;
xi. undergrounding of existing ESB overhead lines, and, relocation of the existing gas main; and,
xii. all ancillary site development works including waste storage and plant rooms at basement level, drainage, landscaping/boundary treatment and lighting.

15.3.1 Aspects Relevant to Assessment

The detail of this proposal is clearly illustrated on the accompanying documentation, prepared by MCA Architects.

Briefly, the proposed development comprises of three pavilion type blocks and associated amenity areas arranged in a north south orientation permitting views between the buildings to the backdrop of the original demesne.

It is proposed to remove 2 no. sections of the northern historic boundary wall in order to permit vehicular/cyclist/pedestrian access to the site on the existing demesne north-western boundary wall and a separate pedestrian/cyclist access at the centre that will facilitate public access to the landscaped area behind the demesne wall. These works will involve the careful taking down of the sections of the wall affected. Conservation works to the wider demesne wall along the northern boundary are intended. This includes removal of ivy that is compromising the wall and carrying out repair works. The material removed to facilitate the access will be reused in the conservation works so as to maintain authenticity.

Figure 15.2: Extract from the Proposed Site Layout Plan, showing the location of the two proposed new entrances in the existing boundary wall.

It is proposed to remove a large section of hedgerow that is approx. 25 years old that traverses the southern portion of the site in an east-west alignment forming the boundary to the golf course. To mitigate its removal, it is proposed to relocate the tree specimens in so far as is practical and reinforce with native trees along the southern boundary of the application area.

The site is positioned at the edge of Howth Castle demesne and there will be minimal works to the historic boundary wall along the northern boundary. The proposed works to the historic boundary wall will be carried out in accordance with the Conservation Specification (Appendix 15.3, Volume III of the EIAR). Works will not affect the eastern boundary wall that encloses the site or trees that line the Avenue leading to the castle.

15.4 Methodology

The cultural heritage value and significance of the proposed development site has been assessed in accordance with the Planning and Development Act 2000 (as amended), the Department of Arts Heritage and the Gaeltacht 'Architectural Heritage Protection: Guidelines for Planners', 2011, and the Fingal County Council Development Plan 2017-23.

A full evaluation of the chronology of the historic Howth Castle demesne and of the building fabric on the Howth Castle estate has been carried out in the preparation of this chapter. This evaluation has been carried out with reference to a number of important resources. These include the following -

- Trinity College Map Library
- the National Library of Ireland
- the Irish Architectural Archive
- Dictionary of Irish Architects
- Britain from Above – Online Photographic Collection
- Irish Photo Archive – Online Photographic Collection
- Irish Times Archive
- Private Collection of St. Lawrence family

This chapter also makes reference to an Architectural Heritage Assessment Report (see Appendix 15.5, EIAR, Volume III) for this proposed development prepared by Clare Hogan, RIAI, and submitted as part of the pre-application consultation documentation to An Bord Pleanála (TC06F.308497) in advance of lodging this application.

This chapter has been prepared having regard to the following;

- Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment (Department of Housing, Planning & Local Government, 2018);
- Environmental Impact Assessment of Projects: Guidance on the preparation of the Environmental Impact Assessment Report (European Commission, 2017);
- Guidelines on the Information to be Contained in Environmental Impact Assessment Reports, Draft (EPA, 2017);
- Advice Notes for Preparing Environmental Impact Assessment Reports, Draft (EPA, 2015);
- Advice Notes on Current Practice in the Preparation of Environmental Impact Statements, (EPA, 2003);
- Guidelines on the Information to be Contained in Environmental Impact Statements, (EPA, 2002)
- Urban Development and Building Heights: Guidelines for Planning Authorities, (Department of Housing, Planning and Local Government, 2018)

The impact of the proposals on the cultural heritage value of the subject site has also been considered with regard to national and international guidelines and conservation charters, including:

- Architectural Heritage Protection: Guidelines for Planning Authorities, (Department of Arts, Heritage and the Gaeltacht, 2001);
- Granada Convention for the Protection of the Architectural Heritage of Europe, (Council of Europe, 1985).
- Venice Charter for the Conservation and Restoration of Monuments and Sites, (ICOMOS, 1964).
- Part IV: Architectural Heritage, Planning and Development Act, 2000.
- NIAH Handbook (Department of Culture, Heritage and the Gaeltacht, 2017).

The description of likely significant effects included in this chapter is in line with Table 3.3 of the Draft EPA Guidelines, which is reproduced in Chapter 1 of this EIAR.

The proposal for the subject site has been assessed with regard to its potential impact on the cultural heritage of the subject site, and any visual impact on the architectural character of the surrounding structures and area. The visual impact of the proposed development on key views and vistas within the adjoining Howth Castle ACA and the Fingal County Council Development Plan has also been assessed.

Key heritage viewpoints, prepared by 3D Design Bureau, have been assessed. These can be found in the separate photomontage book **'Photomontages to accompany Built Heritage - Chapter 15 EIAR Vol II**' .The locations of these viewpoints were selected so as to illustrate the impact on the Protected Structures and the ACA in the wider context of the subject site and were selected based on

- Views identified within the Fingal Development Plan 2017-2023 and the Howth Castle Architectural Conservation Area
- Views requested by the Architectural Conservation Officer of Fingal County Council
- Views and vistas observable from wider context

11 no. views were selected, the locations are described in the Table below and illustrated on the Figures.

View Ref	Location
View 14	View of Howth Castle front
View 13	View of Howth Castle front from parkland
View 12	View along avenue towards main entrance gates Howth Castle
View 7	View along Howth Road showing historic demesne wall
View 11	View towards subject site from front setting of St. Mary's
View 16	View from courtyard Howth castle
View 15	View from turret room Howth castle (upper floor of the Castle)
View 6	View towards main entrance gates Howth Castle from Howth Road
View 17	View from woodland area to the west of Howth Castle
View 18	View from golf course
View 19	View from Muck Rocks

Table 15.1 Viewpoint – Description of Locations

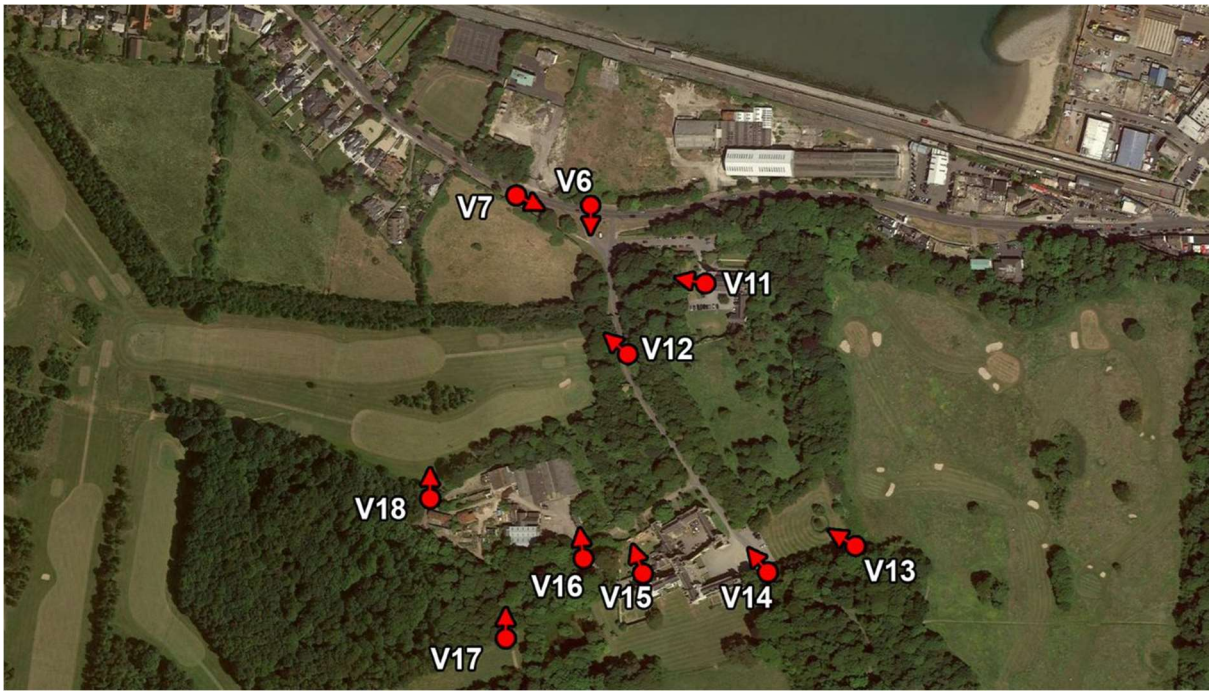

Figure 15.3: Location of Viewpoints, extract from Map by 3D Design Bureau.

Note: due to the distance from the proposed development site View 19 is not included in the image above. Its location is shown in the 3DDB photomontage book.

As noted above, the locations of the heritage viewpoints were selected so as to illustrate the impact on the Protected Structures and the ACA in the wider context of the subject site and were selected based on

- Views identified within the Fingal Development Plan 2017-2023 and the Howth Castle Architectural Conservation Area;
- Views requested by the Architectural Conservation Officer of Fingal County Council; and,
- Views and vistas observable from wider context.

15.4.1 Fingal Development Plan 2017-2023

Within the operative plan, Chapter 10 deals with Architectural Heritage and Culture and provides the following strategic approach to protecting and enhancing the built heritage that Fingal County Council will follow.

The necessity to manage change when dealing with heritage in order to retain its significance is well established conservation practice and is the driving force behind the listing of buildings of special interest.

The project team were made aware of these objectives at the early stage of the design development and the design submitted for permission is consistent with the objectives.

The relevant objectives provided within the operative Plan are:

Objective HOWTH 1

Ensure that development respects the special historic and architectural character of the area.

OBJ CH20
Ensure that any development, modification, alteration, or extension affecting a Protected Structure and/or its setting is sensitively sited and designed, is compatible with the special character, and is appropriate in terms of the proposed scale, mass, height, density, layout, materials, impact on architectural or historic features, and junction with the existing Protected Structure.

OBJ CH21
ACA – Howth Castle demesne
A protected structure within an ACA protection 'extends to the interior and curtilage of these properties'

OBJ CH32
Avoid the removal of structures and distinctive elements (such as boundary treatments, street furniture, paving and landscaping) that positively contribute to the character of an Architectural Conservation Area.

OBJ CH45
Utilise existing surveys to identify and evaluate the surviving historic designed landscapes in Fingal and promote the conservation of their essential character, both built and natural.

OBJ CH46
Require that proposals for development within historic designed landscapes include an appraisal of the designed landscape (including an ecological assessment) prior to the initial design of any development, in order for this evaluation to inform the design which must be sensitive to and respect the built heritage elements and green space values of the site.

OBJ DMS157
Ensure that any new development or alteration of a building within or adjoining an ACA positively enhances the character of the area and is appropriate in terms of the proposed design, including: scale, mass, height, proportions, density, layout, materials, plot ratio, and building lines.

OBJ DMS159
A Designed Landscape Appraisal should accompany any development proposal for an historic demesne and/or designed landscape, to include:

- *Identification and description of the original development, history, structures, features and boundaries of the designed landscape.*
- *Ecological assessment, including identification of any protected habitats or species.*
- *Evaluation of the significance of the historical landscape.*
- *Determination of the carrying capacity of the lands which should not be exceeded, to be agreed with the Council.*
- *Assessment of the development proposal and its impact on the designed landscape.*
- *Recommendations for mitigation and management of the built and natural heritage.*

15.5 Difficulties Encountered

No significant difficulties were encountered in compiling the relevant information and the current report is based on desktop review and non-disturbance on-site assessment only. No intrusive opening up, investigations or excavations have been carried out to the wall fabric.

15.6 Consultation

In accordance with the Opinion from An Bord Pleanála, issued January 2021, the following architectural heritage related prescribed bodies have been notified of the lodgement of the application:

- Department of Culture, Heritage and the Gaeltacht.
- The Heritage Council.
- An Taisce.

Section 247 pre-application meetings were held with Fingal County Council (FCC) during the design development phase and full details are contained in the Planning Statement that accompanies this application under separate cover.

The Planning Authority highlighted objective Howth 1 of the Fingal Development Plan: Ensure that development respects the special historic and architectural character of the area.

The County Architect supported the proposed pavilion style development. Access to the proposed development site via the Howth Castle gates and avenue was discouraged. Acting on this advice, the proposed development's access is proposed from the northern site boundary directly onto the Howth Road.

The Planning Authority highlighted that protecting the sylvan nature of the area and the setting of Protected Structures including the entrance gates to Howth Castle is a priority. This has been taken into consideration in proposed landscape design. Trees lining the Avenue are outside the application area and the proposed development will not impact them. It is proposed to partially remove the hedgerow that traverses the application in an E-W alignment. This hedgerow is approx. 25 years old as evidenced by aerial photography from 1995 available on heritage.ie.

The proposed design includes a comprehensive landscape proposal both within the residential area and enhancements along the southern boundary.

The siting of the blocks was reviewed and adjustments were made that allowed Block C (the most easterly building) to move west, and further away from the Howth Castle Gates.

The Conservation section noted that increased height at this location is inappropriate due to inter alia Protected Structures, the High Amenity zoning to the south and the parkland setting. The Architectural Heritage Assessment Report prepared by David Slattery Conservation Architects Ltd that accompanies this application (submitted under separate cover) provides a justification for the proposed development having regard to the surrounding historic environment. This chapter of the EIAR includes an assessment of the proposed development on 'heritage views' and concludes that the proposed development will have no visual impact on the setting of the neighbouring Protected Structures or on the parkland character of the Howth Castle ACA as the new development will be largely screened from view by the existing and proposed trees. This will ensure that the sylvan character will be retained.

The Fingal County Council Conservation Officer noted concerns with respect to the proposed development, with particular emphasis on the impact on the approach to Howth village and Howth Castle, and the setting of Howth Castle, the ACA and the SAAO. The Fingal County Council Parks department also noted the specific context of the historic designed landscape of Howth Castle and Demesne at this meeting. A detailed response to the conservation issues highlighted in the Opinion issued by Fingal County Council to An Bord Pleanála has been prepared and is included under separate cover with this application.

15.7 Historical Background and Context

15.7.1 Subject Site

As noted above, the subject site is located within the historic demesne lands of Howth Castle. Historic maps show that this area of the demesne was in use as part of the Deer Park. A race-course was laid out in the Deer Park c. 1829, part of which was located in the subject site. The route of this course can be clearly seen on historic mapping, however there is no longer any physical evidence of the race course.

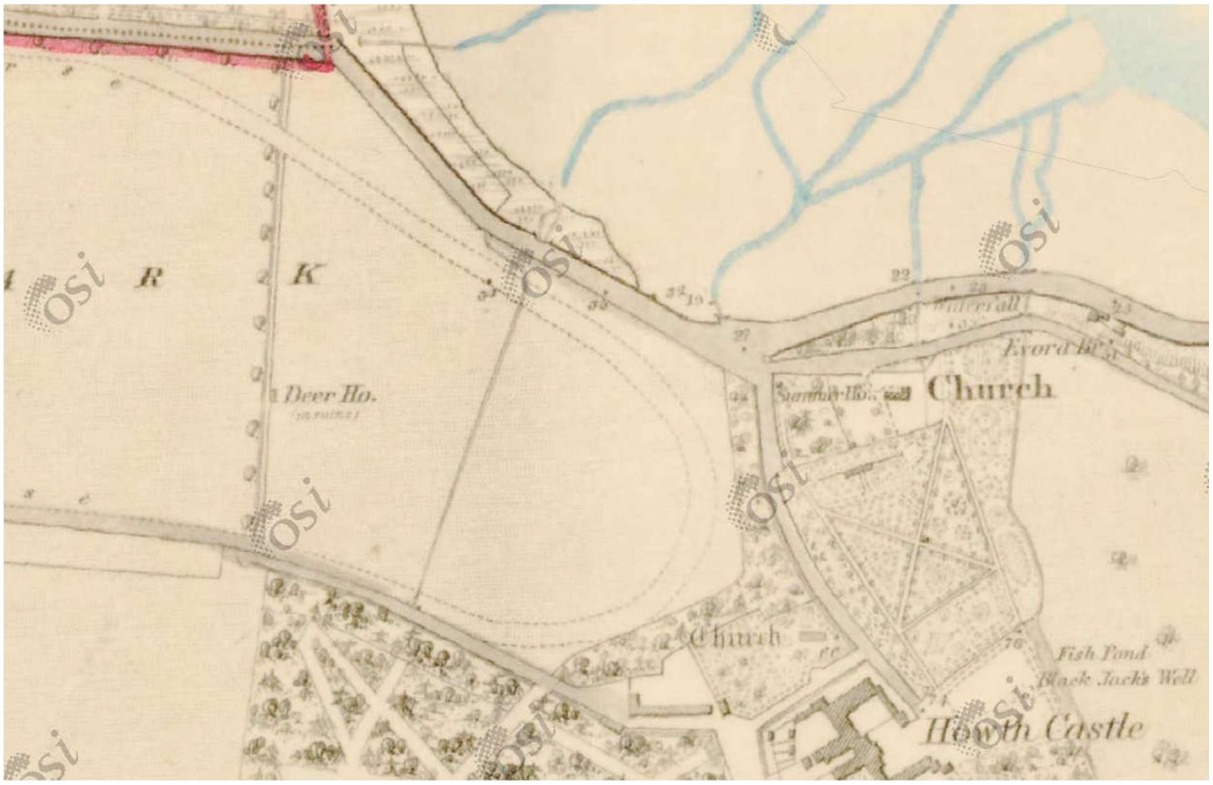

Figure 15.4: Extract from 1st Edition Ordnance Survey Map, 1837-43, showing the location of the race course in the Deer Park of Howth Castle.

A tall (approx. 2.5m) demesne wall survives along the northern boundary of the subject site. This wall originally enclosed the deer park. The wall is constructed using locally quarried limestone and in a random rubble construction. The construction date is not known, and construction may have taken place over a series of phases.

15.7.2 Howth Castle and Demesne

Following the invasion of the Anglo-Normans, Amoricus Tristam (later St Lawrence) landed on the peninsula with a sizeable military force, defeated its Danish inhabitants and was rewarded with the establishment of the St Lawrence family as Lords of Howth. Initially received

as a grant from Strongbow, the astute family never opposed an English king and thus held onto their lands throughout the centuries. Their first castle, most likely a motte and bailey structure, was built by the sea on an important strategic site at the present location of the Martello Tower until, in 1235 a deed references indicates a new castle built where the present building now stands. The seat of thirty successive barons of Howth, since the twelfth century, it had, until sold recently, the unique distinction of being inhabited by the same family for over seven hundred years.

Howth Castle was the home of the St. Lawrence family from the 12th century, and was altered and extended over a number of phases during the succeeding centuries. It is believed that the Castle was constructed in its present location in the 13th century, replacing the old Howth Castle, which had been closer to Howth harbour. Sources consulted in the preparation of this report indicate that the Keep, or Southern Tower, is the original keep of the Castle in this location, and, along with the Gateway Tower, is the oldest surviving section of the Castle today. A detailed account of the development of each of the elements of the Castle is included below.

A Great Hall was added to the 15th century Gate-House Tower and Keep in the mid-16th century, along with an enclosure wall and turrets. A further floor was added to the Hall in the mid-17th century, and the East wing was added in the late 17th century.

The castle was extensively modernised and enlarged in 1738, with the addition of the North Tower, the North and West wings, the entrance door and terrace, and several ancillary farm buildings within the demesne. These works have been attributed to Francis Bindon, and the appearance of the Castle following these works can be seen in an oil painting from this time which hangs in the Castle. It is believed that the Beech Hedges were also laid out in the early 18th century.

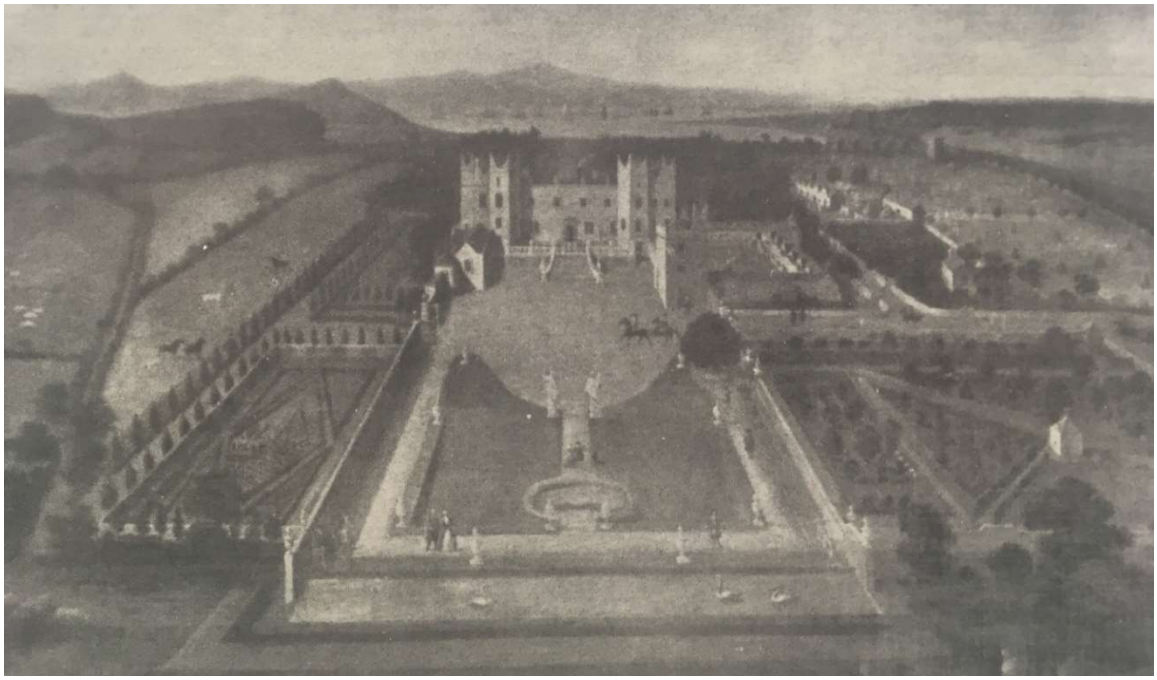

Figure 15.5: ***Painting of 'Prospect of the House of Howth', dated circa 1745.***

The basic plan form of the Castle, and the general lay-out of the demesne, in the mid-18th century is indicated on John Rocque's *Map of Dublin City and Environs*, 1757. The moat/pond to the front of the Castle has been laid out by this time. A drawing of the Castle after Francis Wheatley, c. 1780 (see below) gives a more detailed view of the front of the castle at this time.

Figure 15.6: Extract from Milton's View of Irish Seats, after Wheatley, 1780, showing Entrance front of Howth Castle.

Bosquet, in his '*Howth, A Descriptive Poem'* (1787), writes "*A Sweet Improvement Hangs Upon the Right, The Park and Gardens Wind Along the Coast; Here the Court Holds an Elevated Site, By Groves Protected from the Northern Blast*".

There are drawings by Johnston and Murray, and by the Pain brothers, of unexecuted plans for the castle from the 1820s, and also designs by John Louch from this time, of which the crow-step crenellated parapet to the south-east wing appears to have been the only element that was executed. Richard Morrison proposed works to Howth Castle in the mid-19th century, but only the Gothicisation works to the stables and some works to the South-Western wing appear to have been carried out.

The Gothic style gateway, and adjoining Gate Lodge, attributed to Richard Morrison, appear to have been constructed in the mid- 19th century, between 1848 and 1850, as were the round tower and turret at the corner of the Coach Yard. A Gate-Lodge was built near the deer-park, to the designs of Joseph Maguire, in 1872, and James Hogan and Sons, Plain and Ornamental Stucco Plasterers, Cement Workers and Modellers, noted in 1875 that they were carrying out "*a large amount of work at Howth Castle".* The Irish yew trees along the approach avenue to the Castle were planted in the mid-19th century.

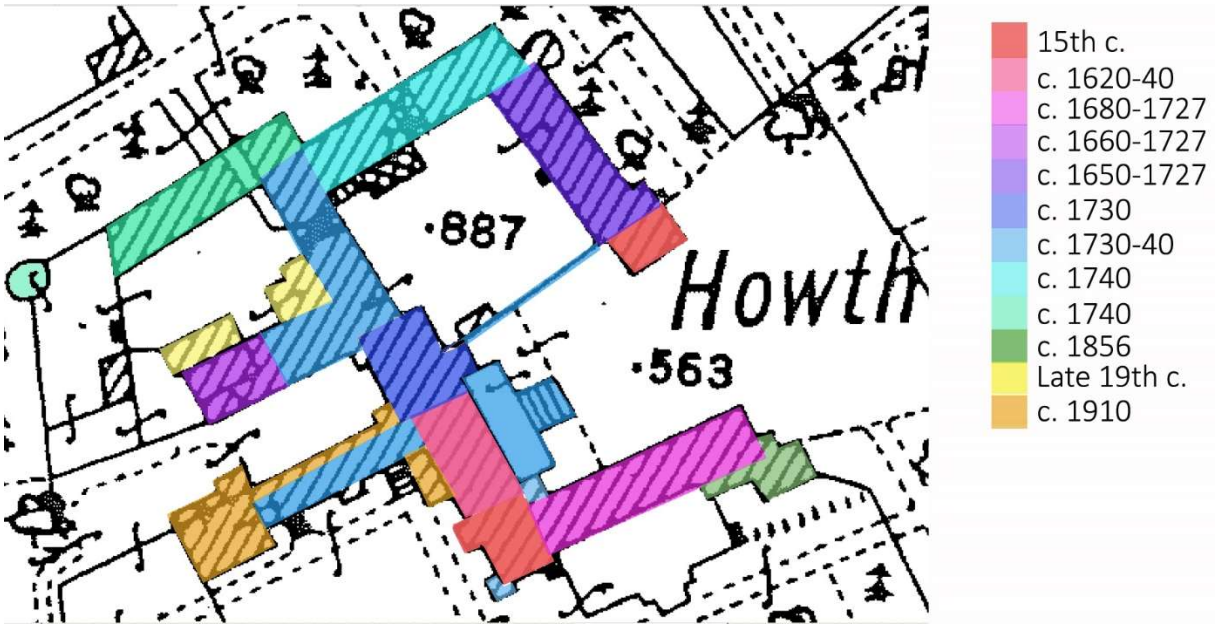

Figure 15.7: Plan showing the apparent Fabric Chronology of Howth Castle, drawing from Historical Accounts, Images and Maps.

In the **Figure** above, the subject site is located to the north of the Castle demesne.

From 1910-11 extensive alterations and additions to the Castle were carried out, to the designs of Edwin Lutyens. These works were overseen by F. Higginbotham, the estate engineer. The works included the addition of a Tower to the rear of the Castle, the Chapel in the East Wing, a loggia and corridor in the Drawing Room Wing, and landscaping works, including a sunken Dutch garden. The drawings for these works survive, and remain in Howth Castle today.

A golf course was built in the north-western portion of the demesne in the 1970s, and the modern Deer Park Hotel, designed by Ryan and Hogan Architects, was completed on the lands in 1974. This portion of land is no longer considered to form part of the modern demesne or the curtilage of Howth Castle. This view is supported by the Statement of Character for the Howth Castle ACA which states in reference to the definition of the boundary of the ACA: "*As much of the demesne lands would have been altered to accommodate the golf course and hotel complex, the boundary of the ACA was reviewed and limited to a core area surrounding Howth Castle and the entrance avenue*". Access to the Golf Course and Hotel is along the avenue to the Castle. The National Transport Museum was established in the complex of buildings to the north of the Castle in recent times. Permission was granted in 2007 for the conversion of the old Castle Kitchen, which had not been in use for fifty years, for use as a commercial Cookery School.

In order to determine the chronology of building on the Howth Castle demesne and its wider setting of the historic Howth demesne, a number of historic maps and images were consulted (the relevant plates are appended to the EIAR, Appendix 15.1, Vol III, and should be referred to). These are as follows –

15.7.3 Historical Maps & Other Sources

15.7.3.1 Down Survey Maps, 1656-68

This early map of Howth does not provide great detail, however the accompanying documentation records that "*There is upon ye Premises one faire Mansion house, two Castles, One Stables One Barne One Dove House and several other Office house of Stone Slated valued by ye Jury at 600li together with an Orchard, two gardens and a Grove of Ash trees set for Ornament, also ye Walls of a decayed Chapel: There is also in ye said Island a Township of Village…There is upon ye premises a Large Conny Warren and a Quarry of slate.*"

The Castle is marked on the map with a small sketch, however this does not appear to accurately represent the Castle at this time.

This map provides no detail relating to the subject site.

15.7.3.2 Francis Bindon's Prospect of the House of Howth, 1745

This painting, attributed to Francis Bindon and hanging in Howth Castle toady, shows the Castle and formal gardens to the forecourt following the extensive alterations and additions in 1738. The Gateway Tower is pictured, framing the forecourt to the Hall of the Castle. A flight of steps leads up to the terraced entrance to this Hall. The Castle appears to be a two-storey-over-basement building, indicating, following the 16th century addition of an extra floor above the Hall. The 15th century Keep of the Castle is to the left (south) of the Hall, and has been mirrored by a new Tower to the North of the Hall. The East wing appears to be a simple single-storey pitched roof structure, and the East Tower has not yet been constructed. The Stables adjoining the Castle to the immediate North of the Gateway Tower also appear on this painting, although in a more simple form than today.

The formal gardens and designed landscape features of the demesne at Howth Castle are also illustrated in this painting, although it appears that some of the features depicted here were never executed. The features which were realised include the two formal lawns at the forecourt of the Castle, culminated by a rectangular canal or moat, the circular pond known as Black Jack's Well between the two lawns, and the geometric beech hedges in the Walled Garden, to the bottom right of the painting. A small summer-house is illustrated at the meeting of the paths of Beech Hedges. The St. Lawrence Tree is noted to the front of the Gateway Tower. Behind the Walled Garden, the avenue is depicted as turning to the West, along the side of the Stable block towards the ancillary farm structures. This route of the avenue has been maintained to the present. To the left of Black Jack's Well there are further formal

gardens and walks. The surrounding demesne lands are depicted as fields. There are views past the Castle across Dublin Bay towards the city and the mountains to the South. The Hill of Howth is to the left.

Minimal detail on the subject site is illustrated in this image. It appears that there is a wall and a line of trees running East-West in the approximate area of the subject site. .

15.7.3.3 John Rocque's Map of Dublin City and Environs, 1757

This map provides a detailed view of the Castle and Demesne lands, including landscape features such as the Walled Garden and Moat.

The entrance steps to the Castle from the forecourt are noted along the North-Eastern face of the Castle, and the forecourt is framed by the East wing to the South, and the Wall to the Gateway Tower to the North. Further to the North is the Stable yard, which is enclosed on three sides by stable and service buildings. The kitchen wing and the West wing are depicted on this map, although both appear to be shorter than they are at present.

The approach to the Castle is from the North, along the line of the present entrance avenue. The Beech Hedges in the Walled Garden are depicted, as are the formal lawns to the forecourt. There appear to be remnants of an earlier structure to the South-West of the Castle, however as there are only fragments of structures and some walls, it is not clear what this may have originally been. The Swan Pond and long lawn to the rear are noted in this map, with wooded areas to either side of the lawn. Paths are laid out through this wooded area in a geometric fashion.

There is relatively little detail provided on the subject site in this map. There appears to be a boundary wall in the approximate location of the existing historic wall on site. A lime kiln is noted to the northern side of the Howth Road.

15.7.3.4 Taylor and Skinner's Road Maps of Ireland, 1777

This map does not provide a detailed view of the demesne, and the sketch figure of the Castle does not appear to be an accurate representation of the Castle. However, the map does illustrate the importance of the Castle on routes through Dublin.

15.7.3.5 Thomas Milton's View of Irish Seats, 1780

This image provides a more detailed view of the Castle in the 18th century. The North Tower, the Hall, the Keep and the East Wing are all shown on this image, and details such as the crenellated battlements on the towers, and the number of panes of glass in each window provide a richer understanding of the appearance of the Castle at this time. The East Tower has not yet been added to the Castle, and the East wing appears as it did in the earlier 18th century painting of the Castle.

The picture does not provide much detail of the demesne features, although a section of a formal lawn, surrounded by paving stones and paths, with some statuary, is depicted in the foreground.

The subject site is not visible in this image.

15.7.3.6 George Petrie, after Wheatley's View of Howth Castle, c. 1770-80

There do not appear to have been any alterations carried out to the Castle by the time of this early 19th century engraving. The designed landscape features in the forecourt also appear unaltered from Milton's earlier depiction.

The subject site is not visible in this image.

15.7.3.7 1st Edition Ordnance Survey Map, 1837-43

This map provides an accurate and detailed survey of the Castle and demesne. Some alterations to the Castle are visible on this map: the Kitchen wing appears to have been extended by this time, and the Eastern Tower has been built.

Features within the demesne such as the Fish Pond (Moat), the Swan Pond, and Black Jack's Well are noted on this map. There is a race-course to the North-West of the Castle, in the Deer Park. A Deer House in this area is noted as being in ruins. Walks and routes within the demesne are illustrated on this map, of particular significance is the route thorough the demesne to the Cromlech on the Hill of Howth.

The subject site is illustrated as part of the historic Deer Park at Howth in this map. Dotted lines indicate the race course, which is also noted on the map. Tree copses and woodland are noted to the south and east of the subject site on this map, between the site and the Castle and Entrance Avenue.

15.7.3.8 Scenery and Antiquities of Ireland, 1841

This view, taken from atop the Hill of Howth, gives an overall impression of the woodland and parkland setting of the Castle. The Castle itself is not depicted in sufficient detail as to inform of any alterations by this time. Howth Harbour, Ireland's Eye and Lambay Island are visible in the background.

No detail on the subject site is provided in this image.

15.7.3.9 McFarland's A Drive from Dublin to Howth, 1853

Four views of the Castle and Demesne of Howth are included in this mid-19th century book. These are: *North View of Entrance Gate to Lord Howth's Demesne; South View of Above Gate; The Castle, the Residence of the Rt. Hon the Earl of Howth; and, View of Demesne from Happy Valley.*

The first two of these show the neo-Gothic front Entrance Gate-Way and Gate-Lodge, attributed to Richard Morrison. These were not included on the 1st Edition Ordnance Survey Map, and are therefore believed to have been constructed during the 1840s. This entrance is set back a significant distance from the Howth Road.

The front view of the Castle is taken from roughly the same viewpoint as Milton's 1780 view, and reveals several alterations that have taken place in the intervening years. These include the Gothicisation of the Stable Block and the East Wing, and the construction of the East Tower (partially obscured in this picture).

No detail on the subject site is provided in any of these images. The views of the Gate Way to Howth Road clearly show the sylvan character of the entrance avenue, and obstruct any views of the subject site.

15.7.3.10 Ordnance Survey Map, 1870-72

There are a few minor alterations and additions to the Howth Castle demesne apparent on this map. The 1840s Entrance Gates and Gate-Lodge are depicted, to the West of the Walled Garden, and a number of ancillary structures in the Farmyard have been constructed. To the north, outside of the demesne, is the railway line and Howth Railway Station, which opened in 1847.

The race-course is no longer noted on the subject site on this map, although portions of the race course appear to survive to the west. A line of trees appears to have been planted to the west of the subject site, separating it from the historic Deer Park. A stream or ditch is noted on the subject site.

15.7.3.11 Ordnance Survey Map, 1907-11

This map provides a detailed view of Howth Castle and Demesne immediately prior to the Lutyens' designed extension and alterations. There are no apparent alterations to the Castle or Demesne since the previous (1870-72) Ordnance Survey Map.

There are no alterations to the subject site apparent in this map.

15.7.3.12 1966 Ordnance Survey Map

There have been some alterations to the Stable Yard and associated structures at the Castle.

There has been small scale residential development along Howth Road, to the immediate west of the subject site. The northern part of the subject site is noted as an Orchard.

15.7.3.13 Current Ordnance Survey Map

There appear to have been no further additions to the Castle since the Lutyens' additions in the early 20th century. A number of the ancillary service structures to the immediate west of the Stable Yard have been demolished, including the western end of the Kitchen wing. The

Farmyard has been redeveloped as the National Transport Museum, and very few of the structures visible on the 1907 OS Map survive.

The wider demesne has been altered significantly, with the conversion of much of the lands into the Deer Park Golf Course. A description of the surviving features of interest is included below.

Trees have been planted throughout the demesne, including in areas to the south of the subject site, and the existing tree line running across the subject site.

15.7.4 St. Mary's Church

The following brief historical account of St. Mary's Church has been extracted from the report prepared by Clare Hogan included in Appendix 15.5 (Vol. III):

"Present church on the site consecrated in 1866. Designed by J. E. Rogers in thirteenth century style with tower in north west angle with 80g spire terminating in a finial. 'The established church is a neat building, situated on an eminence at the entrance of the town, with a tower and pinnacles;' Slater's Commercial Directory of Ireland for the year 1846. It features a pointed entrance door with deeply recessed jambs and carved capitals and arch mouldings. Caen stone pulpit and Evie Hone window. The iron entrance gates to the church site are supported by square stone piers with triangular capping stones, set in a random rubble boundary wall. Within the grounds of the church is a new parish centre, built in the early 1990's. The building is located in a prominent position on raised ground."

15.7.5 Corr Castle

The following brief historical account of St. Mary's Church has been extracted from the report prepared by Clare Hogan included in Appendix 15.5 (Vol. III):

"Part of the original demesne, Corr Castle (Cáisleán an Chórraig, the castle of the Marsh) is a gate lodge dating from the 15th century, probably only an outpost of Howth Castle, built on higher ground in order to guard the isthmus at Sutton. Belonging to the White family, it passed into the 'Blind Lord' of St Lawrence family of Howth Castle in the mid-16th century. It consists of 'an oblong tower, four stories high, nineteen and a half by twenty two feet outside, and thirteen and a half by fifteen and a half feet inside. The third story has a stone floor which rests on a vault still bearing the mark of wicker centring over which it was built. For some reason the which is not apparent, this vault covers only part of the space, leaving an opening the whole length of the south wall. Indeed, defence does not seem to have been considered by the builders; no murder-hole or loops command the door, nor are there any machiolations although a corbel for a chimney to the east might easily be mistaken for one…… The stairs are of far better execution than are usually seen in the peel and church towers of the `Dublin district and though, without a newel, the steps are neat and well set. They number forty in all,

and lead to the battlements which command a fine view of the sea, similar to the one from the chief tower of Howth Castle and also of the southern side of the peninsula.' (Elrington Ball)

The area around Corr castle has since been developed as a housing estate and the modest tower house surrounded with blocks of flats constructed in 2000 and set on c.7 acres of private landscaped grounds with the old castle ruins as its centrepiece."

15.7.6 Howth Village

The following brief historical account of St. Mary's Church has been extracted from the report prepared by Clare Hogan included in Appendix 15.5 (Vol. III):

"Howth is a rocky peninsula that reaches out from the north extremity of Dublin Bay into the Irish Sea, about two miles in length, comprising an area of almost one thousand acres. It rises to an impressive height of 560 feet on the skyline, visible from all along the shore, sometimes appearing as an island due to the low elevation at Sutton Cross. On the south side of the peninsula the grand prospect of the bay sweeps for twelve miles in a continuous backdrop of hills to Bray Head. On the northern shore of the peninsula are the port and town, in the centre of which is the ruins of the Abbey of St Nessan. In Elizabethan times it was described as 'one of the largest and best towns in the country' (E. Hogan Description of Ireland in 1598 Dublin 1878 p.37) despite by the eighteenth century still only consisting of a street running along the ridge of the cliff above the sea and along the coast beside the harbour. The census of Ireland in 1659 Sir William Petty, returned 27 persons residing in 'ye House of Howth' and 111 in Howth town.

'several fishing boats that take such fish as is usual on that coast whereof the Lord of Howth hath of every boat the choice of fish which is called the Lords Fish.' 1659 Commonwealth Census

The peninsula was isolated from mainstream city life as the journey from Dublin was costly and dangerous and a boat trip the only other option. In 1803 the Martello tower was constructed on the site of the original castle. Construction of the harbour began in 1807 under John Rennie. Leinster granite from Dalkey; Howth quartzite from the nearby Kilrock quarry and smaller amounts of Howth schist are the main rocks used in the construction of the harbour. An eminently hydraulic mortar made with Blue Lias lime, local limestone aggregate and low water:binder ratios was used below and above the high watermark. Contemporary writers described the development on the peninsula, the local inhabitants and the poverty. In 1837 Lewis identifies prominent residences and the intrepid traveller Mrs Hall - the archaeological interest - 'However if the tourist will 'step ashore' at Howth, he may, before he is half an hour in Ireland, visit some of the most striking and interesting objects in the country – a ruined church, a very ancient castle, some druidic remains a village which is dignified with the name of 'town' and which is essentially Irish in its desolated character.' (Mrs Hall 1840)

Bartlett '..and the little town and harbour with the castle of Howth are pleasantly situated under the shelter of the hill which rises precipitously behind them. The town, or more properly the village, consists of one straggling street; the inhabitants are a rude, hardy race, the greater number of them being fishermen, who hold their cabins rent free, on the ancient tenure of supplying the lord of the manor with the best fish taken in each boat.'

A contemporary account describes the inhabitants as ' ..a singularly hardy, healthy race of men, and generally above the common stature. Their life is a scene of privation and fatigue; after days of incessant labour, they snatch a few hours rest in the wet clothes in which they are drenched, recruit their spirits with fish, potatoes, and whiskey, their only diet, and proceed again to the repetition of their danger and toil. Till very lately they were noted smugglers, and added to the perils of this illicit calling to the hardships of their ordinary life; yet they lived to a great age, and instances of longevity beyond the age of 100 are not uncommon.'

A pamphlet written by Lord Howth depicted the town as 'Many of the houses are of a primitive description and several are in a bad state. As an owner of a town might be held responsible for the condition of its houses, I may add so easy are the rents and their collection, I am out of pocket by the tenancies under my control. My predecessor and myself built fifty one houses in the parish suitable for the poorer classes. The primitive condition of the town is fully exemplified through there being only ten civilized houses that have w.c's attached to them. The town contains practically only two streets, one the main street, which runs straight from the hill to the harbour; its great width and frequent absence of houses on both sides fully discount its shortcomings to the wayfarer.

The street is somewhat narrow; a road has been especially constructed to cut off all traffic, and its inhabitants are alone interested in its surroundings. Save that better lighting is required, I never remember any complaints being made in the public press of the town of Howth.'

(Pamphlet Heaven- Born Officialism, written 1894)

Howth was cut off from the rest of the city until efficient rail and road connections were provided. Residential development then followed the good road connection and the pattern of development from mid nineteenth century onwards was the steady appearance of summer residences on the Hill of Howth availing of the panoramic views and fresh air. The town developed a reputation as a health and holiday resort, credited with the lowest death rate in Ireland and for a while flourished as the local waters were presumed to have curative effects. Numerous hotels and guest houses sprang up to cater for the thousands of seasonal visitors. 'Howth as a sanitary resort, is much frequented by the citizens of Dublin and 296,000 or just upon 300,000 passengers used Howth (railway) station in the year 1893.' (Howth pamphlet)

The peninsula was productive for mining. The 1837 OS map indicates eight quarries, two gravel pits and a manganese and lime works. A lead mine close to the Casana Rock was

industrially worked. References are found for deposits of lead, copper, silver, iron, manganese, arsenic pyrites and gold.

In 1914 Erskine and Mollie Childers, after sailing the Asgarde from Hamburg landed in Howth with a consignment of rifles. Following a brisk unloading of its cargo the yacht set off for Bangor in Wales. Within a week of this incident the First World War broke out and Erskine Childers and three of the crew went off to serve in the British army. The yacht was sold by Mrs Childers in 1926 and today, following a conservation programme, is on view in the National Museum, Collins Barracks.

Irelands Eye is a rugged, rocky island north of Howth harbour with high cliffs on the northern edge. It possesses a Martello tower. On its west side are the remains of a chapel, built by St Nessan in 570. Three quarters of a mile in length by half a mile wide, its natural habitat included rabbits and medicinal herbs. Somewhat barren due to its exposed site, trees are non-existent, however a large variety of bird species nest on the island."

15.8 Existing Environment

The subject site is located on the southern side of the Howth Road, to the west of the entrance to Howth Castle. The site forms part of the historic demesne of Howth Castle, however, it has been altered in modern times as outlined in the preceding section and was not included in the boundary of the Howth Castle Environs Architectural Conservation Area by Fingal County Council.

The site encompasses an area of approx. 1.7 hectares, immediately south of Howth Road and west of the entrance to Howth Castle and Deer Park golf club. The northern portion (1.16 ha), where the proposed residential blocks and ancillary development is concentrated is zoned RS (Residential) in the Fingal County Council Development Plan 2017-23, with the objective to "*provide for residential development and protect and improve residential amenity".* The southern section (0.58 ha) of the site is zoned HA (High Amenity) with the objective to "*protect and enhance high amenity areas".* It is proposed to re-profile the existing landform of this area.

15.8.1 Subject Site

The most significant built heritage feature of the subject site is the historic demesne wall, along the northern boundary to the Howth Road and wrapping around to the eastern boundary. Howth Castle is approximately 175m south of the application area, and St. Mary's Church is approximately 105m to the east. The Entrance Gates to the Howth Castle demesne are set back from Howth Road, to the immediate east of the subject site. There are mature trees along this boundary. There is a significant swathe of mature woodland between the application site and the neighbouring Protected Structures. This is clearly visible in the baseline photomontages prepared by 3D Design Bureau.

The following brief description of the subject site has been extracted from the report prepared by Clare Hogan included in Appendix 15.5 (Vol. III):

"The section of demesne wall that bounds the side of Howth Road is all that remains of the landlord's boundary that originally ran almost to Sutton Cross. It is located beside the main entrance to the castle but separated from the castle buildings with a golf course taking up the intervening grounds. The upper courses have been rebuilt and repointed to a considerable extent. The newer portion of the wall is quite clearly seen although original stones have been used in the construction.

Subsequent rebuilding and repairs can be identified where different mortars were used but this type of wall construction changed little over centuries. The texture of the rock is moderately coarse. The castle quarry produced the clay limestone used in the construction. The mortar used in the original sections has a coarse aggregate. Remains of lime render can be seen along the wall.

Parts of the wall are covered with ivy and until it has been fully removed the condition of the underlying structure cannot be fully assessed. Ivy roots have embedded within joints and these require careful removal so as to do no further damage. Natural erosion of mortar can be seen between some stones and generally the wall appears in sound condition. The use of limestone required a thick wall for structural stability. The mortar varies between soft lime mortar and a modern dense cement based mix. At the location of the proposed residential development the wall height varies, this overall height increased by the supporting bank. The construction is simple and no architect is identified with the work."

Figure 15.8: Photographs along the historic boundary wall to the northern and eastern boundaries of the subject site

There is a heavy tree line running roughly East-West across the subject site, providing visual delineation and screening between the subject site and the surviving demesne of Howth Castle. This line of trees appears to date from the construction of the golf-course. Along with

tree lines to the south of the subject site and within the parkland demesne of Howth Castle, the setting of Howth Castle remains largely pastoral.

The land zoned High Amenity to the south will be retained as a greenfield area post development.

15.8.1.1 Architectural Significance

The boundary wall to Howth Road is of architectural significance based on its historic role within the demesne, and its contribution to the approach to Howth Castle.

The subject site is in a prominent location along the approach to the historic Howth Village, and located adjacent to the primary entrance to Howth Castle demesne. However, despite this Fingal County Council excluded the area of the subject site from the Howth Castle Environs Architectural Conservation Area. This clearly illustrates the level of alteration to the historic demesne landscape, and reflects the separation between the subject site and the remaining section of the Howth Castle demesne. Visual screening of Howth Castle is provided by the mature trees on the demesne landscape, and at the southern boundary of the subject site.

15.8.1.2 Artistic Significance

The subject site has no surviving features which could be considered to be of artistic significance.

15.8.1.3 Archaeological Significance

This chapter does not address archaeological issues, see Chapter 14 of this EIAR.

15.8.1.4 Cultural Significance

References to Howth Castle and Demesne abound in Irish literature, including references to the rhododendron walks in Ulysses. There are no references specific to the subject site.

15.8.1.5 Historic Significance

The subject site is located within the historic boundaries of the Howth Demesne, a significant historic designed landscape. The subject site historically formed part of the Deer Park and Race Course. The character of the historic demesne and significant historic features were lost during the conversion of much of the demesne lands to a golf-course in the 1970s.

The historic boundary wall is a feature of the historic demesne and is of significance.

15.8.1.6 Social Significance

The subject site cannot be considered to be of any particular social significance.

15.8.1.7 Scientific Significance

The subject site cannot be considered to be of any particular scientific significance.

15.8.1.8 Technical Significance

The subject site cannot be considered to be of any particular technical significance.

15.8.2 Howth Castle Demesne

The context and setting of Howth Castle within the demesne has altered considerably since the mid twentieth century when the golf course was constructed and the lands gradually shrunk to an immediate area of formal gardens around the castle. The parkland character changed to that of golf course landscaping. The introduction of an Architectural Conservation Area (see **Figure** below) defined the remaining significant features of the setting of the castle.

The demesne of Howth Castle was deemed to be of sufficient significance by Fingal County Council as to warrant both Protected Structure status for the built structures on the demesne, and designation of the demesne as an Architectural Conservation Area.

It should be noted that **the subject site was not included within the boundaries of the ACA** by Fingal County Council. The boundary of the ACA is illustrated in **Figure 15.9**, below. Furthermore, Fingal County Council note in their opinion submitted to An Bord Pleanála at PAC stage on the proposed development that the subject site is located outside of the curtilage of Howth Castle, "*6.1 Strategic Context: The site… adjoins the curtilage of a Protected Structure".* The significance of the subject site will be assessed below, with consideration given to its relationship with the Howth Castle and associated structures, St. Mary's Church and the Howth Castle ACA.

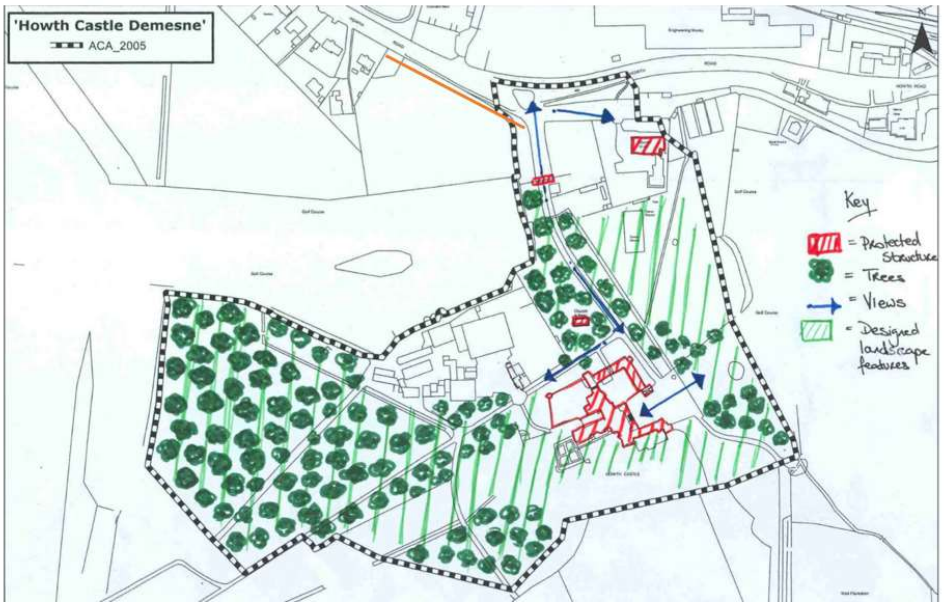

Figure 15.9: ACA with alignment of boundary wall along northern site boundary (orange)

Howth Castle was constructed and developed over a series of phases, as detailed above. The following extracts from Ball's '*History of Howth and Its Owners',* describe Howth Castle shortly after the last of these phases, Lutyens' 1910 alterations and additions. There do not appear to have been any major alterations or additions to the Castle since this time:

"The seat of the St. Lawrences, known as Howth Castle, has stood on its present site, not far from the isthmus on the northern shore of the peninsula, for seven hundred years. It comprises a great mass of buildings, and contains structures of various periods. It is approached from the east through a courtyard, on the north side of which lies an ancient gateway and the stable-yard, and on the south a wing containing a chapel and various apartments. The front shows an elevation of two stories over the ground floor, and a lofty flight of steps leads to the hall, which is on the first floor. To the north of the hall is the dining-room, and to the south the billiard room. In a wing extending to the south-west lie the drawing room, library and other reception rooms. The library, which is in a tower at the end of the wing, was designed for the present owner of the castle by Mr. E. L. Lutyens, under whose direction extensive alterations and additions have been made.

At first search is made in vain for any sign of an early origin. "Nothing but modern-looking turrets, rough-cast and white-washed," says the President of the Royal Society of Antiquaries of Ireland, "are to be seen through the thick mantle of ivy with which the Castle is covered, and it is only on close examination that in the south-west corner of the Castle, to the left of the entrance, the keep or chief tower of the ancient fortress is

revealed. At the north-west angle of the keep, in a small turret, the original staircase is found, and in the north-east angle in a corresponding turret, which was vaulted throughout its stories, curious rude corbelling is visible. The stairs were composed of rude stone steps, without any newel or stone-cutting such as occurs even in small peel towers in the west of Ireland, but a neat pointed doorway leads into the upper story of the Castle. Six steps higher there is one of the original window slits, now built up, and ten steps more lead to the summit of the keep. Excepting in the case of the south-west turret, which is apparently of eighteenth century date, the original crenellated battlements and slab gutters are retained. The north-west or staircase turret has a small, straight flight of steps leading from the main stairs to the top, which affords a fine view, over the Castle gardens and park, of the sea and Ireland's Eye. This turret is seven feet eight inches north and south, six feet ten inches east and west, while the main tower is twenty-three feet four inches long from this turret to the south wall along the battlement. The chimneys, which rest on corbels far down the face of the walls and block p the battlements, are plain, and a window of oblong shape which has been built up, was without ornament.

A gateway tower, which lies to the north-east of the Castle and is now unused, is also of mediaeval time. It consists of a gloomy round-vaulted passage, eleven feet eight inches wide, and over twenty-seven feet deep, with two little guard rooms only lighted by slits, which splay inwards and outwards, and by small doorways. Over the vault, the side wall of which is five feet eight inches thick, there are two stories. The windows in them have been probably renewed, but a turret at the north-east corner and the battlements are possibly of the same date as the main portion of the gateway.

Beyond the gateway tower, farther to the north-east, the Castle gardens slop down to the sea. They were laid out more than two hundred years ago, and are intersected by beech hedges, which are remarkable not only for the size to which they have grown, but also for the radiating plan which was adopted in planting them. A summer-house forms the centre, and alleys through the hedges afford marine vistas of great beauty. The hedges have been kept closely clipped, and the effect of the vistas is increased by their being seen through "walls of gleaming leaves, tender green in spring, deep green in high summer, and glorious sheen of copper at the fall of the year…

The history of the owners of Howth in the mediaeval period tends to show that their castle was one of the most important dwellings in the neighbourhood of Dublin; but alterations in later times have left little remains of it, and no certainty can be felt as to its extent of design…

There is some reason to believe that in the opening years of Henry the Seventh's reign the owner of Howth resided at Killester, and it is possible that opportunity may have been

then taken to adapt the Castle of Howth to the expanding ideas of that time, but no certainty on the question is attainable. Even at that early period the Castle appears to have been provided with cannon; and after Silken Thomas' rebellion it withstood a somewhat formidable attack made upon it by the Irish tribes…

At the beginning of Elizabeth's reign comfort began to be considered by the owner of Howth, and a mansion was added to the ancient keep. This mansion was, no doubt, of a semi-fortified type, like the castle of Rathfarnham, which was erected some years later by Archbishop Loftus. Though probably not all occupying their original place, three tablets, which were affixed near it, still remain at Howth. They bear the St. Lawrence arms impaled with those of the Plunketts. To a daughter of that house the Lord Howth of Elizabeth's time was married, and the largest of the three tablets has, as well as their arms, their initials and an inscription: IDNS DEUS MISERIT NRI (probably standing for Jesus Dominus Deus Miseritus Est Nostri). This tablet, which bore also formerly the date 1564, is over an arched gateway, through which the stable-yard is entered from the north, and it seems not improbable that an entrance to the courtyard of the Castle was constructed in 1564 at this point to supersede the use of the vaulted passage through the mediaeval gateway tower, which afforded little room for vehicles. What portions of the present buildings date from that time cannot be determined with certainty, but the hall and kitchen appear to have been amongst them…

It was the blind lord, as has been seen, that a mansion house was added to the ancient keep, and Howth Castle, as we know it today, it probably a monument to his energy and pre-eminence amongst its owners under the Tudor and Stewart dynasties…

The Jacobean age has left little mark on the county of Dublin, either in regard to its buildings or the history of its families, and in the case of Howth an exception to the rule is not found. There is not any trace of Jacobean work in the Castle, but it is probable that an alteration in the structure was made during the reign of Charles the First, as Swift alludes in one of his references to Traulus to the fact that Traulus' great-grandfather, the designer of the Earl of Strafford's mansion near Naas, left his name inscribed on one of the chimneys: 'An at Howth to boost his fame, On a Chimney cut his name…

The Castle and demesne underwent in Swift's day great improvement. Their appearance then will be seen from a contemporary oil painting in a panel over the chimney-piece of the Castle drawing-room, and the contents of the rooms are known from inventories which were compiled between the years 1746 and 1752. It was in Swift's time that the present entrance from the courtyard to the Castle, the classic doorway and the broad steps and terrace, were constructed, and uniformity in the appearance of the Castle secured by the erection of turrets and battlements in imitation of those on the ancient keep. The bird's-eye view shows also that an Italian garden was laid out, and that it

terminated in a canal; but before the end of the eighteenth century, as will be seen from the reproduction of an old engraving, this garden had undergone alteration. The round pond and great tree shown in the view, however, still survive, the former being known as Black Jack's pond, and the latter as the family tree."

A brief account of the chronological development of the main parts of the Castle is included below, alongside a description of their present appearance. The information in this section draws on cartographic and documentary evidence, in particular a c. 1956 account of the historical development of Howth Castle by Captain S. F. Gaisford-St. Lawrence, held in the Castle. A transcript of these notes is included in Appendix 15.1 (Vol III). It should be noted that as these historic notes are hand-written, some sections and words in the original text were not legible.

Gateway Tower

This Tower is believed to date from the 15th century, and along with the Keep is the oldest surviving part of the Castle today. It is included on the Record of National Monuments, Ref: DU015-027002.

The Tower was renovated in the early 18th century as part of the modernising works to the Castle. The Tower is a three storey rubble stone structure, with an arched carriageway at ground floor level. There are also two small rooms, believed to have been guard-rooms, at ground floor level, and a stairs leading to the upper floors. The upper floors of the Tower are derelict today. There are crow-step crenellated battlements at parapet level, and a square turret in the Northern corner. There are several buttresses at the base of the tower.

Keep (South Tower)

The Keep is believed to have been constructed in the 15th century. The original stone staircase and corbelling survive to this day. Gaisford-St. Lawrence notes:

"The Castle of 1650 consisted of the Keep with its loft vaulted basement room, which by the time has probably become a kitchen a low bedroom or living room above…and bedrooms on 2nd floor; together with the Hall block with bedrooms above. There was no access between Hall and Keep living room which must have been singularly inconvenient."

It is believed that floor level of the First Floor Level of the Keep was lowered in the late 17th century, a by-product of which was the need for a new kitchen.

"The exact date of this alteration is unknown but it is likely to have followed the building of the East Wing and to have preceded the North Tower extensions. Up to this time the Hall had been used for meals; a separate dining room was required and this was attained by lowering the Keep 1st floor room to give it easy access to Hall and to ... its ... as a ...

The floor was lowered some 4-5 feet and a doorway cut in the Keep north wall from which a short staircase led down to the Hall. In the staircase turret, the old entries to Keep and Hall were closed up with new dual purpose entry cut for both rooms. The lowering of floor level cut off the chamber on 2nd floor of NE Keep turret, the floor was therefore completely removed leaving the 2nd floor chamber, which was now being used as a passage way to the east wing a lofty lobby as it stands today. It is uncertain whether the present doorway from wing to the turret lobby was cut at this period but it is more likely that it was not done until the time of the 3rd Earl when the East wing staircase was built up. The new Dining Room was unpanelled and had 2 windows. The SW turret was floored at new Dining Room level and became the 'wig powdering' room but whether this included sanitary arrangements is not known: later it became a china cupboard."

Further minor alterations to the Keep are believed to have been carried out c. 1836:

"In order to improve serving meals a door was cut into the east wall of the Keep to the new landing; it is not clear how the step down was arranged but it was presumably inconvenient as in 1910 Lutyens raised the landing level, the object of which must have been to improve the access. With the new doorways the spiral staircase must have fallen in to disuse for in 1910 it was found to be in complete disrepair.

The Dining Room itself was panelled completely and the chamber in the SW turret converted into a China cupboard."

Lutyens' extensive works to the Castle in 1910 included some minor alterations to the Keep:

"On the Ground Floor a partition wall was put upon the north side connecting the area to a passage to the north with a Brushing Room to the south. The spiral staircase in NW Turret was ... In the NE turret floor level was raised and a door to forecourt cut in the east wall.

On the 1st floor the old Dining Room was converted into a Smoking and Billiard Room, a new window being made in the south wall to the east of the fireplace. The chamber in the SW turret as converted from a China Cupboard into a small writing rom. The NE turret passage became a Telephone Lobby, the window in its north wall being blocked up.

On the 2nd floor the Castle Room and Dressing Room remained unchanged except that the entrance to the NE turret ...was enlarged.

On the roof above chimneys and flues were rearranged to form one chimney stack (hidden by the turret battlement) in place of two which was ..."

The Keep is a three storey rubble stone structure, with crow-step crenellated battlements at parapet level. The walls are battered at the base. There are turrets in the Northern, Western and Southern corners of the Tower. The window dressings are in limestone.

Central Wing (Hall)

The Central Wing comprises the Great Hall of the Castle, believed to have been added to the Keep in the 16th century. An extra floor was added above the Hall in the early 17th century, c. 1620-40.

> *"It is known that alterations were made during the reign of Charles I. These would have been carried out by Nicholas 23rd Lord, who was in possession 1619-43. A complete 2nd Floor was added above the hall. The floor was divided up into 3 bedrooms (now known as Green, Middle and Sidney Rooms). The passage on the side was not added until a century later. The windows on the E side are probably … in the west wall: later alterations would have destroyed them.*
>
> *Floor level was and is 4 feet lower than that of the Keep 2nd Floor. Entry to this floor may have been directly down the spiral staircase or from the Keep room as it is at present. As the north wall of the Hall block was completely removed in the later alterations there is nothing to show whether these had access to the bedrooms at the …end, it is possible that the mural staircase from ground level to the Hall was continued up …2nd floor but there is now no indication that such was the case.*
>
> *Nicholas had married Jane Montgomery in 1615 and it is probable that her dowry of …financed this addition, or that the Bishop did so."*

In 1738 the wing was modernised, with the addition of the front entrance steps, terrace and door:

> *"As has already been pointed out there is some doubt as to the position of the principal entry to the Castle of 1560. It must have been very unimposing wherever situated. William made good the deficiency by a doorway in the east wall of the Hall; to reach this doorway a terrace was built up from tower to tower with a wide central sweep of steps down to ground level. The door was placed slightly to the north of the centre; this may have been for convenience within the Hall or in order to put it directly under a window…*
>
> *A natural completion of the improved East frontage was the removal of the East enclosure wall and building a wall from North Tower to Gate Tower to correspond with the East Wing to the south. It is possible however that the East Enclosure wall had already been removed at the time the East Wing was added."*

Some minor alterations to the Hall were carried out in the early 19th century:

"An exterior porch was contemplated, but an interior glass porch was built in lieu. A cornice depicting the St. Lawrence and de Burgh Arms was made around the walls. In other aspects no changes were made in Hall or in Sidney Hall."

Further minor alterations were carried out to the Hall during the early 20th century Lutyens' works:

"On the ground floor cellars were rearranged and the south cellar converted into a Document Room.

In the Hall above the inside Porch was removed and a new floor laid. The stove was removed and old fireplace opened up and pillars from Killester formed into it. A pictorial map designed by Sir Eric Gill formed a new over mantle. The doorway leading to the Pantry staircase was converted into a Coat Cupboard.

No alterations were made on 2nd floor except those required for the new Loggia block."

This wing is a two-storey-over-basement structure with a roughcast render and crow-step crenellated battlements to the parapet.

North Tower

This Tower is on the northern end of the central wing. Together with the Keep, it frames views of the central wing (Hall) from the forecourt to the Castle. The Tower dates from the 1738 works to the Castle.

"Outwardly this addition lengthened the Hall Block before adding the Tower to ... with the Keep to the south. Inwardly the floors were at a different level to that of the Hall Block which gave the tower a separate entity internally.

The massive north wall of the Hall Block was completely removed at first floor level and replaced by a central chimney flue block the wall being completed by timber panelling between which cupboard were arranged on the 1st and 2nd floors. The Tower was bisected by a solid wall running east and west on all floors. Only one turret was built, that at SEW corner, the other turrets were in the form of dummy battlements only.

At the Ground floor the southern half formed a Pantry; on the SE corner a staircase was built to the Hall. The northern half was divided into 2 rooms with an entrance passage in which was an outside door to the east, a door to kitchen ... and a 'back; staircase up to the floor above. It is not clear whether there was a passage to the west or whether merely a 'covered way' to connect the Kitchen with the Hall basements; the latter is the more probable.

The 1st floor was divided in a similar manner: the southern half was turned into Lady Howth's bedroom with the turret space as an alcove; a door in the south-west corner with a short staircase gave access to the Hall; this staircase was designed to match that of Hall to Dining Room at the Keep end. The northern half was divided into 2 rooms (Lord and Lady Howth's Dressing Rooms) with landings beyond on the back staircase. The bedroom was panelled with the 'Siege of Buda' over the fireplace; it is not clear whether the panelling extended to the Dressing Rooms, probably not.

On the 2nd floor the southern half consisted of a large bedroom (now the Tower Room) with an alcove in the turret. In the northern half was a small bedroom (now the French Room) with back landing and staircase beyond. Entry to both rooms from ... Back landing was by a passage on the west wall. This passage was extended into the Hall block thus converting the 3 'through' bedrooms into separate rooms and terminated ... At the 'Castle' Room and spiral staircase. It is now known as the Blue Passage. The wall of the passage as panelled and panelling was put up in all the bedrooms from the passage except the Castle Room and French Room. During repairs in 1956 a newspaper dated 1761 was found behind Tower Room panelling; this is no proof however that panelling was not in place before that date.

On the 3rd floor the original layout is uncertain. There was probably two ... rooms corresponding with the rooms below. There was no 3rd floor in the Turret."

Alterations to the North Tower were carried out as part of the extensive 1910 works to the Castle:

"The main object was to convert the 3 rooms of 1st floor into one large room to be used as a Dining Room. The alteration involved much structural work as a min wall had to be removed on ground and first floors but left in place on the 2nd floor above.

On Ground Floor a north/south girder was introduced to support the floor above in place of the wall; other partition walls were removed which formed a large Pantry. At the SW corner a large Safe was built in and at the SE corner the staircase to hall was removed. A new fireplace was built on the south wall, the flue being led to the chimney above. The exterior porch at Back Door was removed. The passage to the west was widened to the verandah above.

On the 1st Floor two east/west girders were introduced to support the wall above. The panelling was rearranged to cover all walls with the portrait of Swift on the north wall. He WC in NE lobby was removed.

No alterations were made on the 2nd floor.

On the 3rd floor a room was formed in the turret by introducing a gabled roof. A passage to the east was made which gave access to this room and to the room to the south. The new gable entailed additional weight which was taken partly by introducing a north-south girder into the ceiling of Tower Room below, but much of the weight devolved upon the double girders above new Dining Room, which 10 years later sagged under the strain."

It is a three-storey structure with crow-step crenellated battlements at parapet level. A dormer attic level was added in 1910. The NIAH description of this Tower states that it is of medieval origin, but this does not appear to be accurate.

Western Wing

This wing contains the Drawing Room, and appears to have been constructed 1730-40.

"This wing was added after the North Tower and probably after the North wing. It fulfilled the triple requirement of a large Dining Room or Drawing Room, Front Staircase and more bedrooms. Its alignment is not at right angles to the Hall Block but 2° off to the northward; it is possible that it followed the line of the inner Enclosure Wall (referred to previously) the end of which now forms the north wall of Sidney Garden. A 3-storeid slate roof building, it was probably unadorned by battlements in its original state. Its north wall did not follow the line of the Hall block north wall but was slightly to the northward and overlapped into the North Tower west wall; this was probably in order not to block the mural staircase to Hall. For some reason the west wall into which no windows were cut is curved and falls away at its NW corner.

The Ground Floor consisted of a small lobby to the eastward which acted as a servants passage to the main block. From this lobby a door led to a large room, probably a Servants Hall, with 2 smaller rooms abreast of each other beyond, probably Housekeepers Room and Store Room. Two further rooms were reached from outside only and were probably menservants or grooms rooms. It is probably that at this period ground level to the north and south of the wing were similar and that the ground to the south was not raised until later.

On the 1st floor a large doorway was cut in the Hall west wall giving access to a lobby, later known as the Sidney Hall. From this lobby a staircase led to the landing above and a door to a large reception room originally intended as a dining room but never used as such. For some reason this room as about 12" below the level of the Lobby and Castle Hall which necessitated a step down. A door in the lobby to the south led to steps down to the Pleasure Ground. It is possible that the South Hall had a window where the doorway had now been cut.

The Drawing Room much in the same state as when built but without the bow window. The panelling contained the seascapes and Prospect Picture as at present. The Boudoir

beyond has changed little except that window has been enlarged; its original use was probably a Writing Room. There was no passage on the north side.

On the 2nd Floor the landing from the staircase was at a lower level to the Castle 2nd Floor. A doorway was cut in the Blue Passage wall possibly where a window had been previously. To the west of the landing were 3 bedrooms; it is uncertain whether the passage is original or whether they were 'through' rooms.

On the staircase the original window with the signature of William St. Lawrence (2nd Son of William 27th Lord) in one pane of glass is still in place."

Drawings in the National Library indicate several proposals for alterations and additions to this wing, but it does not appear that any of these were carried out. Minor alterations are believed to have been carried out c. 1836.

"As has already been stated there was a step down from Sidney Hall to the Drawing Room; this seems to have annoyed Lord Howth and his guests after dining too well. It was eliminated by raising the Drawing Room Floor Level; presumably the Boudoir Level was also raised. In the Drawing Room a Bow window was built out (at ground level only) and the other two windows enlarged as was that of the Boudoir.

On the floor above the passage on the north side, if not already in place, was built up to convert the through rooms into separate rooms. The small room of WC on the staircase landing may have been added at this time or later; they were in place in ... and were a great eyesore.

Exterior additions made were the ugly battlements and 4 buttresses on the south face the object of which is obscure."

The wing was altered in 1910 with the addition of a corridor to the north, a new Tower to the West, and a loggia in the corner with the Central Wing:

"The new passages at ground and 1st floor levels was the major alteration. This was required on the ground floor to connect the 'through' rooms into self-contained rooms and to connect up the new Tower. On the 1st floor it was less necessary, but it was a convenience to ... the Tower without passing through Drawing Room and Boudoir. This new passage also produced a means of adding a bathroom and lavatory to the west Wing bedrooms. One of the requirements in forming the new passage was that the SW window of the new Dining Room and that on the main staircase should not be blocked. This was attained by starting the passage at the east end at ground floor level only; it was then raised to 1st floor level to form the Drawing Room Passage but then further raised to 2nd floor to form the new bathroom and lavatory which terminated at the New Tower. As the Dining Room new windows looked out onto the courtyard between West

Wing and Kitchen care was taken to make it a good outlook. Oriel windows were introduced and gargoyles in place of piping. The many levels of the passage were dealt with by providing an outside stone staircase with entrance to the passage on 2nd floor of the wing, terminating below in a verandah to the west of the Dining Room. This verandah was formed by widening the passage already in place ... the kitchen. A doorway on Castle Back Staircase gave aces to the verandah; it and the exterior staircase were of little practical value and seldom used, their only object being to improve the view.

1st Floor – the new passage approach passage was built under the Castle staircase with a door to the Sidney Hall, the remaining under staircase space being utilised by a small 'Flower Room'. The Drawing Room remained unchanged as did the Boudoir except for a new door into the new passage.

On the 2nd Floor the small room and lavatory at the staircase landing was removed. The bow of the Drawing Room was extended up to the bedroom above. The new lavatory and bathroom were formed above the new passage. The 2 small rooms to the west were converted to one large room (the South Room).

Outside the out of place ornamentation and buttresses on the south side were removed and replaced by bold, plain battlements."

The wing is a two-storey over-basement structure, with simple crenellated battlements at parapet level.

Western Tower

This Tower is a 1910 addition to the Castle, designed by Sir. Edwin L. Lutyens, and containing the Library. It was built as an extension to the earlier West Wing.

"Originally known as the Gaisford Tower and later, when let, as the West Wing, in these notes it will be referred to as the West Tower. Intended to contain the Library the size of the Tower was governed to some extent by the bookshelf area of the Offington Library. The rectangular tower was added symmetrically to the west wall of the wind, the curve of the wall being filled in with cupboards on the 1st and 2nd floors. It was intended to pull down a part of the Enclosure internal wall, the material being used to form an ... wall to the Sidney Garden. A plain, bold style without battlements, turrets or other ornamentation was designed. At the SE corner the overlap was partly filled by a verandah and ... the NE corner the overlap was partly filled by a new passage along the wing.

The ground floor or Basement was used to form 3 menservants rooms, bath room and landing with a staircase at the NE corner extending up to the top floor. At the top/left of the stairs the new passage gave access to the Castle and to the Courtyard by a door close to the Tower.

The 1st Floor formed the library with a small Book Room to the west of the ... A door was cut to the Boudoir, being sited in order to give a view right through to the Hall. Doors from the library and Book Room led to the staircase and there was a connecting door from Library to Book room. A fireplace from Killester was used for the Library. In order to obtain correct proportions in this room the ceiling of the small Book Room was low, the spare space ...Being utilised to make a box room as an intermediate floor. As on the ground floor a new passage in the wing connected the staircase to the Castle.

The 2nd Floor found the principal bedroom with a Dressing Room and bathroom to the north of a large Cupboard Room to the east. The passage ... in place in the wing ...the Castle to the staircase landing.

The 3rd and Top Floor consisted of a large bedroom to the SW with smaller rooms to the east and north. In the roof above large tanks formed the Castle water supply."

The West Tower is a three-storey-over-basement structure, with dormer attic level and crow-step crenellated battlements. A square turret at the northern corner houses the staircase.

East Wing

This wing is believed to have been constructed in the late-17th century.

"It can probably be … therefore that the East Wing was built between 1650 and 1671 or between 1680 and 1727. It is known that Thomas had building inclination as he build a Pier and the Protestant Chapel so the latter period is therefore the more likely.

…

As already stated the wing was probably added 1680 to 1727 but possibly as early as 1650-78, it follows the line of the South Enclosure Wall viz. 3° to the south of a right angle and was probably built on this ... Wall. It extended up to the east enclosure wall. The SE corner tower of the Enclosure was incorporated; its east wall does not appear to incorporate the East enclosure wall.

The ground floor of the wing had no access to the Castle and consisted of 4 separate rooms each with a door to the forecourt on the north wall of the wing. Three of these doors and 2 windows till remain today but the western door has been moved round to the keep turret and replaced by a window. At the south east corner of the wing the end room was connected to the Enclosure Tower by a doorway and by a staircase up to the Tower floor above. There was no staircase at the western end.

The 1st floor of the wing appears to have consisted of a lobby at the west end followed by 3 rooms, the first of which was a 'through' room. A passage on the west side of the 2nd room led to the 3rd room which was connected to the 1st floor of Enclosure Tower and to its staircase. The rooms were probably panelled when built but it is possible that the panelling was not introduced until the Castle alterations of c. 1738 were undertaken.

Entry to the 1st floor of the wing from the Castle was arranged through the Keep turret chamber by cutting doorways in its west wall into the Hall and in its south wall into the wing. Floor level of wing and Hall were similar. The mural staircase of the turret was probably retained and rearranged to give access to the 1st floor of the Wing thus forming a staircase from 1st floor of wing to ground floor of Castle. At this period the Hall, 1st Floor of turret and 1st floor of wing were all on the same level. There was probably no direct access from wing to Keep dinging (or living) room as the ... was at that time at a much higher level.

Above the upper floor of the wing has a slated roof but then ... battlements. The chimneys were high and unsightly and were surmounted by ornamented chimney pots 4ft high."

It was modernised in the early 19th century, c. 1836-38, with the addition of the crow-step crenellated battlements. A tower (Kenelm's Tower) was constructed at its eastern end in the mid-19th century.

"These alterations were made to provide nurseries and additional bedrooms and an office for himself. In order to make better use of the ground floor a staircase and landing as introduced at the Keep end, the ground floor being brought into the Castle by cutting a doorway in the south wall of the Keep turret. The mural staircase was now redundant and was blocked up. A ground floor passage was made on the north side giving access to the 4 rooms; his passage turned along the east wall and gave access to the Enclosure Wall turret; the existing doors to the forecourt were left in place but only the western one probably remained in use.

On the floor above a similar passage was introduced and an additional room off the new landing became the office. The look of the staircase was spoilt by a cupboard which extended out from the office over the staircase.

As built both upper and lower landings coincided in level with the wind and Castle so that no steps were required. It was not until 1910 that both landings were raised.

Externally battlements ... replaced 3' parapet were added in order to improve the appearance by hiding the slated roof; similar battlements were added to the wall on the north side of the forecourt."

Alterations to the Wing were carried out as part of the 1910 phase of works to the Castle:

"The major alteration was the introduction of a Chapel at the east end.

The Chapel was formed by doing away with bedrooms and passages on ground and upper floors, the space being converted to a chapel to the east with sacristy to the west; above the sacristy a gallery was former. The old exterior passage to Kenelm's Tower remained as such, but all communication between Wing and Kenelm's Tower was

blocked on the floor above. The original idea was to make church like windows on the north, south and west walls but this was abandoned as out of keeping with the Castle and small square windows were formed to north and south and the large east window blocked up altogether.

The staircase at the west end was remodelled; the lower landing was raised about a foot to conform with the new level in Keep Turret. The landing above was raised about two foot; the object of this was to improve the access to new Smoking Room, the stairs down from which were too steep; it entailed steps down in the idle of the telephone lobby to reach Hall level and again steps down to reach the Wing passage and rooms. The western forecourt door of the wing was no longer required and was replaced by a window.

The Ground Floor – the passage on the north side was retained and now ended with the entrance to Sacristy which also formed the communication to Kenelm's Tower. At the west end a large lavatory was formed with WCs on either side; this was followed by a cross passage giving access to the new Sunk Garden; this cross passage was in line with the door out to Forecourt; the door was retained but fell into disuse. The two rooms beyond remained unaltered and were used as Bachelor visitors bedrooms.

The 1st floor between staircase and new Chapel gallery remained unaltered, the passage ending with the Chapel Gallery. In the Office Room to the west, known as the Panel Room, the cupboard overhanging the staircase was removed.

No alterations were made in Kenelm's Tower other than re-decoration. The upper rooms were intended as Bachelor bedrooms but were seldom used. The Ground Floor room became a 'Garden' Room.

The Roof – this was unaltered except that the high chimney pots were removed (they are stored in Farm, 1956).This greatly improved the appearance from the south, but unfortunately later it was found necessary to add revolving tops.

The East Wing is a two-storey structure.

<u>Kenelm's Tower</u>

This tower is believed to have been constructed in the mid-19th century, c. 1850-60. It was named for Kenelm St. Lawrence, born December 1855. Gaisford-St. Lawrence notes:

"The SE Enclosure wall tower was demolished and the new tower erected almost exactly on its site. It is rectangular with a turret at the NE corner; the battlements are cruder but conform generally to the Keep. The turret contains the staircase giving access to 2 floors and the roof.

On the ground floor an entrance from the forecourt gives access to the staircase and by a passage on the west side to a single room. The old tower entrance from the wind was

blocked and a new passage built on to the south wall of the wing. The passage on the north the east of the end wing rooms was diverted to this new 'outside' passage thus enlarging the end room.

On the 1st floor the arrangement was similar to the ground floor. The passage in the wing remained unaltered and connected to the staircase landing of the new Tower.

On the 2nd floor there was no passage and a single room only which became in later days the Billiard Room."

The 1910 Works to the Castle included the blocking off of all communication between the Easy Wing and Kenelm's Tower at first floor level and internal redecoration.

The Tower is a three-storey structure with crow-step crenellated battlements at parapet level. A turret on the Northern face houses the staircase.

Kitchen Wing

A detached Kitchen Block is believed to have been constructed c. 1700, following the lowering of the First Floor Level in the Keep.

"A direct result of the lowering of the Keep kitchen ceiling would have been that it was no longer suitable as a Kitchen... The new kitchen requirement was fulfilled by building a detached one. Ball states that the 'new' kitchen probably dates from 1564 but this seems most improbable and a more likely date is around 1700 at the same time as the lowering of floor level in Keep…

The 'new' kitchen would have followed the keep floor level alteration and was probably carried out about 1700. Although this is a reasonable supposition it is by no means certain that it was ever a detached building and did not originate with the north wing among the 1738 additions. The alignment of its south wall at right angles to the Hall block and not to the north wing suggests that it was in fact in place before the wing. In its initial form it as probably a single room, the annexes having been added with the North Wing. Some form of covered way, as was found later, may have connected it to the NW entrance to the Castle."

This wing was extended in 1738, to meet with the Northern wing, as a range of service spaces for the Castle.

"The single room kitchen was extended to the westward to form an entrance porch and larder. On its north wall a 2 storied building was added consisting of a saddle room below and 2 bedrooms above. A doorway connected the Saddle room to the Coach House. The 2 bedrooms had no access to North Wing but were reached b an external staircase and were presumably used by grooms.

The original dome and plaster ceiling and cornice of the kitchen are still in place as are the windows in its south wall."

Minor works to the Kitchen entrance were carried out as part of the 3rd Earl's 1860-74 alterations.

"The 3rd Earl, after adding Kenelm's Tower made no further major additions. Minor additions included exterior porches to the Coach yard back door and to the kitchen SW entrance door."

The early 20th century phase of alterations to the Castle involved some alterations and additions to the Kitchen Wing.

"The major alterations were the conversion of the Coach house into a Servants Hall, the Saddle Room into a Scullery, the introduction of a 1st floor west of kitchen and the conversion of the stable on south side of Stable Yard into a dairy…

Other than sinks etc. and a doorway to kitchen little change was required to the Saddle Room to convert it to Scullery. To the west of the Kitchen, the exterior porch and entrance were removed and a Cook's Room introduced.

On the 1st floor the rooms above old Saddle Room were brought into the Castle by building up a passage running over the north wall of the kitchen; this passage led on to 3 new rooms build over the outhouses to the west of the kitchen. The exterior stairs to the rooms above the old Saddle Room as removed and over the platform a servants WC was built. In the north wing minor improvements were made to the rooms, the southern room being converted to a servants' bath room and annexe."

Works were carried out in modern times to facilitate the conversion of the kitchen to a modern Cookery School.

North Wing

This wing appears to have been constructed as part of the 1738 improvements to the Castle. It appears to have been primarily a service wing, and has direct access into the Stable Yard. The wing connects to the Kitchen Wing.

"The object of this wing was the provision of a Coach House and it is probably that the servants rooms above was a secondary consideration. It conformed more to the East wing of the future coach yard rather than to the remainder of the Castle. It is curious that it did not follow the alignment of the Castle, being 5° towards the West, it is however roughly at right angles to the north wall of the Enclosure which may have been the object in view; alternatively it may have followed the line of the east wall of the detached kitchen.

The ground floor consisted of a long Coach house beyond which was the dairy and Stewards House, which projected slightly beyond the Enclosure Wall which would have to have been demolished.

The upper floor consisted of 3 'through' servants rooms above the Coach House beyond which floor level drops 2-3 foot and was probably a part of Stewards House. The slate roof was ornimented [sic] *by a cupular* [sic] *above Stewards house."*

Some alterations were carried out to this wing as part of the 1910 works to the Castle.

"The major alterations were the conversion of the Coach house into a Servants Hall, the Saddle Room into a Scullery, the introduction of a 1st floor west of kitchen and the conversion of the stable on south side of Stable Yard into a dairy.

On the Ground Floor the Coach House doors were filled in and a fireplace introduced. The room to the east was made into a Servants Hall Scullery....

In the Stewards House, vacated by Bullick. The Dairy was removed and incorporated into the house, which became the Chauffeur's House."

The wing is a two-storey structure with dormer windows. A conservatory was added in the late 20th century.

Loggia

This was added to the Castle as part of the Lutyens' alterations in the early 20th century.

"The main object of the Loggia was to produce a bathroom and WC for the 7 bedrooms of main block. At the same time if improved external appearance by filling in an ugly corner.

On the ground floor under the Loggia the space was utilised to house the boiler of the new Central Heating. The Loggia itself included steps down to the lawn from the Sidney Hall in the same position as built originally.

On the 2nd floor a passage running out from Blue Passage gave access to a large bathroom to the south and to a WC and Syphoning. Around to the north later when steam heating was replaced by HW heating the Syphoning Room became an Airing Cupboard."

Coach Yard

A block of building in this lay-out and location are present in the earliest images of the Castle.

The East Wing of the Yard appears to have been constructed c. 1650-1727.

"The Coach Yard was not built up until the North Wing had been added c. 1750. Its East Wing however appears to be of an earlier date and it is probable that it was added to the

north of the Gate Tower some half century earlier….It was a 2 storied building with 2 rooms followed by a stables on the ground floor. The 2 rooms (a workshop and saddle room) had separate entrances and close to the Gate Tower was a passage entry to Gate Tower turret staircase which was altered to form an entrance to the upper floor of the wing. The upper floor probably consisted of 2 rooms followed by a loft much the same as it stands today. The slated roof would have had no battlements."

The extensive building works carried out to the Castle c. 1738 included the construction of a North wing to the Castle and a new wall to the forecourt between the North Tower and the Gate Tower, enclosing the Coach Yard on three sides. It is believed that the North Wing of the Coach Yard was constructed shortly after the completion of the North Wing of the Castle.

"The building additions had already enclosed the Coach Yard on three sides. The North side was probably undertaken soon after the completion of the Castle North Wing. It extended from the Stewards House to the NE Enclosure Corner Tower, this tower being removed. The present circular tower is not shown in the Prospect Picture and was probably not added until the end of the century.

The North side building was built up to conform generally with the east and west side. It consisted of 7 horse stalls to the west and 4 loose boxes to the east. Above at the west end were grooms rooms reached by an exterior staircase (still in place) and the remainder of the building taken up by lofts. It is unlikely that the North Enclosure Wall was incorporated into the new building in which case it must have been demolished. As built the north face was similar to the south face. The battlements were not added until later.

The cupular [sic] *over the Stewards House was transferred to the centre of the building and it is found today but there was no clock nor was there an entrance to the yard from the north; the only carriage entrance was in the Gate Tower/North Tower Wall which was a large arched entrance with doors."*

Further alterations to the block, to the designs of Richard Morrison, were carried out c. 1840.

"A drawing by Morrison of these alterations is on record but is undated. They consisted of a carriage entrance with gates though the north area. It was an obvious improvement long overdue. The carriage entrance in the south wall was filled in to form a pedestrian door only. The object would have been to shut off the Coach yard from the front of the house, a doubtful improvement which was altered in 1910. A Clock loft was built in under the cupola and a stable clock fitted."

The Coach Yard was further altered during the 1910 Lutyens' alterations:

"As already stated the Coach House was converted into a Servants Hall. The North arm which contained Loose Boxes and Stall was completely rebuilt internally; to the west a 4-car garage was made and to the east an Engine Room and Battery Room for the new Electric Light plant. The central tunnel entrance was left unaltered by the old coach entrance in the south wall of the yard was opened up to its original state and a refuse shed was built on close to the Bac door. Little changes were made in the East Arm of the yard which formed the only remaining stables."

15.8.2.1 Howth Castle Demesne Landscape

Historic maps and photographs indicate that the demesne landscape had a mixture of formal designed features and pastoral parkland features. The conversion of much of the lands to golf course use in the 1970s resulted in the loss of much of the parkland features, however some of the more formal designed landscape features survive to the present.

Setting

Gaisford-St. Lawrence describes the early appearance of the estate landscape, and traces the development of the designed landscape features over the course of the 17th, 18th, 19th and 20th centuries.

"The existing south wall of the Sidney Garden is probably the remains of a [sic] *wall running E and W from west enclosure wall to north end of Hall. It is* [sic] *that this was erected at a later date and after the detached kitchen was built c. 1660, the object being to* [sic] *off the back regions from the Pleasure Grounds. It would have produced a courtyard* [sic] *westward of the Hall, possibly grassed and used for bowls.*

During this period the ground levels were similar all round the Castle as is evidenced by the pintels of Gate Tower doors or the arched entrance to Keep [sic] *Tower. The slop down from the southward would have terminated in a bank running east and west on the line of the present Sunk Garden south wall and disappearing with missing* [sic] *Ground at the intermediate tower of Enclosure south wall.*

Outside the Enclosure Walls would have been pastures. The 'Family Tree' planted in 1585 terminated the level ground to the eastward. A shallow valley through which ran the Bloody Stream, followed the line Penn Len –Black Jack Pond, the stream reaching the sea somewhere between the present Front Gates and Protestant Church passing under Evora Bridge, is such bridge ever existed which …the site of present Protestant Church.

The 'Danes' Drain is somewhat of a mystery. Possibly it was a method of bringing running water into the enclosure from the Bloody Stream,. It enters the enclosure to the north of the SE corner tower and leaves at North ... Enclosure wall where the [sic] *Room is now found…*

The Enclosure Walls must have remained intact until the early VIIIth century but a western gateway may have been made in the west wall late in the VIIth century. The north gate post with its ... is still in place; it was probably a 'tradesman' entrance. Later this entrance was moved some 20 yards to the northward and the old entrance walled up

It is unlikely that there were any gardens outside the Enclosure but there were probably many minor buildings and sheds inside and outside the Enclosure to the North West.

The Protestant Chapel replaced St. Mary's about 1700. Thomas 26th Lord who was then in possession was a friend of Robert Grafton the rector; this may account for the erection of the Chapel so close to the Castle. It remained in use for a century.

The new harbour had not yet been built and the Howth-Dublin road ran along what is now the 'Harbour Walk'; below it was probably sea shore and above pastures would have run up to the Castle Enclosure…"

Formal landscape features appear to have been introduced during the 17th and 18th centuries, following the gradual removal of the Enclosure walls.

"The east frontage would have been made by William 27th Lord early in his tenure as a part of the terraced entrance scheme; it required the removal of the east enclosure wall if that had not already disappeared with the East Wing erection. It has been suggested that the Beech Hedge Garden is of an earlier date; this seems most unlikely as it is difficult to visualise the South Wall before the built up pathway of the frontage had been made. The first step of the frontage scheme would have been to divert the Bloody Stream to the eastward to form the Moat; the excavation of the Moat would have provided the material to build up the terrace and approach paths. The pond 'Black Jack' previously in the bed of the stream was either a spring or became one. It is unlikely that the Italian Garden as depicted in the Prospect Picture of 1745 ever resulted ...This picture shows walls banking up the approach pathways and a walled east face to the approach; it is most unlikely that such walls had they existed would have been replaced by earth banks as they are today. Again Wheatley's sketch of 1770-80 shows no such garden; the sketch shows a level grass plot to the eastward of the forecourt with paved ... carrying ornamental urns and with cannons on the west side. It can be assumed that the original layout was much the same as it exists today except that tee were no flanking yews or yew hedge around the pond. The central pedestal on the terrace which is still in place carried a statue of 'Black Jack' as shown in Petrie's sketch of 1819; this statue was stolen for its lead in 1836. Petrie's sketch also shows the cannons and ... plot replaced by the posts and chains now in place. The cannons later appeared on the ... parapet above the Hall from where they were not removed until after 1914. It is possible however that there

were real cannons; "8 pieces of cannon" were lodged in HM Stone, Dublin in 1793. Faulkner's Journal of 9th March 1793.

Wheatley's sketch shows that the entrance gates to the north and south of the frontage were in fact built; the east post and ... of the northern gates is still in place. That the south wall extended so far as the moat is more doubtful.

The Pleasure Grounds to the south of the Castle were probably accurately depicted in the Prospect Picture. It is known that an avenue ran east and west parallel to the west fence and the gateway and bridge into '20 Acres' is still in place. This section of the Enclosure Wall from keep to intermediate tower was probably demolished when the West wing was built but it is probable that ground level at this area was still level with that of the forecourt.

It is unlikely that the formal garden to the southeast of East Wing ever materialised. This area probably became a hollow when the new course of the Bloody Stream was banked up and it is a hollow today; it is unlikely therefore that it was ever levelled off to produce the garden. The Pleasure Ground would have ended to the westward at the avenue running north and south now known as 'Holly Walk'."

Further landscape features were added, and the demesne altered over the course of the 19th century.

"The east front formal garden lost its formal aspect early in the [19th] century; the paving edged grass plot and line of cannons had disappeared by the time of Petrie's sketch of 1819and the present chain railings were in position; the only formal aspect remaining was 'Black Jack' on his pedestal. With a view probably of tidying up the appearance the 3rd Earl c. 1850 planted Yew trees along the approach walks on either side and hid the ill-kept Black Jack pond with a clipped Yew hedge which left the area in very much the same state as it is seen in today."

The Pleasure Grounds: According to contemporary letters the Pleasure Grounds early in the XIXth century had become a wilderness. Irish Yews were now planted along the avenues running east and west and as was the fashion o the period, small flower beds were dotted about ... without any apparent method. On the west the Farm lane was abolished completely ... approach path made to Jenny's Walk a few yards to the westward of the old lane. The walls on either side of Jenny's Walk were falling down; the north all was removed completely and only parts of the east wall retained. To replace the walls a Yew Hedge on either side was planted in 1865 and a Beech avenue planted.

Between the Pigeon Field and Walk Meadow a terrace was built p in 1865 with a Summer House at its east end. Irish Yews and Beech Trees were planted up the avenue to the

rhododendrons (now known as Cherry Walk). A Beech Tree Avenue was also planted below the Cromlech.

The Race Course was made about 1830. Originally it was a straight course from ... Corr Castle to beyond the Herds Cottage; later it was extended to the ... and turned south down what is now called the 'Race Course'. In 1853 Baldoyle Races were started and the Racecourse fell into disuse. There were stay houses... At Howth in 1826-7 but it was probably not until after c. 1853 when the Ward Union had acquired the hunt that the enclosed Deer Park was made…"

Further works to the grounds were carried out during the Lutyens' renovation works in 1910.

"On the east front no changes were made other than killing the Ivy on Gate Tower Walls and Steps.

On the south front a sunk garden was formed outside East Wing to replace the ugly grass bank and shrubs. The southern east/west path and its Irish Yew avenue were removed as were the Yews on the south side of the southern path; by this means the lawn space became sufficient for 2 tennis courts and a Croquet Lawn. Outside the Drawing Room the odd beds were grassed over and a paved path built up to the Swan Pond passing through the Sidney Garden in which an east wall was built. The old doorway entrance though the SW Enclosure Wall Tower was filled in.

On the west front the east bank of the Swan Pond was walled and the pond surround planted; further north the approach to the Kitchen yard was converted into a garden and that section of the Enclosure Wall removed in order to improve the view from Dining Room windows.

There is little remaining of the former pastoral setting of Howth Castle following the conversion of much of the demesne lands to golf course use.

Entrance Gates and Gate-Lodges

The front Entrance Gates to the demesne date from 1848-50, and have been attributed to Richard Morrison.

"This was the only addition made during the 3rd Earl's widowhood. Emily had died in 1842 and he did not remarry until 1851.

The tradition is that the Gates were built out of the winnings of Peep-O-Day Boy, who won the Chester Cup in 1848. Previously there were not gates until those abreast the Gate Tower were reached, these were close to the Garden Wall so that with the new gates the line of the drive must have been moved some yards to the westward. The Irish yews down the drive were planted at this time. If the small cottage at the corner of the

Beech Hedge Garden was still in place it would have been demolished when the Front Lodge was built. The Gateway and wall connecting garden wall to Gate Tower was removed; if the corresponding wall and gates to the south were still in place they were probably removed at this date."

They survive intact, although the Gate-Lodge is now in ruins. These Gates are now in use as the Entrance to the Deer Park Hotel on the former demesne lands.

"The Back Drive and Back Lodge and Gates probably appeared soon after."

The Back Gates were less elaborate than the main entrance, and are believed to have been brought from Killester House to Howth. The Gate Piers survive, although the Gates themselves have been lost. The Gate Piers are now located at the residential estate Old Castle Avenue. The Gate-Lodge at these Gates does not survive.

Yew-Lined Entrance Avenue

The main avenue from the Howth Road to the Castle is lined with yew trees, and branches off to the North-West towards the sheds and outbuildings. The yew trees lining this avenue appear to have been planted in the mid-19th century, along with the construction of the Front Entrance Gates and Gate Lodge.

This feature survives to the present, and is of significance within the demesne. Views along the avenue towards the Castle are of primary significance.

Beech Hedges / Walled Garden

The Walled Garden, situated to the South-East of the entrance avenue survives partially intact, although features within the Walled Garden such as the Beech Hedges, orchard and sundial garden have been lost. The Beech Hedge Alleys in the Walled Garden were believed to have been planted as part of the 1738 phase of works.

"The Beech Hedge Garden was probably made with and after the formal east frontage. The Prospect Picture accurately depicts it. The extension walls to the east and ... were not added until after the new Howth-Dublin road had been made. The cottage at the north east corner was probably demolished when the Front Lodge was built c. 1850. The round pond was made on the old bed of the Bloody Stream as ... as today from Black Jack Spring. Where the old bed of the stream goes under the south wall a tunnelled entrance was made from Black Jack lawn; this tunnelled entrance later fell into disuse and was finally filled in about 1910…"

There were some minor alterations to the Beech Hedge Garden during the early 20th century works to the Castle and grounds.

"In the Beech Hedge Garden the hedge section from Garden House to the Eastward was removed, a heath garden formed to the east of Greenhouses, 'Dial Garden' formed to the west of greenhouses (vines) and a Herbaceous border planted along the Harbour Walk approach walk. The whole area was planted with Fruit Trees and Shrubs. It is of interest that the Bee Hives remained in the same position as in the Prospect Picture of 1745.

As originally planted there was just over half a mile of Beech Hedge, the main vista being 85 yards long and the Ireland's Eye Vista 150yds long.

NB By 1955 the average height of the hedges was 27ft and the total area to be clipped was approximately 3 ½ acres."

The Hedges had reached a height of over 30 feet by the 1960s, when the decision was made to cut down some of the hedges. The radiating plan of the Beech Hedges was laid out so as to frame specific views, including views to Lambay Island and Ireland's Eye. There are now no surviving Beech Hedges in the Walled Gardens, and the Summer House at the intersection of the Beech Alleys has also been lost.

St. Lawrence's Tree

The St. Lawrence, or Family, Tree, was an elm tree planted in 1585 near the gate-house. Tradition maintained that the Howth title would expire when the last bough fell. Props and chains were implemented in an attempt to delay this, but a branch which had been held up by a chain fell in 1908, the year in which the last Earl of Howth died. The tree was a prominent feature on the demesne, and was included in many of the historic drawings of the Castle.

Moat

It is believed that the 'Moat', located to the North-East of Black Jack's Well, in the front setting of the Castle, was laid out in the early 18th century, as it appears on the 1745 Prospect of the Castle, along with the two formal lawns and central circular pool known as Black Jack's Well. The moat is still extant today, and delineates the boundary between the modern lands of Howth Castle and the golf-course on the former demesne lands.

Black Jack's Well

A circular hollow section to the north-east of the castle today, this was formerly a round pond, known as Black Jack's Well. It is visible in the 1745 painting of the Castle, and likely dates from the 1738 improvement works undertaken.

Sunken Garden

This sunken parterre, located along the side of the Eastern Wing was laid out to the designs of Sir Edwin Lutyens in 1910. It was described in Country Life in 1930:

"This consists of three raised beds contained in frames of stone and clipped box. The beds are about 6 inches above the paved walks, the stone and box frames about a foot high. By this ingenious yet simple means the flowers in the beds are always up to, or above, the level of their frame, and thus produce a brighter effect, while the frame itself is bolder and more solid than usual."

Gaisford-St. Lawrence notes in his account of the Castle history that:

"The existing south wall of the Sidney Garden is probably the remains of a ... wall running E and W from west enclosure wall to north end of Hall. It is ... that this was erected at a later date and after the detached kitchen was built c. 1660, the object being to ... off the back regions from the Pleasure Grounds. It would have produced a courtyard ... westward of the Hall, possibly grassed and used for bowls."

Photographs of the garden at this time reveal that it is largely unaltered from its original form.

Sidney/Sydney Garden

This garden, named for Lady Isabella Sydney, a daughter Thomas, 1st Earl of Howth, who was widowed within a month of her 1773 marriage to Lord Sydney of Leix, and was overlooked by her room in the Castle. A walled garden in this area, of which sections of the south-eastern wall survive today, is visible on historic maps from as early as 1757.

"The existing south wall of the Sidney Garden is probably the remains of a .. wall running E and W from west enclosure wall to north end of Hall. It is ... that this was erected at a later date and after the detached kitchen was built c. 1660, the object being to ... off the back regions from the Pleasure Grounds. It would have produced a courtyard ... westward of the Hall, possibly grassed and used for bowls."

The garden was remodelled by Lutyens in the early 20th century. It is located to the west of Lutyens' new Library Tower, and is enclosed on all sides. The walls of this garden are a combination of walls of different ages and materials, including rubble stone and red brick. There is a blocked-up arched ope in the south-western corner. There are ruinous structures dating from at least the 18th century along the south-eastern wall.

There are two paved foot-paths crossing the garden, and a perimeter paved footpath just inside the walls. There are arched entrances to the garden on both the eastern and western wall, enabling views through the garden, and along the South-Western Wing of the Castle. Country Life notes that this garden was "*devoted more especially to rare and pleasant plants. I noticed the yellow-flowered Piptanthus Nepalensis. A large proportion of ever-greens and winter-flowering plants make it pleasant at the dead season".* The planting in this garden has not been maintained, but the built fabric remains intact.

Swan Pond

This pond, or small artificial lake, located to the rear of the Castle, appears on Rocque's map of 1757, suggesting that it may have been constructed as part of the extensive works to the Castle and Demesne in 1738. Historic maps and photographs show that there was an island in the centre of the pond.

> *"The Swan Pond is of doubtful origin; its shape suggests that it is artificial. It is suggested that it did not exist up to the early VIIIth century and that the area was then a boggy... Swamp. Towards the end of the century the pleasure ground to the west of the hall must have been levelled up requiring some 3 to 4 foot of filling; it is suggested that the pond was made at this time for the dual purpose of removing the swamp and of provided in the earthy... Filling for the levelling up. It must be admitted that this is pure conjecture."*

Alterations were carried out to the Swan Pond and surrounding area during the 1910 works to the Castle and Demesne.

> *"Outside the Drawing Room the odd beds were grassed over and a paved path built up to the Swan Pond passing through the Sidney Garden in which an east wall was built. The old doorway entrance though the SW Enclosure Wall Tower was filled in.*
>
> *On the west front the east bank of the Swan Pond was walled and the pond surround planted; further north the approach to the Kitchen yard was converted into a garden and that section of the Enclosure Wall removed in order to improve the view from Dining Room windows."*

Danes' Drain

> *"The 'Danes Drain' – The origin and original purpose of this very large culvert which runs down the front drive in almost a tunnel is a mystery. In a drainage diagram by Higginbotham of 1909, dealing with the Castle drainage, it is shown running from the east corner of Kenelm's Tower across the forecourt and through the Coach Yard entrance, then ... to the East Wing of Yard to the north wing where it curves into the front drive running down the west side of it into the sea; another ranch is shown starting near the Farm and running down the south side of the back drive and into the main culvert at the Front Drive; the sources of neither branch are shown, but there is ... a storm/stone ... drain or a culvert running into it from along Holly Walk; this may be merely a method of discharging the field drain in Walk Meadow and the Sunk .... The curious course at the forecourt suggests that originally it had nothing to do with the Castle and this is confirmed by its traditional name. It was not utilised when ... drainage was introduced into the Castle in the VIIIth century although at this period it was in use for stable and kitchen drainage; it was utilised however when modern drainage was ... in 1910."*

Wooded Area and Walks

"The 'little wood' at this period [c. 1738] *was a semi ornamental area probably completely walled in; a small ornamental pond still remains as do the foundations of a raised summer house at the north west corner."*

The Wooded Area to the rear of the Castle survives, although it appears that some of the formal tree-lined paths have been lost.

The Kitchen Garden and Farm Buildings c. 1738

"It is probable that the Walled Kitchen Garden and Farm buildings were built at the same time as the Beech Hedge Garden. They are accurately depicted in the Prospect Picture as is the Deer Park boundary wall and Corr Castle (by then unused).It seems unlikely however that the wall shown along west side of Drive or that on the south side of Back Drive were ever in existence. The Back Drive probably ceased at Farm Buildings with lanes running ... north and south. The north branch passed through farm and continued on to the ... past the Herds Cottage. The south branch skirted the west Enclosure Wall past the back entrance at the bottom of Cross Garvey; a branch of this lane ran up Jenny's Walk which at this period was walled on each side. It is doubtful whether the lane running from the top of Jenny's Walk to the Stewards and Herds Cottages were in existence at this date."

The Farmyard is now in use as the National Transport Museum, and the buildings surviving today appear to date from the mid-20th century. The quadrangular blocks illustrated on 19th and early-20th century maps are no longer extant.

Similarly, most of the structures in the Stable Yard adjoining the Castle to the North-West have been demolished. Recent works to the old Kitchen involved the reconstruction of some of these ruinous structures. The boundary walls of the yard survive, as does the ruinous Dove-Cote.

Dove-Cote

This ruinous circular structure is included on the NIAH Building Survey, and described as "*Single-bay two-storey rubble stone building, c. 1750, on a circular plan, possibly originally a dovecote. Now disused and partly derelict. Attached to rubble stone wall, c. 1840, on an L-shaped plan, around a kitchen garden".*

Church (Ruinous)

This ruinous structure is situated to the north of Howth Castle, and is oriented East-West. It is visible in the 1745 painting of Howth Castle and is believed to be of medieval origin, although McBrierty notes that the 26th Lord Howth constructed a chapel on the demesne in the year 1700.

Rhododendron Gardens

The Rhododendron garden was planted on Muckrock, part of the Hill of Howth, in the mid-19th century, and by 1902 had attained a high level of beauty and fame, as evidence by the high praise for the gardens published in the Irish Times: *"…It is worth a trip across the Atlantic merely to spend an afternoon among the rhododendrons at the Howth demesne. It is the fairyland of childhood called into brief and beautiful reality. I have travelled in most part of the world, and have seen the greater part of the show-places on the Continent, but nothing of the sort can equal in fantastic and sumptuous beauty this hanging garden at the Howth demesne. It is a pity that anyone who can visit Howth should miss a sight that is unsurpassed on this side of the Indian Ocean."*

The Rhododendron Gardens gained some fame as the location where Leopold Bloom proposed to Molly in Joyce's Ulysses. The gardens continue to thrive, and are open to the public as part of the grounds of the Hotel and Golf-Course.

Dolmen

There is a large Dolmen or Cromlech on the hill at Howth, within the demesne lands. This is described by Lewis in 1837: *"In a hollow on the east side of the Hill of Howth are the remains of a cromlech, the table stone of which, 14 feet long, 12 feet wide, and about 6 feet thick, has fallen on one side, but is still supported on the other by upright stones, 7 feet high; it is by the peasantry called 'Fin's Quoit', from a tradition that it was thrown into its present position by Fin McCoul".* Other traditions relating to the Cromlech claim that it is the burial place for Aideen, daughter of Aengus of Ben Edar (Howth), who died of grief on the death of her husband Oscar at the battle of Gavra.

The Dolmen is now located within the lands of the golf-course, outside of the modern demesne of Howth Castle. It is a National Monument (Reg. Ref: DU015-032). The listing on the Record of Monuments and Places describes the Dolmen today: "*The tomb is situated by a pathway under tree cover at the edge of Deer Park golf course at the foot of Muck Rock on the north side of Howth Head. There is an entrance in SE to a single chamber (L 2.6m; W 1.1m). This is indicated by two portals (H 2.75m and 2.45m respectively). The door stone has partially collapsed into the chamber. The large roof stone (L 5.2m; W 4.2m; D 1.9m) still rests on the upper edge of the portals above the collapsed chamber (Borlase 1897, 2, 376-9; Ó Nualláin 1983, 82, 96)."*

15.9 Do Nothing Scenario

It should be noted that the subject site is primarily zoned RS for residential development, and in the absence of the proposed development it is likely that a comparable residential scheme would be proposed, having regard to national planning policy that advocates compact growth and increased density at sites proximate to public transport, such as the subject site.

In the absence of the proposed development going ahead and consequently no conservation works carried out, the historic fabric of the section of the demesne boundary wall will inevitably deteriorate due to the impact of the ivy growth.

The unbroken demesne walls presently create a barrier to engagement of the community with the site. Should the proposed development not proceed the opportunity to introduce this social improvement will be lost.

15.10 Likely Significant Effects

The following sections refer to potential significant impacts in the absence of mitigation and without consideration of the specific features and design of the proposed development which will reduce these potential effects.

15.10.1 Construction Phase

Likely Significant Effect: In the absence of any mitigation efforts, the proposed conservation works to the fabric of the historic demesne wall will enhance the architectural character of the wall and its contribution to the character of the streetscape.

Quality: Positive.

Significance: Slight.

Extent: Local.

Context: The historic wall is in a deteriorating condition and has extensive ivy growth. Earlier repairs to the wall are clearly visible and detract from the character of the wall.

Probability: This is a likely effect.

Duration/Frequency: This is a permanent and constant effect.

Type of Effect: Worst-Case.

Likely Significant Effect: In the absence of any mitigation efforts, the creation of two new access openings in the historic boundary wall to the northern boundary of the site will have a negative impact on the historic fabric and architectural/historic significance of the wall.

Quality: Negative.

Significance: Slight.

Extent: Local.

Context: The historic wall is in a deteriorating condition and has extensive ivy growth. Earlier repairs to the wall are clearly visible and detract from the character of the wall.

Probability: This is a likely effect.

Duration/Frequency: This is a permanent and constant effect.

Type of Effect: Worst-Case.

Likely Significant Effect: In the absence of any mitigation efforts, the creation of two new access openings in the historic boundary wall to the northern boundary of the site will have a negative impact on the character of the approach to Howth village.

Quality: Negative.

Significance: Moderate.

Extent: Local.

Context: There has been significant modern development along the Howth Road in modern times, and a large residential development, Claremont, has been permitted at the former Techcrete site on the opposite side of the road.

Probability: This is a likely effect.

Duration/Frequency: This is a permanent and constant effect.

Type of Effect: Worst-Case.

15.10.2 Operational Phase

Likely Significant Effect: In the absence of any mitigation efforts, the development of the subject site will involve the loss of trees and will have a resulting negative impact on the landscape setting of the neighbouring Howth Castle demesne.

Quality: Negative.

Significance: Significant.

Extent: Regional.

Context: The historic demesne landscape of Howth Castle has been altered in modern times, with the development of the Deer Park Hotel and Golf Course, as well as neighbouring residential estates.

Probability: This is a likely effect.

Duration/Frequency: This is a permanent and constant effect.

Type of Effect: Worst-Case.

Likely Significant Effect: In the absence of any mitigation efforts, the proposed residential development of the subject site will have a negative impact on the setting and context of neighbouring Protected Structures, including Howth Castle (and associated structures) and St. Mary's Church.

Quality: Negative.

Significance: Moderate.

Extent: Regional.

Context: Modern residential development along the Howth Road and modern alterations to the Howth Castle demesne, including the development of the modern Deer Park Hotel and golf course have altered the historic context and setting of the Protected Structures.

Probability: This is a likely effect.

Duration/Frequency: This is a permanent and constant effect.

Type of Effect: Worst-Case.

Likely Significant Effect: In the absence of any mitigation efforts, the proposed residential development of the subject site will have a negative impact on the adjoining Howth Castle Environs Architectural Conservation Area and key views and vistas within the locality.

Quality: Negative.

Significance: Moderate.

Extent: Regional.

Context: Modern residential development along the Howth Road and modern alterations to the Howth Castle demesne, including the development of the modern Deer Park Hotel and golf course have altered the historic context and setting of the Howth Castle demesne.

Probability: This is a likely effect.

Duration/Frequency: This is a permanent and constant effect.

Type of Effect: Worst-Case.

15.10.3 Cumulative

Permission has been granted by An Bord Pleanála for the residential development of the former Techrete site (Claremont SHD), opposite the subject site (Reg. Ref. 306102-19). This permitted scheme will include four residential blocks with a height up to a maximum of seven storeys. The cumulative impact of this permitted scheme and the subject proposal will be assessed in this section.

Likely Significant Effect: In the absence of any mitigation efforts, the cumulative impact of the Claremont SHD and the proposed development will have an unacceptable visual impact on the character of the Howth Road and the approach to Howth village and the entrance to Howth Castle.

Quality: Negative.

Significance: Moderate.

Extent: Regional.

Context: Modern residential development along the Howth Road and modern alterations to the Howth Castle demesne, including the development of the modern Deer Park Hotel and golf course have altered the historic context and approach to Howth village and Howth Castle.

Probability: This is a likely effect.

Duration/Frequency: This is a permanent and constant effect.

Type of Effect: Worst-Case/Cumulative.

Likely Significant Effect: In the absence of any mitigation efforts, the cumulative impact of the Claremont SHD and the proposed development will have an unacceptable visual impact on the key views and vistas within the Howth Castle Environs ACA and the setting of the Protected Structures.

Quality: Negative.

Significance: Moderate.

Extent: Regional.

Context: Modern residential development along the Howth Road and modern alterations to the Howth Castle demesne, including the development of the modern Deer Park Hotel and golf course have altered the historic context and views and vistas within the context.

Probability: This is a likely effect.

Duration/Frequency: This is a permanent and constant effect.

Type of Effect: Worst-Case/Cumulative.

15.10.4 Worst-case Scenario

The worst-case scenario for the subject site would see the loss of the historic demesne wall along the northern and eastern boundaries, constituting the loss of historic fabric and a feature of interest within the attendant grounds of Howth Castle. The worst-case scenario would also see the proposed new development having an overbearing visual impact on the setting of the neighbouring Protected Structures of Howth Castle and St. Mary's Church, detracting from the character of these Protected Structures.

These worst-case scenarios will be avoided through the careful siting of the proposed new blocks and the planting of trees so as to screen the proposed development from the settings of the neighbouring Protected Structures, and through appropriate site management procedures and vibration monitoring are required to be in place and appropriate avoidance measures undertaken to avoid any damage to the historic demesne wall.

15.10.5 Summary

The Table below summarises the identified likely significant effects of the proposed development in the absence of mitigation during the construction phase.

Likely Significant Effect	Quality	Significance	Extent	Probability	Duration	Type
In the absence of any mitigation efforts, the creation of two new access openings in the historic boundary wall to the northern boundary of the site will have a negative impact on the historic fabric and architectural/historic significance of the wall.	Negative	Slight	Local	Likely	Permanent	Worst-Case
In the absence of any mitigation efforts, the creation of two new access opes in the historic boundary wall to the northern boundary of the site will have a negative impact on the character of the approach to Howth village.	Negative	Moderate	Local	Likely	Permanent	Worst-Case

Table 15.2 Summary of Construction Phase Likely Significant Effects without Mitigation

The Table below summarises the identified likely significant effects of the proposed development in the absence of mitigation during the operational phase.

Likely Significant Effect	Quality	Significance	Extent	Probability	Duration	Type
In the absence of any mitigation efforts, the development of the subject site will involve the loss of trees and will have a resulting negative impact on the landscape setting of the neighbouring Howth Castle demesne.	Negative	Significant	Regional	Likely	Permanent	Worst-Case
In the absence of any mitigation efforts, the proposed residential development of the subject site will have a negative impact on the setting and context of neighbouring Protected Structures, including Howth Castle (and associated structures) and St. Mary's Church.	Negative	Moderate	Regional	Likely	Permanent	Worst-Case

Likely Significant Effect	Quality	Significance	Extent	Probability	Duration	Type
In the absence of any mitigation efforts, the proposed residential development of the subject site will have a negative impact on the adjoining Howth Castle Environs Architectural Conservation Area and key views and vistas within the locality.	Negative	Moderate	Regional	Likely	Permanent	Worst-Case
In the absence of any mitigation efforts, the cumulative impact of the Claremont SHD and the proposed development will have an unacceptable visual impact on the character of the Howth Road and the approach to Howth village and the entrance to Howth Castle.	Negative	Moderate	Regional	Likely	Permanent	Worst-Case/ Cumulative
In the absence of any mitigation efforts, the cumulative impact of the Claremont SHD and the proposed development will have an unacceptable visual impact on the key views and vistas within the Howth Castle Environs ACA and the setting of the Protected Structures.	Negative	Moderate	Regional	Likely	Permanent	Worst-Case/ Cumulative

Table 15.3 Summary of Operational Phase Likely Significant Effects without Mitigation

15.11 Mitigation

15.11.1 Incorporated Design Mitigation

The design of the site and the layout of the three proposed residential blocks has been carefully considered with regard to the visual impact of the development on the sensitive setting of neighbouring Protected Structures, the Howth Castle ACA and other significant views and vistas within the wider context.

The provision of the car parking in the basement (as opposed to ground level) is a key incorporated mitigation measure. This allows for the site to retain a substantial proportion of open space, and to introduce a large number of trees to the site, for visual screening.

The three buildings are arranged and scaled to have a strong visual presence in the Howth Road corridor, but with the facades angled to present towards the west and east (the approaches to the site), as opposed to facing the road in front of the site. This recognises the fact that the greatest number of visual receptors would be moving towards the site as opposed to seeing it face-on from or across the street. The siting of the blocks has been carefully considered, and carefully set back from the road so as to minimise visual impact. The design has taken into account the comments from Fingal County Council at pre-application stage.

The architectural treatment and detailing of the new openings has been designed to reflect the robust character of the demesne wall. High quality materials specified are intended to provide immediate and long term resilience and enhanced visual appearance.

The wide, landscaped corridors between the buildings provide relief in the built frontage, and glimpses of the trees and the headland to the south, when seen from the road as it passes the site.

The massing of the buildings has been considered and designed to minimise the visual impact and footprint on the site and to maximise views through permitting glimpses to the open green setting behind the development.

The buildings - set back behind the existing road-side verge, the retained demesne wall and the green space and trees described above - are five storeys at the road-front (with the fifth storey set back). This is an appropriate scale for a development intended to have an urbanising effect on the road corridor at the gateway to the town. They would generate a degree of built enclosure - but with no buildings directly opposite, a sense of space would be retained, orientated towards the coastline and sea to the north. There would be no sense of excessive enclosure. The buildings each step up to six storeys in their rear volume, the step in height reflecting the gradient of the site (like the top floor of the front volume, the sixth storey of the rear volume is set back).

The landscape proposals include retention of the historic woodland belt (part of the demesne woodland framework) outside the site's east boundary. It is proposed to reinforce and enhance the woodland belt with supplementary planting inside the boundary.

A part of the golf course perimeter woodland belt (a modern/20th century intervention) would be removed from the rear portion of the site. This would be replaced with a new belt of woodland planting along the rear (south and west) boundaries of the applicant's land holding, resulting in a net gain on woodland cover.

Verified view photomontages have been created by 3D Design Bureau which illustrate the visual impact of the development, and the cumulative impact of the subject proposal and the neighbouring Claremont SHD. These impacts will be assessed under Section 15.12.4 - Residual Impact Assessment, below.

The proposed landscape design by Bernard Seymour Landscape Architects has been carefully considered to take into account the existing historic landscape of the adjoining Howth Castle demesne and to ensure screening of the proposed new development. This will be assessed in greater detail under Section 15.12 - Residual Impact Assessment, below.

15.11.2 Construction Phase Mitigation

Potential negative impacts on the building fabric and integrity of the built heritage arising from the removal of a section of the demesne wall can be minimised during the construction phase by adherence to best practice and to the Architectural Heritage Protection Guidelines for Planning Authorities (2011) and the Advice Series issued by the Department of Arts Heritage and the Gaeltacht.

Best practice mitigation measures :

- Using expert conservation advice
- Protecting the special interest
- Promoting minimum intervention
- Promoting honesty of repairs and alterations
- Using appropriate materials and methods

The physical works to the demesne wall will be advanced with design and specifications to a detailed level to indicate all interventions to the wall fabric including interface with the new architectural treatment of the openings and any structural intervention required.

As a result of dismantling sections of the wall a quantity of durable limestone will become available. It is proposed to reuse the stone elsewhere to carry out any repairs required to the wall and to integrate within the landscape proposals.
The use of specialist contractors with relevant experience, skill and qualifications will be employed to carry out conservation works to the demesne wall.

The proposed taking down of two sections of the historic boundary wall to the north of the site will be carried out with care and consideration, and in accordance with the Conservation Specification, (Appendix 15.3, Volume III of the EIAR). This will ensure minimal damage and loss of historic fabric.

The proposed new openings will be carried out in accordance with the drawings by MCA Architects. The impact of the proposed design will be assessed under Section 15.12 – Residual Impact Assessment, below.

Conservation works to the historic demesne wall will be carried out to the surviving historic demesne wall along the northern boundary of the site.

15.11.3 Operational Phase Mitigation

There are no relevant mitigation works at Operational Phase as the likely significant effects arising from the Operational Phase have been considered as part of the incorporated design mitigations – see Section 15.11.1 above.

15.12 Residual Impact Assessment

15.12.1 Construction Phase

The proposed design is considered to be an acceptable and necessary intervention. The design will read as a clearly modern intervention, ensuring historical legibility and clarity. The design will not detract from the character of the Howth Road, as the demesne wall will be largely retained in situ. The principle of creating new openings within this demesne wall has been established as an acceptable intervention as this also appears to have been carried out at the modern house to the immediate west of the subject site. The proposed conservation works to the historic demesne wall will have a positive impact on the historic fabric and on the contribution of the wall to the character of Howth Road and the approach into Howth.

Likely Significant Effect: The creation of the proposed two new openings in the existing historic demesne wall to the northern boundary of the site will result in minimal loss of historic fabric.

Quality: Neutral.

Significance: Slight.

Extent: Local.

Context: The proposed works will be carried out in accordance with the Outline Conservation Specification (appended)

Probability: This is a likely effect.

Duration/Frequency: This is a permanent and constant effect.

Type of Effect: Residual.

Likely Significant Effect: The proposed conservation works to the fabric of the historic demesne wall will enhance the architectural character of the wall and its contribution to the character of the streetscape.

Quality: Positive.

Significance: Slight.

Extent: Local.

Context: The historic wall is in a deteriorating condition and has extensive ivy growth. Earlier repairs to the wall are clearly visible and detract from the character of the wall. The proposed conservation works will be carried out in accordance with the Outline Conservation Specification (appended) and will have a positive impact on the fabric and character of the historic demesne wall.

Probability: This is a likely effect.

Duration/Frequency: This is a permanent and constant effect.

Type of Effect: Worst-Case.

The visual impact of the proposed new openings can be seen in **Figure 15.10**, below. It is clear that the proposed new gates will not detract from the character of Howth Road. The proposed works will include conservation works to the surviving historic demesne wall, thereby ensuring its ongoing survival and enhancing the impact and contribution of the wall to the character of the approach to Howth Village and to Howth Castle.

Likely Significant Effect: The proposed new openings providing access to the subject site will be of high quality architectural design and will protect and retain the architectural significance of the historic demesne walls.

Quality: Positive.

Significance: Slight.

Extent: Local.

Context: The proposed new gates will be in keeping with the character of the streetscape of Howth Road and the historic demesne walls.

Probability: This is a likely effect.

Duration/Frequency: This is a permanent and constant effect.

Type of Effect: Residual.

15.12.2 Operational Phase

The proposed name of the new development is 'Kenelm', named for Kenelm Lee Guinness, a formula-one racing driver and yachtsman. His mother was a Gaisford-St. Lawrence of Howth. One of the towers of Howth Castle has been named after Kenelm Guinness. The naming of the proposed development for this historical figure creates a link to the historic demesne of Howth Castle and respects the special heritage of the wider setting.

15.12.3 Operational Phase - Landscape

15.12.3.1 Landscape Design

The proposed landscape design by Bernard Seymour Landscape Architects has been carefully considered to take into account the significance of the existing historic landscape of the adjoining Howth Castle demesne. The visual impact of the proposed development will be minimised through the retention of existing mature trees in the eastern section of the subject site, which will ensure screening between the site and Howth Castle. As noted above, there is also significant mature woodlands and tree belts to the south of the subject site, which provide visual screening to the Castle. The proposed new landscape design will also involve the planting of new trees. This will ensure that the character of the historic demesne is maintained and protected. The impact of these measures can be seen in the following sections on Visual Impact. The proposed landscape design will be in keeping with the parkland character of the adjoining historic demesne. The level of retention of the existing trees can be clearly seen in the Tree Impact and Protection Plan, prepared by John Morris Arboricultural Consultancy Ltd.

Figure 15.10: Extract from the Proposed Landscape Design Plan, prepared by Bernard Seymour Landscape Architects. showing the extensive retention of existing trees to the south and east of the subject site.

Likely Significant Effect: The proposed new landscape design for the scheme will be in keeping with the historic demesne character and will have no visual impact on the character of the setting of Howth Castle.

Quality: Positive.

Significance: Slight.

Extent: Local.

Context: The proposed retention of the existing tree line to the southern and eastern sections of the site will provide screening between the proposed development and the setting of Howth Castle.

Probability: This is a likely effect.

Duration/Frequency: This is a permanent and constant effect.

Type of Effect: Residual.

15.12.4 Operational Phase – Visual Impact

The accompanying photomontage booklet prepared by 3D Design Bureau to support this chapter of the EIAR includes 11 no. views. The views are presented as 'baseline', 'proposed' and 'proposed + permitted Claremont scheme' on the former Techrete site.

15.12.4.1 Visual Impact of Proposed Development on Entrance Gates RPS No. 0556 (Views 6 and 12)

The Entrance Gates to Howth Castle (RPS Reg. Ref. 0556) are located to the east of the subject site. They are set back approx. 50m from the Howth Road. The Photomontage images, views 6 and 12, prepared by 3D Design Bureau show the visual impact of the proposed development on the setting of the Protected Structure.

Figure 15.11: View 12, Prepared by 3D Design Bureau, showing the visual impact of the proposed development on the setting of the Entrance Gates to Howth Castle, a Protected Structure.

The proposed development will not be visible from this viewpoint looking North along the Entrance Avenue towards the Entrance Gates. This is a protected view within the Howth Castle ACA.

Likely Significant Effect	Quality	Significance	Extent	Probability	Duration	Type
The proposed development will have no visual impact on the setting of the Entrance Gates.	Neutral	Slight	Local	Likely	Permanent/ Constant	Residual

Figure 15.12: View 6, Prepared by 3D Design Bureau, showing the visual impact of the proposed development on the setting of the Entrance Gates to Howth Castle, a Protected Structure.

Whilst views from the avenue to the south of the entrance gates will be unaffected, the proposed new development will be visible from views towards the entrance gates to Howth Castle from the Howth Road, as illustrated in View 6. The Howth Castle ACA does not include views towards the Entrance Gates as a protected view but the gates are protected and there will be some impact on their front setting. As noted above, the entrance gates are set back some distance (approx. 50m) from Howth Road, and have a minimal visual presence on wider views of the Howth Road streetscape which is dominated by contemporary visual characteristics - the busy carriageway, the grassed roundabout, the residential development to the west as well as the historic boundary wall and the dense planting. The new development is separated from the entrance by the historic boundary wall and the dense planting – both historic and proposed. In wide views, therefore, the proposed development will be visible to the west of the entrance but seen as separate from the entrance and as part of the contemporary characteristics of the Howth Road streetscape to the west. The proposal will not be visible at all in views further south on the approach to the gates. The dense historic planting will screen the new development in closer views of the gates within its immediate front setting where the architectural qualities of the masonry become apparent. The impact

therefore will be confined to wider views of the gates within a roadside streetscape and will not affect the immediate front setting of the Entrance Gates. The visual impact of the proposed development on this viewpoint is therefore considered to be acceptable.

"The principal views of note within the boundaries of the ACA are of Howth Castle itself. There are some views out of the ACA, namely from the entrance gates and from the castle over the golf course. These views contribute to the character of the area and it is important that potential new development within the ACA does not negatively impact on or obscure these views."

The retention of the historic demesne wall along the northern boundary of the site has a positive visual impact on this viewpoint, identifying the site as formerly part of the historic demesne, and contributing to the historic character of the streetscape. The demesne wall continues to the west, forming a boundary to the front gardens of some of the single-storey houses in that area.

Likely Significant Effect	Quality	Significance	Extent	Probability	Duration	Type
The proposed development will have minimal visual impact on the setting of the Entrance Gates.	Neutral	Slight	Local	Likely	Permanent/ Constant	Residual

It is clear from the above that the proposed development will have no significant visual impact on the setting of the Entrance Gates to Howth Castle. The proposal therefore cannot be considered to have any impact on the character of the setting or the Protected Structure.

15.12.4.2 Visual Impact of Proposed Development on Howth Road (Views 7-10)

The character of the Howth Road in this location is defined by the rubble stone wall to the south and the trees in the middle-distance, screening Howth Castle from views.

The proposed development will have a significant impact on the view along Howth Road from this location. Mitigation measures including the retention of the historic demesne wall, the planting of mature trees on site, and the carefully considered design of the new gate to the site ensure that the character of the streetscape is retained.

It should be noted that the character of the streetscape along Howth Road has been significantly altered in modern times, with the development of modern houses to the west of the subject site, as illustrated in View and 10.

Figure 15.13: View 10, Prepared by 3D Design Bureau, showing the existing modern character of the Howth Road, to the west of the subject site.

Figure 15.14: View 7, Prepared by 3D Design Bureau, showing the visual impact of the proposed development on the character of Howth Road.

The proposed new development will be visible from the streetscape of Howth Road, as illustrated in View 7. The retention of the historic demesne wall, and conservation works to the historic fabric of the same, will have a positive impact on the character of the streetscape, enhancing the contribution and appreciation of the historic demesne wall. The materiality of the proposed new blocks has been carefully selected so as to maintain visual harmony with the historic wall. The proposed new access opes in the demesne wall will enhance the physical and visual connections and will have a positive impact on the streetscape.

Likely Significant Effect	Quality	Significance	Extent	Probability	Duration	Type
The proposed development will have a positive visual impact on the character of Howth Road.	Positive	Significant	Local	Likely	Permanent/ Constant	Residual

15.12.4.3 Visual Impact of Proposed Development on Howth Castle (Views 13-19)

Howth Castle (RPS Reg. Ref. 0556) is located approximately 175m to the south of the subject site. The Photomontage images prepared by 3D Design Bureau show the visual impact of the proposed development on the setting of the Protected Structure.

Figure 15.15: View 13, Prepared by 3D Design Bureau, showing the visual impact of the proposed development on the setting of Howth Castle, a Protected Structure.

The proposed new development will not be visible from this viewpoint within the front setting of Howth Castle.

Likely Significant Effect	Quality	Significance	Extent	Probability	Duration	Type
The proposed development will have no visual impact on the setting of Howth Castle.	Neutral	Slight	Local	Likely	Permanent/ Constant	Residual

Figure 15.16: View 14, Prepared by 3D Design Bureau, showing the visual impact of the proposed development on the setting of Howth Castle, a Protected Structure.

The proposed new development will not be visible from this viewpoint within the front setting of Howth Castle.

Likely Significant Effect	Quality	Significance	Extent	Probability	Duration	Type
The proposed development will have no visual impact on the setting of Howth Castle.	Neutral	Slight	Local	Likely	Permanent/ Constant	Residual

Figure 15.17: View 15, Prepared by 3D Design Bureau, showing the visual impact of the proposed development on views from the upper floors of Howth Castle, a Protected Structure.

The proposed new development will not be visible from this view, looking north from an upper floor of Howth Castle.

Likely Significant Effect	Quality	Significance	Extent	Probability	Duration	Type
The proposed development will have no views from Howth Castle.	Neutral	Slight	Local	Likely	Permanent/ Constant	Residual

Figure 15.18: View 16, Prepared by 3D Design Bureau, showing the visual impact of the proposed development on the setting of the courtyard to the north-west of Howth Castle, a Protected Structure.

The proposed new development will not be visible from this viewpoint of the service courtyard buildings within the rear setting of Howth Castle.

Likely Significant Effect	Quality	Significance	Extent	Probability	Duration	Type
The proposed development will have no visual impact on the courtyard to the north-west of Howth Castle.	Neutral	Slight	Local	Likely	Permanent/ Constant	Residual

Figure 15.19: View 17, Prepared by 3D Design Bureau, showing the visual impact of the proposed development on the woodland area to the west of Howth Castle, a Protected Structure.

The proposed new development will not be visible from this viewpoint within the woodland area to the rear/west of Howth Castle.

Likely Significant Effect	Quality	Significance	Extent	Probability	Duration	Type
The proposed development will have no visual impact on the woodland area to the west of Howth Castle.	Neutral	Slight	Local	Likely	Permanent/ Constant	Residual

Figure 15.20: View 18, Prepared by 3D Design Bureau, showing the visual impact of the proposed development on golf course, within the former demesne lands of Howth Castle

The proposed new development will not be visible from this viewpoint within the golf course on the former demesne lands of Howth Castle

Likely Significant Effect	Quality	Significance	Extent	Probability	Duration	Type
The proposed development will have no visual impact on the golf course on the former demesne lands of Howth Castle.	Neutral	Slight	Local	Likely	Permanent/ Constant	Residual

Figure 15.21: View 19, Prepared by 3D Design Bureau, showing the visual impact of the proposed development on the view towards Howth Castle from Muck Rock.

The proposed new development will be visible from this viewpoint on Muck Rock, looking towards Howth Castle. However, the amount of woodland area on the Howth Castle demesne is such that the new development is largely screened from view. The proposed new development does not interrupt or obstruct views of Howth Castle from this viewpoint, and is not considered to have a significant visual impact.

Likely Significant Effect	Quality	Significance	Extent	Probability	Duration	Type
The proposed development will have minimal visual impact on the view of Howth Castle from Muck Rock.	Neutral	Slight	Local	Likely	Permanent/ Constant	Residual

It is clear from the above that the proposed development will have no visual impact on the setting of Howth Castle. The proposal therefore cannot be considered to have any impact on the character of the setting or the Protected Structure.

15.12.4.4 Visual Impact of Proposed Development on St. Mary's Church (View 11)

St. Mary's Church (RPS Reg. Ref. 0594) is located to the east of the subject site. The CGI Photomontage images prepared by 3D Design Bureau show the visual impact of the proposed development on the setting of the Protected Structure.

Figure 15.22: View 11, Prepared by 3D Design Bureau, showing the visual impact of the proposed development on the setting of St. Mary's Church, a Protected Structure.

It is clear from the above figure that the proposed development will have no visual impact on the setting of St. Mary's Church. The proposal therefore cannot be considered to have any impact on the character of the setting or the Protected Structure.

Likely Significant Effect	Quality	Significance	Extent	Probability	Duration	Type
The proposed development will have no visual impact on the setting of St. Mary's Church.	Neutral	Slight	Local	Likely	Permanent/ Constant	Residual

15.12.4.5 Visual Impact of Proposed Development on Church ruin

The ruinous Church (RPS Reg. Ref. 0557) is located to the south of the subject site. The structure is completely surrounded by trees, thereby providing natural existing screening between the Protected Structure and the proposed development. No photomontages of this view were prepared.

Likely Significant Effect: The proposed new development will have no visual impact on the setting of the neighbouring Protected Structures.

Quality: Neutral.

Significance: Slight.

Extent: Local.

Context: CGI Photomontages clearly show that the proposed development will not be visible from the setting and views to/from the neighbouring Protected Structures.

Probability: This is a likely effect.

Duration/Frequency: This is a permanent and constant effect.

Type of Effect: Residual.

15.12.4.6 Visual Impact of Proposed Development on Character of Howth Castle ACA and Key Views and Vistas within the ACA

The Howth Castle Demesne ACA document defines significant views within the ACA, as illustrated in the figure below.

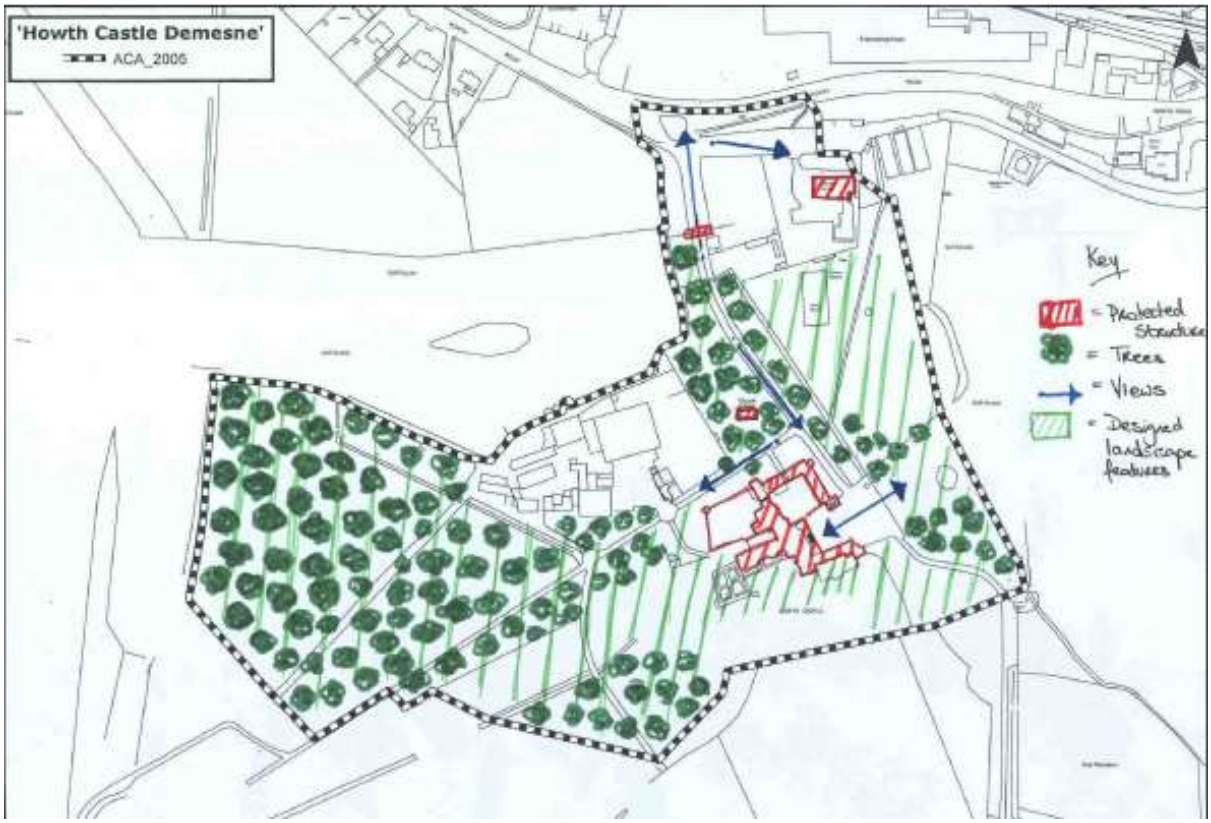

Figure 15.23 Sketch Plan from Howth Castle Environs ACA highlighting Protected Structures, Designed Landscape Features, Trees and Key Views within the ACA.

The significant views within the Demesne landscape and the ACA include views to and from Howth Castle, and views along the entrance avenue towards the Castle. The view looking out from the demesne through the front Entrance Gates is also noted as a key view. The visual impact of the proposed development on the relevant significant views as defined within the ACA has been assessed under Section 15.12.4.4, above, as part of the assessment of the proposed development on the setting of the Protected Structure of Howth Castle.

Likely Significant Effect: The proposed new development will have no visual impact on the key views within the Howth Castle ACA.

Quality: Neutral.

Significance: Slight.

Extent: Local.

Context: CGI Photomontages clearly show that the proposed development will not be visible from the setting and key views within the Howth Castle ACA.

Probability: This is a likely effect.

Duration/Frequency: This is a permanent and constant effect.

Type of Effect: Residual.

15.12.5 Cumulative

Permission has been granted by An Bord Pleanála for the residential development of the former Techcrete site (Claremont SHD), opposite the subject site (Reg. Ref. 306102-19). This permitted scheme will include four residential blocks with a height up to a maximum of eight storeys. The cumulative impact of this permitted scheme and the subject proposal will be assessed in this section.

15.12.5.1 Cumulative Visual Impact of Proposed Development and Neighbouring Permitted Claremont SHD on Setting of Neighbouring Protected Structures and on the Character of Howth Castle Environs ACA and Key Views and Vistas within the ACA (Views 6-7, 11-19)

Protected Structures within the immediate context of the subject site include Howth Castle (and associated structures, including Entrance Gates), Reg. Ref. 0556, the ruinous Church in the grounds of Howth Castle, Reg. Ref. 0557, and St. Mary's Church, Reg. Ref. 0594.

The cumulative visual impact on views of the setting of the neighbouring Protected Structures and within the ACA is assessed in the Table below. The booklet of Heritage Photomontages prepared by 3D Design Bureau and submitted under separate cover should be read alongside this section.

View Ref	Effect	Quality	Significance	Extent	Probability	Duration	Type
View 14	No cumulative visual impact	Neutral	Slight	Local	Likely	Permanent	Cumulative
View 13	No cumulative visual impact	Neutral	Slight	Local	Likely	Permanent	Cumulative
View 12	No cumulative visual impact	Neutral	Slight	Local	Likely	Permanent	Cumulative
View 7	The cumulative impact of the two developments on the character of Howth Road will be positive (See Section 15.12.5.2)	Positive	Significant	Local	Likely	Permanent	Cumulative
View 11	No cumulative visual impact	Neutral	Slight	Local	Likely	Permanent	Cumulative
View 16	No cumulative visual impact	Neutral	Slight	Local	Likely	Permanent	Cumulative

View Ref	Effect	Quality	Significance	Extent	Probability	Duration	Type
View 15	No cumulative visual impact	Neutral	Slight	Local	Likely	Permanent	Cumulative
View 6	No cumulative visual impact	Neutral	Slight	Local	Likely	Permanent	Cumulative
View 17	No cumulative visual impact	Neutral	Slight	Local	Likely	Permanent	Cumulative
View 18	No cumulative visual impact	Neutral	Slight	Local	Likely	Permanent	Cumulative
View 19	The cumulative visual impact will not interrupt views of Howth Castle from this viewpoint	Neutral	Slight	Local	Likely	Permanent	Cumulative

Table 15.4 Heritage Viewpoints – Description of Cumulative Visual Impact

Likely Significant Effect: There will be no cumulative visual impact from the proposed new development and the neighbouring Claremont SHD scheme on the setting of the neighbouring Protected Structures.

Quality: Neutral.

Significance: Significant.

Extent: Local.

Context: CGI Photomontages clearly show that the proposed development and the Claremont SHD will have little or no impact on the settings of and views to/from the neighbouring Protected Structures.

Probability: This is a likely effect.

Duration/Frequency: This is a permanent and constant effect.

Type of Effect: Residual.

15.12.5.2 Cumulative Visual Impact of Proposed Development and Neighbouring Claremont SHD on Character of Howth Road and Approach to Howth Village

The cumulative visual impact of the proposed development and the neighbouring permitted Claremont SHD scheme will have a significant impact on the character of the Howth Road. It is considered that the works will have a positive impact on the streetscape, enhancing and improving the amenity of the street. The developments will be of high architectural quality which will make a positive contribution to the character of the streetscape, and measures such as the retention and conservation works of the historic demesne wall on the subject site will

ensure that the historic character of the streetscape is not lost. It is important to recognise that the Howth Road streetscape itself is not protected and that, whilst the historic boundary wall has a presence, views here are dominated by contemporary characteristics including the existing Techcrete building (permitted for replacement with the Claremont SHD), the carriageway and the suburban ribbon development on the south side of the road. Views from here generally include contemporary visual characteristics which lie outside the ACA boundaries defined by Fingal County Council.

Figure 15.24: View 7, Prepared by 3D Design Bureau, showing the cumulative visual impact of the proposed development and the neighbouring Claremont SHD scheme on the view along Howth Road.

Figure 15.25: View 8, Prepared by 3D Design Bureau, showing the cumulative visual impact of the proposed development and the neighbouring Claremont SHD scheme on the view along Howth Road, looking south-east towards the subject site.

Likely Significant Effect	Quality	Significance	Extent	Probability	Duration	Type
The cumulative visual impact will have a positive impact on the character of Howth Road	Positive	Significant	Local	Likely	Permanent/ Constant	Cumulative

15.12.6 Summary

The Table below summarises the identified likely significant effects of the proposed development during the construction phase post application of mitigation measures.

Likely Significant Effect	Quality	Significance	Extent	Probability	Duration	Type
The creation of the proposed two new opes in the existing historic demesne wall to the northern boundary of the site will result in minimal loss of historic fabric.	Neutral	Slight	Local	Likely	Permanent/ Constant	Residual
The proposed new gates providing access to the subject site will be of high quality architectural design and will protect and retain the architectural significance of the historic demesne walls.	Positive	Slight	Local	Likely	Permanent/ Constant	Residual

Table 15.5 Summary of Construction Phase Likely Significant Effects with Mitigation

The Table below summarises the identified likely significant effects of the proposed development during the operational phase post application of mitigation measures.

Likely Significant Effect	Quality	Significance	Extent	Probability	Duration	Type
The proposed new landscape design for the scheme will be in keeping with the historic demesne character and will have no visual impact on the character of the setting of Howth Castle.	Positive	Slight	Local	Likely	Permanent/ Constant	Residual
The proposed new development will have no visual impact on the setting of the neighbouring Protected Structures.	Neutral	Slight	Local	Likely	Permanent/ Constant	Residual
The proposed new development will have no visual impact on the key views within the Howth Castle ACA.	Neutral	Slight	Local	Likely	Permanent/ Constant	Residual

Table 15.6 Summary of Operational Phase Likely Significant Effects with Mitigation

15.13 Interactions

There are interactions between this Chapter and Chapter 5 Landscape and Visual Assessment, and Chapter 14 Cultural Heritage – Archaeology. Please see Chapter 16, Interactions.

15.14 Monitoring

An appropriately qualified conservation architect will be appointed to oversee the careful taking down of sections of the historic demesne wall along the northern boundary of the site and the construction of new entrances within these openings. All works will be carried out in accordance with the Conservation Method Statement included in Appendix 15.3 in Volume III of this EIAR.

On completion of the construction works a regular maintenance programme (in accordance with the advice series – *Maintenance a guide to the care of older buildings* issued by the Department of the Environment Heritage and Local Government 2007) will be provided to the site owner for implementation. This would include noting any structural variations, checking for any signs decay or deterioration in stone, monitoring vegetation growth.

15.15 Summary of Mitigation & Monitoring

The Table below summarises the proposed construction phase mitigation and monitoring measures.

Likely Significant Effect	Mitigation	Monitoring
In the absence of any mitigation efforts, the creation of two new access openings in the historic boundary wall to the northern boundary of the site will have a negative impact on the historic fabric and architectural/historic significance of the wall.	Incorporated Design Mitigation – Design of New Openings	Works to be overseen by a Conservation Architect
In the absence of any mitigation efforts, the creation of two new access openings in the historic boundary wall to the northern boundary of the site will have a negative impact on the character of the approach to Howth village.	Incorporated Design Mitigation – Design of New Openings	Works to be overseen by a Conservation Architect

Table 15.7 Summary of Construction Phase Mitigation and Monitoring

The Table below summarises the proposed operational phase mitigation and monitoring measures.

Likely Significant Effect	Mitigation	Monitoring
In the absence of any mitigation efforts, the development of the subject site will involve the loss of trees and will have a resulting negative impact on the landscape setting of the neighbouring Howth Castle demesne.	Incorporated Design Mitigation – Landscape Design	N/A
In the absence of any mitigation efforts, the proposed residential development of the subject site will have a negative impact on the setting and context of neighbouring Protected Structures, including Howth Castle (and associated structures) and St. Mary's Church.	Incorporated Design Mitigation – Visual Impact Assessment	N/A
In the absence of any mitigation efforts, the proposed residential development of the subject site will have a negative impact on the adjoining Howth Castle Environs Architectural Conservation Area and key views and vistas within the locality.	Incorporated Design Mitigation – Visual Impact Assessment	N/A
In the absence of any mitigation efforts, the cumulative impact of the Claremont SHD and the proposed development will have an unacceptable visual impact on the character of the Howth Road and the approach to Howth village and the entrance to Howth Castle.	Incorporated Design Mitigation – Visual Impact Assessment	N/A
In the absence of any mitigation efforts, the cumulative impact of the Claremont SHD and the proposed development will have an unacceptable visual impact on the key views and vistas within the Howth Castle Environs ACA and the setting of the Protected Structures.	Incorporated Design Mitigation – Visual Impact Assessment	N/A

Table 15.8 Summary of Operational Phase Mitigation and Monitoring

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CHAPTER 16
INTERACTIONS OF THE FOREGOING

MAY 2021

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16 Interactions of the Foregoing

16.1 Introduction

The construction (including demolition), operational and cumulative impacts of the proposed development have been assessed within each chapter of the EIAR. In practice, many impacts have slight or subtle interactions with other disciplines. This chapter highlights those interactions which are considered to potentially be of a significant nature.

The potential impacts arising from the interactions were identified early in preparation of the EIAR / design process and therefore have been avoided through (i) design measures or (ii) the specific mitigation measures outlined in the EIAR chapters and summarised in Chapter 16.

This chapter was prepared by Paula Galvin of McCutcheon Halley Planning Consultants with input from the lead author of each assessment.

16.2 Population and Human Health

During the construction phase, the following likely interactions may occur with population and human health and in the absence of mitigation may give rise to likely significant effects;

- **Material Assets – Traffic & Transport:** Traffic flow for construction vehicles in the locality has potential to impact upon road safety.
- **Noise & Vibration:** There is potential for impact on human health associated with noise during the construction phase.
- **Air Quality & Climate:** There is potential for impact on human health from dust associated with construction activities.

During the operational phase the potential interactions are;

- **Landscape:** The landscape plan will impact on the quality of the private, communal and public open spaces, which could impact on people's health and well-being.
- **Material Assets – Traffic & Transport:** Traffic flows within the site have the potential to create safety risks for pedestrians and cyclists.
- **Land & Soils:** Development of the site to facilitate residential development will interact with land use which would change from the current greenfield to residential.
- **Biodiversity:** Increased population arising from the proposed development could interact with biodiversity locally due to the increased disturbance at amenity sites.
- **Air Quality & Climate:** There is potential for impact on human health from a deterioration in air quality associated with emissions from vehicles.

The potential significant impact on population and human health arising from these interactions have been considered within the relevant discipline and mitigation measures outlined where required. With mitigation measures in place, no significant permanent residual negative impacts will occur.

16.3 Landscape & Visual

During the construction phase the potential impact is;

- **Population & Human Health:** The emergence of plant to facilitate the development resulting in short-term, slight to not-significant, neutral visual effects for the existing resident population and users of the surrounding road network.

During the operational phase the potential interactions are:

- **Population & Human Health:** The landscape plan will impact on the quality of the private and communal open spaces, which will impact on people's health and well-being;
- **Biodiversity:** The landscaping has significant interaction with biodiversity in relation to the potential of the proposed planting maximising biodiversity benefits. Although a part of the golf course perimeter tree belt would be removed from the site, the most valuable trees/woodland in the area – the woodland belt outside the east site boundary – would be retained. New woodland planting is proposed inside the east, south and west boundaries of the applicant's land holding, ultimately resulting in a net increase in tree cover and diversity on the site – with amenity and biodiversity benefits.
- **Cultural Heritage – Built Heritage**: There would be a direct impact on the northern demesne wall arising from opening the wall to facilitate traffic and pedestrian movements. The sensitive approach to this together with the wider proposal to rehabilitate the wall at this location would safeguard its future.

  There would be no direct visual effects on Howth Castle or St Mary's Church, nor the majority of the ACA of which they are part, despite its proximity to the site. The dramatic change of character of the site itself would however indirectly affect the wider setting of the protected structures and the ACA, emphasising the historic character (and its value) by juxtaposition.

The potential significant impacts on landscape and visual arising from these interactions have been considered within the relevant discipline and mitigation measures outlined where required. With mitigation measures in place, no significant permanent residual negative impacts will occur.

16.4 Material Assets: Traffic & Transport

During the construction phase, the following aspects would interact with traffic and transport and in the absence of mitigation may give rise to likely significant effects;

- **Noise & Vibration:** Construction traffic, excavation works and the build out of the blocks may result in short-term localised noise and vibration effects; and,
- **Air Quality and Climate:** Emissions from construction traffic may impact local air quality and climate in terms of increased emissions of greenhouse gases from vehicles.
- **Population & Human Health**: Increased noise and dust may impact the amenities and health of existing residents in close proximity to the site.

During the operational phase the potential interactions are;

- **Population & Human Health:** Allowing people to live closer to services and amenities and high quality public transport modes would interact with patterns of traffic and transport locally.
- **Noise & Vibration:** Vehicular traffic flows generated by the development may result in corresponding changes to noise levels locally.
- **Air Quality and Climate:** Emissions from traffic associated with future occupants may impact local air quality and climate in terms of increased emissions of greenhouse gases from vehicles. Increasing population at this location, close to high quality public transport and with convenient access to services and amenities would interact with air quality and climate in terms of the opportunity to reduce greenhouse gas emissions associated with car usage.

The potential significant impacts on traffic and transport arising from these interactions have been considered within the relevant discipline and mitigation measures outlined where required. With mitigation measures in place, no significant permanent residual negative impacts will occur.

16.5 Material Assets: Built Services

During the construction phase, the following aspects would interact with built services and in the absence of mitigation may give rise to likely significant effects;

- **Population & Human Health:** Connections to existing services may require a temporary interruption to existing services in the local area.
- **Water & Hydrology:** The construction of the proposed services (water supply, drainage and IT etc.) may affect the local hydrological and hydrogeological environment as there is a risk of suspended solids run off.

During the operational phase the potential interactions are;

- **Water & Hydrology:** There will be an increased demand on potable water supply.
- **Air Quality and Climate:** The built services have an interaction with climate in the availability and use of non-greenhouse gas reliant power and heat sources.

The potential significant impacts on built services arising from these interactions have been considered within the relevant discipline and mitigation measures outlined where required. With mitigation measures in place, no significant permanent residual negative impacts will occur.

16.6 Material Assets: Waste Management

During the construction phase, the following aspects would interact with waste management and in the absence of mitigation may give rise to likely significant effects;

- **Population & Human Health:** management of waste in the construction phase may interact with population and human health due to the potential for nuisance litter and dust arisings.
- **Land & Soils**: the excavations to facilitate the development will require the removal of soils and subsoils.
- **Traffic & Transport**: excavated material will increase the intensity of construction traffic related movements.
- **Air Quality and Climate:** excavation may give rise to the generation of dust.

During the operational phase the potential interactions are;

- **Population & Human Health:** increased generation of domestic waste generation if not managed appropriately may give rise to nuisance locally.

The potential significant impacts on waste arising from these interactions have been considered within the relevant discipline and mitigation measures outlined where required. With mitigation measures in place, no significant permanent residual negative impacts will occur.

16.7 Land, Soils, Geology and Hydrogeology

During the construction phase, the following aspects would interact with land and soils and in the absence of mitigation may give rise to likely significant effects;

- **Water & Hydrology:** Site preparatory works (i.e. site clearance, re-profiling etc.) during the construction stage have the potential to impact on the hydrology and hydrogeology due to the risk of suspended solids becoming entrained in surface water runoff and accidental spills etc.
- **Biodiversity:** Site preparatory works have the potential to cause impact on the biodiversity of the site, through removal and disturbance of habitats and species.
- **Cultural Heritage- Archaeology:** Site clearance works may impact on sub-surface archaeology.

No potential operational interactions were identified.

The potential significant impacts on land, soils, geology and hydrogeology arising from these interactions have been considered within the relevant discipline and mitigation measures outlined where required. With mitigation measures in place, no significant permanent residual negative impacts will occur.

16.8 Water & Hydrology

During the construction phase, the following aspects would interact with water and hydrology and in the absence of mitigation may give rise to likely significant effects;

- **Material Assets Built Services:** The construction of the proposed services (water supply, drainage and IT etc.) may affect the local hydrological and hydrogeological environment as there is a risk of suspended solids run off.
- **Land & Soils:** Site preparatory works (i.e. site clearance, re-profiling etc.) during the construction stage have the potential to impact on the hydrology and hydrogeology due to the risk of suspended solids becoming entrained in surface water runoff and accidental spills etc.
- **Biodiversity:** Any impacts on surface water drainage would interact with biodiversity having regard to due to the presence of a sensitive aquatic receptor in the vicinity of the subject site (Baldoyle Bay SAC/pNHA).

During the operational phase the potential interactions are;

- **Material Assets Built Services:** There will be an increased demand on potable water supply and on the municipal drainage system.

The potential significant impacts on water and hydrology arising from these interactions have been considered within the relevant discipline and mitigation measures outlined where required. With mitigation measures in place, no significant permanent residual negative impacts will occur.

16.9 Biodiversity

During the construction phase, the following aspects would interact with biodiversity and in the absence of mitigation may give rise to likely significant effects;

- **Land & Soils:** Site preparatory works have the potential to cause impact on the biodiversity of the site, through removal and disturbance of habitats and species.
- **Water & Hydrology:** Interactions between water & hydrology and biodiversity including habitats, flora and fauna can occur through impacts to water quality either arising from an accidental pollution event or increased sedimentation during the construction stage or an accidental pollution event during the operational stage. This interaction has the potential to result in significant impacts on hydrologically connected habitats and sensitive fauna that rely on these habitats.
- **Noise & Vibration**: Interactions between noise and sensitive fauna, namely birds that occur in adjacent wetland habitats in Baldoyle Bay, can occur and arise from increased noise levels during the construction stage.
- **Air Quality & Climate**: Interactions between air quality and sensitive flora and fauna in adjacent habitats and designated sites can occur during the construction stage due to dust emissions arising from construction works.

During the operational phase the potential interactions are;

- **Landscape & Visual**: They quality of the landscaping plan and appropriateness of the species may impact biodiversity.

The potential significant impacts on biodiversity arising from these interactions have been considered within the relevant discipline and mitigation measures outlined where required. With mitigation measures in place, no significant permanent residual negative impacts will occur.

16.10 Noise & Vibration

During the construction phase, the following aspects would interact with noise and vibration and in the absence of mitigation may give rise to likely significant effects;

- **Population & Human Health:** There is potential for interaction with population and human health associated with noise generated during the construction phase.
- **Traffic & Transport:** Construction traffic may give rise to localised noise and vibration effects.

During the operational phase the potential interactions are;

- **Traffic & Transport:** Operational traffic may give rise to localised noise and vibration effects.

The potential significant impacts on noise and vibration arising from these interactions have been considered within the relevant discipline and mitigation measures outlined where required. With mitigation measures in place, no significant permanent residual negative impacts will occur.

16.11 Air Quality and Climate

During the construction phase, the following aspects would interact with air quality and climate and in the absence of mitigation may give rise to likely significant effects;

- **Population & Human Health:** There is potential for impact on human health from dust associated with construction activities.
- **Material Assets Traffic & Transport:** Emissions from construction traffic may impact local air quality and climate in terms of increased emissions of greenhouse gases from vehicles.
- **Biodiversity:** Interactions between air quality and sensitive flora and fauna in adjacent habitats and designated sites can occur during the construction stage due to dust emissions arising from construction works.

During the operational phase the potential interactions are;

- **Population & Human Health:** There is potential for impact on human health from a deterioration in air quality associated with emissions from vehicles.
- **Material Assets Traffic & Transport:** Emissions from traffic associated with future occupants may impact local air quality and climate in terms of increased emissions of greenhouse gases from vehicles.
- **Material Assets Built Services:** The built services have an interaction with climate in the availability and use of non-greenhouse gas reliant power and heat sources.

The potential significant impacts on air quality and climate arising from these interactions have been considered within the relevant discipline and mitigation measures outlined where required. With mitigation measures in place, no significant permanent residual negative impacts will occur.

16.12 Cultural Heritage: Archaeology

During the construction phase, the following aspects would interact with cultural heritage and in the absence of mitigation may give rise to likely significant effects;

- **Land and Soils**: Site clearance works may impact on sub-surface archaeology.

No operational interactions were identified.

The potential significant impacts on cultural heritage - archaeology arising from these interactions have been considered within the relevant discipline and mitigation measures outlined where required. With mitigation measures in place, no significant permanent residual negative impacts will occur.

16.13 Cultural Heritage: Built Heritage

During the construction phase, the following aspects would interact with cultural heritage and in the absence of mitigation may give rise to likely significant effects;

- **Landscape and Visual:** The proposed openings in the norther demesne wall will result in the removal of historic fabric. However, it is intended to reuse this fabric to carry out remediation works to the remainder of the wall.

  The emergence of construction plant and hoarding to secure the development site would interact with the landscape and visual environment in the short term.

During the operational phase the potential interactions are;

- **Landscape and Visual:** The proposed new buildings may have a visual impact on the character of the neighbouring architectural conservation area and Protected Structures.

The impact of the proposed development on the architectural heritage character of the wider setting during the operational phase has been mitigated through various design decisions, material palette chosen, the modest heights of the buildings and the set back between Block C and the entrance to Howth Castle. With mitigation measures in place, the effect is not significant and there will be no likely significant residual impact from the proposed development.

Interaction	Population & Human Health		Landscape & Visual		Material Assets- Traffic & Transport		Material Assets- Built Services		Material Assets - Waste		Land & Soils		Water & Hydrology		Biodiversity		Noise & Vibration		Air Quality & Climate		Cultural Heritage: Archaeology		Cultural Heritage: Built Heritage	
	Con.	Op.	Con.	Op.	Con.	Op.	Con.	Op.	Con.	Op.	Con.	Op.	Con.	Op.	Con.	Op.	Con.	Op.	Con.	Op.	Con.	Op.	Con.	Op.
Population & Human Health			×	✓	✓	✓	×	×	×	×	×	✓	×	×	×	✓	✓	×	✓	×	×	×	×	×
Landscape and Visual	✓	✓			×	×	×	×	×	×	×	×	×	×	✓	✓	×	×	×	×	×	×	×	✓
Material Assets- Traffic & Transport	✓	✓	×	×			×	×	×	×	×	×	×	×	×	×	✓	✓	✓	✓	×	×	×	×
Material Assets- Built Services	✓	×	×	×	×	×			×	×	×	×	✓	✓	×	×	×	×	×	✓	×	×	×	×
Material Assets - Waste	✓	✓	×	×	✓	×	×	×			✓	×	×	×	×	×	×	×	✓	×	×	×	×	×
Land & Soils	×	×	×	×	×	×	×	×	×	×			✓	×	✓	×	×	×	×	×	✓	×	×	×
Water & Hydrology	×	×	×	×	×	×	✓	✓	×	×	✓	×			✓	×	×	×	×	×	×	×	×	×
Biodiversity	×	×	×	✓	×	×	×	×	×	×	✓	×	✓	×			✓	×	✓	×	×	×	×	×
Noise & Vibration	✓	×	×	×	✓	✓	×	×	×	×	×	×	×	×	×	×			×	×	×	×	×	×
Air Quality & Climate	✓	✓	×	×	✓	✓	×	✓	×	×	×	×	×	×	✓	×	×	×			×	×	×	×
Cultural Heritage: Archaeology	×	×	×	×	×	×	×	×	×	×	✓	×	×	×	×	×	×	×	×	×			×	×
Cultural Heritage: Built Heritage	×	×	✓	✓	×	×	×	×			×	×	×	×	×	×	×	×	×	×	×	×		

Con. - Construction Phase | Op. - Operational Phase | ✓ - Potential Significant Interaction | × - No Significant Interaction

Table 16.1 Interactions with Potential for Significant Impacts Before the Implementation of Mitigation Measures

16.14 Conclusion

As outlined above, the proposed development has the potential to impact on various environmental aspects, with interactions and inter-relationships between these aspects as described above. The EIAR has considered these interactions and inter-relationships throughout the appraisal, firstly through the design and layout of the proposed developments, to avoid impacts where possible, and also in the definition of suitable mitigation measures to minimise the impacts.

CHAPTER 17
SUMMARY OF MITIGATION MEASURES

MAY 2021

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17 Summary of Mitigation Measures

17.1 Introduction

A key objective of the Environmental Impact Assessment (EIA) process is to identify likely significant environmental impacts at the pre-consent stage and where necessary to propose measures to mitigate or ameliorate such impacts. This chapter of the Environmental Impact Assessment Report (EIAR) summarises the proposed mitigation measures set out in Chapter 4 to Chapter 14 inclusive.

All construction phase mitigation measures proposed within the individual specialists' chapters are deemed adopted for the purpose of the Construction and Environmental Management Plan (CEMP) and the appointed contractor will be required under the terms of the appointment to adhere to them.

Table 17.1 Incorporated Design Mitigation

Aspect	Incorporated Design Mitigation
4 - Population & Human Health	• The proposed design complies with the Building Regulations to safeguard users and the health of occupants. • The proposed development incorporates the principles of universal design and the requirements of Part M of the Building Regulations. • The design includes landscaped public, communal and private open space. • Provision of segregated pedestrian entrance and separation of vehicular traffic. • The inclusion of energy efficient measures, less dependent on fossil fuels, into the design to provide for healthy living standards. •
5 - Landscape & Visual	• The provision of the car parking in the basement (as opposed to ground level) is a key incorporated mitigation measure. This allows for the site to retain a substantial proportion of open space, and to introduce a large number of trees to the site, for visual screening and residents' amenity. • The three buildings are arranged and scaled to have a strong visual presence in the Howth Road corridor, but with the facades angled to present towards the west and east (the approaches to the site), as opposed to facing the road in front of the site. This recognises the fact that the greatest number of visual receptors would be moving towards the site as opposed to seeing it face-on from or across the street. The wide, landscaped corridors between the buildings would provide relief in the built frontage and glimpses of the trees and the headland to the south, when seen from the road as it passes the site. • The angled front facades also create three triangles of green space in front of the buildings, in which large specimen trees are proposed, softening the built frontage. • The buildings - set back behind the existing road-side verge, the retained demesne wall and the green space and trees described above - are five storeys at the road-front (with the fifth storey set back). This is an appropriate scale for a development intended to have an urbanising effect on the road corridor at the gateway to the town. They would generate a degree of built enclosure - but with no buildings directly opposite, a sense of space would be retained, orientated towards the coastline and sea to the north. There would be no sense of excessive enclosure. The buildings each step up to six storeys in their rear volume, the step in height reflecting the gradient of the site (like the top floor of the front volume, the sixth storey of the rear volume is set back).

Table 17.1 Incorporated Design Mitigation

Aspect	Incorporated Design Mitigation
	• The landscape proposals include retention of the historic woodland belt (part of the demesne woodland framework) outside the site's east boundary. Only one tree, inside the boundary, is proposed to be removed in this area. It is proposed to reinforce and enhance the woodland belt with supplementary planting inside the boundary. • A part of the golf course perimeter woodland belt (a modern/late 20th century intervention) would be removed from the rear portion of the site. This would be replaced with a new belt of woodland planting along the rear (south and west) boundaries of the applicant's land holding, resulting in a net gain on woodland cover.
6 – Material Assets: Traffic & Transport	• Reduced car parking ratio to promote modal shift. • Inclusion of 2nd pedestrian entrance to facilitate desire line and ease of movement east to Howth centre.
7 - Material Assets: Built Services	• The design has been prepared based on relevant codes of practice, design guidance and in consultation with relevant local and statutory authorities to ensure best practice design, considering the effect on local and wider network for water supply, foul and surface water drainage, gas supply, electrical network and the telecommunication network. • The development will be constructed to the Part L Near Zero Energy Building (NZEB)[1] standard which will result in an improved thermal performance along with the incorporation of renewable technology, accordingly, the demand on energy infrastructure will be reduced.
8 - Material Assets: Waste Management	• A dedicated construction waste compound shall be developed which will include a range of storage skips and bunded storage units to allow inert, non-hazardous or hazardous wastes to be segregated and securely stored prior to off-site disposal. • The apartments which will include a 3-bin waste segregation at source system together with the communal waste storage areas have been designed with regard to Section's 4.8 and 4.9 Refuse Storage of The Department of Housing, Planning and Local Government – Sustainable Urban Housing : Design Standards for New Apartments – Guidelines for Planning Authorities. 2018. •
9 - Land, Soils, Geology & Hydrogeology	The proposed development will be designed in accordance with the principles of Sustainable Drainage Systems (SuDS) as embodied in the recommendations of the Greater Dublin Strategic Drainage Study (GDSDS) and will maintain run-off rates at the existing greenfield condition and improve storm water quality discharging to the public storm water system. The SuDS will be addressed by the provision of the following elements: • Interception storage: Green roofs, permeable paving, rain gardens, oil/petrol interceptors and bioretention tree-pits • Attenuation storage: It is proposed to provide an attenuation tank within the site. This will be designed for the 1 in 100 year storm + 20% climate change, and will form the last part of the SuDS management train. A Hydrobrake will be fitted downstream the tank in order to restrict the flow to the greenfield equivalent runoff for the catchment area.

[1] Building Regulations 1997 to 2020

Table 17.1 Incorporated Design Mitigation

Aspect	Incorporated Design Mitigation
	The basement car park is covered by a podium slab and does not receive direct rainfall. There will be very limited outflow from the basement, rainfall coming off cars & rainwater coming in through car park vents. The car park drainage is pumped to the nearest foul manhole and is not at risk of any backflow from the surface water system during storm conditions. The main source of pollutant is potentially from surface water run-off from the basement car park & access roads. The SuDS measures proposed are linked in series, and this is commonly known as a SuDS Management Train, (SMT). The SMT ensures that rainwater falling on a site is captured, conveyed, stored, intercepted and removed of pollutants correctly and efficiently before it is discharged back into the surrounding water course or network.
10 - Water & Hydrology	The proposed development will be designed in accordance with the principles of Sustainable Drainage Systems (SuDS) as embodied in the recommendations of the Greater Dublin Strategic Drainage Study (GDSDS) and will maintain run-off rates at the existing greenfield condition and improve storm water quality discharging to the public storm water system. The SuDS will be addressed by the provision of the following elements: • Interception storage: Green roofs, permeable paving, rain gardens and bioretention tree-pits • Attenuation storage: It is proposed to provide an attenuation tank within the site. This will be designed for the 1 in 100 year storm + 20% climate change, and will form the last part of the SuDS management train. A Hydrobrake will be fitted downstream the tank in order to restrict the flow to the greenfield equivalent runoff for the catchment area. These elements will intercept any potential leakage of fuel from car park areas. The main source of pollutant is potentially from surface water run-off from the basement car park & access roads. The SuDS measures proposed are linked in series, and this is commonly known as a SuDS Management Train, (SMT). The SMT ensures that rainwater falling on a site is captured, conveyed, stored, intercepted and removed of pollutants correctly and efficiently before it is discharged back into the surrounding water course or network.
11 - Biodiversity	***European sites*** Sustainable Urban Drainage Systems (SuDS) are to be implemented to remove any potential for contaminated/polluted surface water to drain via the new surface water sewer network proposed as part of the development. SuDS proposed for the site include: • Green Roofs – General: - Green roofs are areas of living vegetation, installed on the top of buildings. They provide water quality, water quantity, amenity and biodiversity benefits. Green roofs also intercept rainfall at source reducing the reliance on attenuation storage structures.

Table 17.1 Incorporated Design Mitigation

Aspect	Incorporated Design Mitigation
	• Green Roof – Extensive: Extensive roofs have low substrate depths and therefore low loadings on the building structure, they are lightweight and have a low cost to maintain. These systems cover the entire roof area with hardy, slow growing, drought resistant, low maintenance plants and vegetation, such as sedums. The planting usually matures slowly, with the long-term biodiverse benefits being the sought-after results. These roofs are typically only accessed for maintenance and are usually comprised of between 20mm – 150mm overall total depth. It is proposed to cover the apartment block roofs with extensive green roofs. The apartment block roofs take up a considerable portion of the site area and therefore by utilising these for green roofs, there will be interception and treatment storage provided at source. The proposed system will be a sedum roof over a drainage tray, which will intercept water. • Permeable Paving: Permeable paving provides a surface suitable for pedestrian and/or vehicular traffic, while also allowing rainwater to infiltrate through the surface and into the underlying structural layers. Permeable paving systems are an effective way of managing surface water runoff close to its source. The pathways throughout the site will be of a permeable paving build up. The paving within the podium slab area will incorporate a drainage board which also contributes to the interception storage within the site. • Rain Gardens: A rain garden is a bioretention shallow depression designed to collect, store, filter and treat surface water runoff. The rainwater downpipes for the three blocks will be directed to the adjacent rain gardens. The system will incorporate a drainage board to provide a degree of additional interception storage, and outlets below connected to the surface water drainage system. • Bioretention Systems & Tree Pits: Bioretention systems are shallow landscaped depressions that can reduce the runoff rates and volumes of surface water. They treat pollution using engineered soils and vegetation. They are very effective in delivering interception and treatment storage. By including tree pits, the effectiveness of the overall system in meeting the requirements of water quality, water quantity, amenity and biodiversity is significantly improved. Trees provide benefits to the SuDS measures by: ○ Transpiration – Water evaporates through the stomata on the leaf as a result of photosynthesis. ○ Interception – Leaves, branches and trunk surfaces intercept and absorb rainfall reducing the amount of water that reaches the ground. ○ Infiltration – Root growth increases the soil infiltration capacity and rate, ultimately reducing run-off volumes. ○ Phytoremediation – When drawing up water, trees also take up trace amounts of harmful chemicals. These chemicals can be transformed into less harmful substances within the tree. • Bioretention tree-pits will be used within the landscape podium areas between the apartment blocks and to the north of the site near the existing boundary wall.

Table 17.1 Incorporated Design Mitigation

Aspect	Incorporated Design Mitigation
	• Attenuation Tanks: Attenuation tanks are used to create below-ground void space for the temporary storage of surface water before infiltration, controlled release, or use. Attenuation tanks can be constructed using geocellular crates, which offer flexibility in size, shape and constructability meaning that they can be tailored to suit specific site characteristics. It is proposed to provide an attenuation tank within the site. This will be designed for the 1 in 100 year storm + 20% climate change, and will form the last part of the SuDS management train. A Hydrobrake will be fitted downstream of the tank in order to restrict the flow to Qbar for the catchment area. ***Nationally designated sites*** Incorporated design mitigation measures to protect downstream nationally designated sites are the same as those to protect European sites as discussed in section 0 above. ***Habitats*** There will be permanent loss of a sections of the southern hedgerow, valued as a local importance (higher value) habitat. New tree planting is proposed along the southern boundary where this habitat will be removed and additional planting is proposed to strengthen linear hedgerow habitats to the west. A strong woodland edge is proposed connecting to the existing retained portion, which will create a new green link of biodiversity. This planting is in accordance with the All-Ireland pollinator plan, in recognition of Fingal County Councils partnership status in the All Ireland Pollinator Plan 2015-2020, which promotes use of native species in order to enhance wildlife. It is proposed that this element of the scheme occurs prior to building works so that maximum time is allowed for the re-establishment of the broken link from west to east of the site. High density planting around the wet zones will consist of species such as Ilex, Birch, Beech, Hazelnut, Rowan, Cherry, Oak, and Alder which provide food and habitats to a wide range of wildlife. All of the species come in varieties, and therefore sourcing the native strains would be important for maximising wildlife value. The landscape restoration strategy proposes using any existing scrub for the underplanting, particularly on the west and eastern boundaries of this area. The scrub will act as a nursery for a variety of trees, such as the native Quercus (Q.robur and Q. petraea) and Scots pine, and will protect the young trees from grazing. This will enhance a new woodland type which will be characterised by an early establishment of diverse composition eventually maturing into an oakwood over the passage of time. ***Bats*** The landscape plan includes additional native woodland planting of scots pine, hawthorn. Blackthorn and oak along the southern hedgerow, creating further light screening from the proposed development and re-establishing the connectivity between the woodland to the east and the severed southern hedgerow. ***Terrestrial mammals (excluding bats)*** The landscape plan, proposes to plant treelines to link with existing vegetation, creating wildlife corridors and green infrastructure links for small mammals.

Table 17.1 Incorporated Design Mitigation

Aspect	Incorporated Design Mitigation
	Breeding birds Retained habitats will be enhanced by the landscape plan through provision of additional hedgerows or treeline habitats using native species to support local biodiversity, which are connected to other similar habitats and creating habitat corridors to wider landscape. Additionally, the landscape plan proposes wild bird cover seeding in place of meadow seeding in patches throughout the scheme. ***Wintering birds*** The landscape plan proposes to plant trees along the altered southern hedgerow boundary. This will provide screening to the amenity grassland habitat within Deer Park golf course, within which surveys found black-headed gulls, herring gulls, light-bellied brent geese, curlew and oystercatcher foraging in the winter of 2019/2020 and winter 2020/2021, thus reducing any increase in noise, vibration and/or human activity levels during the operational phase of the proposed development. Additionally, the landscape plan proposes wild bird cover seeding in place of meadow seeding in patches throughout the scheme.
12 - Noise & Vibration	External noise can enter rooms within dwellings through windows, ventilators, walls, roof and doors. In most cases, however, windows provide the main path and therefore, mitigation by design has focused on this building element to ensure that their insulation is adequate. All apartments shall have external windows shall have acoustically rated windows to prevent breakthrough of external noise. In addition, Heat Recovery and Mechanical Ventilation systems will be incorporated into the design thus there will be no requirement for passive air vents. ***Acoustic Design requirements for residential buildings*** ***Windows*** In order to ensure a sufficient level of sound insulation is provided for all dwellings within the development, the following lists the minimum sound insulation performance of windows and window frame sets in terms of the in-situ weighted sound reduction index (R_W): 40dB R_W for Living rooms & Bedrooms 37dB R_W for Kitchen – Dining Rooms. The acoustic performance specifications detailed are the minimum requirements which shall apply to the overall glazing system when installed on site. In the context of the acoustic performance specification the 'glazing system' is understood to include any and all of the component parts that form part of the glazing element of the façade, i.e. glass, frames, seals, openable elements etc. All exterior wall and door frames should be sealed tight to the exterior wall construction. ***Ventilation Systems*** The ventilation strategy for the development will be in accordance with Part F of the Building Regulations. The apartment units shall include mechanical heat recovery ventilation systems which will negate the requirement for passive wall vents in bedrooms and living spaces which would otherwise allow the transfer of external noise into the building through the air gaps in the passive vents.

Table 17.1 Incorporated Design Mitigation

Aspect	Incorporated Design Mitigation
	However, windows may remain openable for rapid or purge ventilation, or at the occupant's choice. ***Wall Constructions*** The wall construction typically provides the highest level of sound insulation performance to a residential building. The residential dwellings will be built using either masonry or a timber framed construction. The minimum sound insulation performance of the chosen wall construction will be 55dB Rw. ***Roof Construction*** The insulated roof constructions proposed across the site will provide an adequate level of sound insulation to the properties within the development site. A minimum sound insulation value of 40dB Rw should be used for roof spaces. At the earliest stage during the construction phase, residential test units shall be constructed to their finished level and shall be tested by a suitably qualified independent Acoustic Engineer to ensure that they comply with Department of the Environment, Building Regulations 2014, Technical Guidance Document E – Sound. Table 12-17 above provides detail on the recommended sound insulation values that shall be achieved to ensure acoustic privacy between adjoining residential units and to assess compliance with external noise intrusion criteria as defined in BS 8233: 2014: Guidance on Sound Insulation and Noise Reduction for Buildings. The operational phase of the development is predicted not to have an adverse noise impact on the receiving environment or on existing residential developments adjacent to the site during the operational phase of the scheme. Therefore, no mitigation measures additional to those set out above are proposed. ***Internal Noise Control – Residential Units*** At the earliest stage during the construction phase, test apartments and houses shall be constructed to their finished level and shall be tested by a suitably qualified independent Acoustic Engineer to ensure that they comply with Department of the Environment, Building Regulations 2014, Technical Guidance Document E – Sound. Table 12-19 of Chapter 12 provides detail on the recommended sound insulation values that shall be achieved to ensure acoustic privacy between adjoining residential units. For other non-traffic related sources appropriate guidance on internal noise levels for dwellings is contained within BS 8233: 2014: Guidance on Sound Insulation and Noise Reduction for Buildings. This British Standard sets out recommended noise limits for indoor ambient noise levels in dwellings as detailed in Table 12-20 of Chapter 12. All residential units shall be designed to achieve the specified ambient noise design range.
13 - Air & Climate	Air Quality & Climate Impact Mitigation Measures by Design • Energy Efficiency – All residential units shall be designed and constructed in accordance with The Irish Building Regulations Technical Guidance Document L – Conservation of Fuel & Energy – Dwellings amended in 2017 includes requirements for all residential dwellings to be "Nearly Zero Energy Buildings" (NZEB's) by 31st December 2020. • Energy Consumption - The following key design features have been integrated into the design and construction of the residential units to reduce energy consumption:

Table 17.1 Incorporated Design Mitigation

Aspect	Incorporated Design Mitigation
	• U-values for floor and roof will exceed the building regulation backstops • Using Glazing U-Value target outlined in this report • Better performance air permeability than the backstop, adding to building air tightness • High performance thermal bridging • Mechanical extract ventilation with heat recovery via heat pump • Exhaust air source heat pump to provide space heating (via radiators) and domestic hot water. • Mechanical ventilation heat recovery and air source heat pump heating for the landlord areas and tenant amenities. • Proximity of Public Transport including Dublin Bus and DART services will reduce dependence on private vehicles • Provision of open landscaped areas, to encourage residents to avail of active lifestyle options and which will contribute albeit in a minor way to the adsorption of Carbon Dioxide from the atmosphere and the release of Oxygen into the atmosphere
14 - Cultural Heritage: Archaeology	No mitigation proposed
15 - Cultural Heritage: Built Heritage	The design of the site and the layout of the three proposed residential blocks has been carefully considered with regard to the visual impact of the development on the sensitive setting of neighbouring Protected Structures, the Howth Castle ACA and other significant views and vistas within the wider context. The provision of the car parking in the basement (as opposed to ground level) is a key incorporated mitigation measure. This allows for the site to retain a substantial proportion of open space, and to introduce a large number of trees to the site, for visual screening. The three buildings are arranged and scaled to have a strong visual presence in the Howth Road corridor, but with the facades angled to present towards the west and east (the approaches to the site), as opposed to facing the road in front of the site. This recognises the fact that the greatest number of visual receptors would be moving towards the site as opposed to seeing it face-on from or across the street. The siting of the blocks has been carefully considered, and carefully set back from the road so as to minimise visual impact. The design has taken into account the comments from Fingal County Council at pre-application stage. The architectural treatment and detailing of the new openings has been designed to reflect the robust character of the demesne wall. High quality materials specified are intended to provide immediate and long term resilience and enhanced visual appearance. The wide, landscaped corridors between the buildings provide relief in the built frontage, and glimpses of the trees and the headland to the south, when seen from the road as it passes the site. The massing of the buildings has been considered and designed to minimise the visual impact and footprint on the site and to maximise views through permitting glimpses to the open green setting behind the development.

Table 17.1 Incorporated Design Mitigation

Aspect	Incorporated Design Mitigation
	The buildings - set back behind the existing road-side verge, the retained demesne wall and the green space and trees described above - are five storeys at the road-front (with the fifth storey set back). This is an appropriate scale for a development intended to have an urbanising effect on the road corridor at the gateway to the town. They would generate a degree of built enclosure - but with no buildings directly opposite, a sense of space would be retained, orientated towards the coastline and sea to the north. There would be no sense of excessive enclosure. The buildings each step up to six storeys in their rear volume, the step in height reflecting the gradient of the site (like the top floor of the front volume, the sixth storey of the rear volume is set back). The landscape proposals include retention of the historic woodland belt (part of the demesne woodland framework) outside the site's east boundary. It is proposed to reinforce and enhance the woodland belt with supplementary planting inside the boundary. A part of the golf course perimeter woodland belt (a modern/20th century intervention) would be removed from the rear portion of the site. This would be replaced with a new belt of woodland planting along the rear (south and west) boundaries of the applicant's land holding, resulting in a net gain on woodland cover. Verified view photomontages have been created by 3D Design Bureau which illustrate the visual impact of the development, and the cumulative impact of the subject proposal and the neighbouring Claremont SHD. These impacts will be assessed under Section 15.12.4 - Residual Impact Assessment (Chapter 15). The proposed landscape design by Bernard Seymour Landscape Architects has been carefully considered to take into account the existing historic landscape of the adjoining Howth Castle demesne and to ensure screening of the proposed new development.

Table 17.1 Incorporated Design Mitigation

Table 17.2 Demolition & Construction Mitigation

Aspect	Demolition & Construction Phase Mitigation
4- Population & Human Health	• To adopt and implement the Construction & Environmental Management Plan (CEMP) and the Construction Waste Management Plan (CWMP) by the selected contractor. • All construction personnel to implement the requirements of the CEMP and CWMP. • Appoint project supervisors for the construction phase and the preparation of a Preliminary Health and Safety Plan to address health and safety issues from the design stage through to the construction phases of the development.
5 - Landscape & Visual	• No mitigation measures are proposed other than standard best practice construction site management (e.g. erection and maintenance of site hoarding, orderly storage of materials and vehicles, etc.).However, given the importance of the existing trees to be retained within and in close proximity to the site, particular attention should be paid during construction to the arboricultural inspection and supervision programme. • Similar attention should be paid to the measures recommended by Slattery Conservation for (a) the protection of the demesne wall during construction, and (b) the creation of the two new openings in the wall.
6 - Material Assets: Traffic & Transport	The following measures to mitigate the impact of the construction phase on the existing environment are proposed with reference to the road network. ***Road Network Construction Stage Measures to be implemented:*** To ensure the road network will have a slight impact with short term temporary slight effects, the following migration will be incorporated. • To reduce the potential impact with morning traffic particularly between the hours of 8am and 9am, no HGV's will be allowed to leave site during this period. However, vehicles coming to site will be against morning traffic and will therefore have minimal impact on the local road network. These vehicles will be able to enter site and wait in the waiting area, if necessary, be loaded and ready to leave site after 9am. • Works in Howth road will be carried out in a strip process, limiting the extent of works at any given time and given the existing width of the road across the site frontage two way traffic will be managed at all times. • Informing workers and expected visitors regarding access arrangements and parking provision to ensure an appropriate mode of travel is chosen; By enforcing this the potential impacts of road delays will be slight and have short term neutral effect. • Clear and appropriate signage within the site to advise of permitted routes, speed limits, safety requirements. • Any recommendations with regard to construction traffic management made by the Local authority will be adhered to. • All road works will be adequately signposted and enclosed to ensure the safety of all road users and construction personnel. • Provision of sufficient on-site parking and compounding to ensure no overflow of construction generated traffic onto the local network. • A dedicated 'construction site' access / egress system will be implemented during the construction phases. • Site offices and compound will be located within the site boundary. • A series of 'way-finding' signage will be provided to route staff / deliveries into the site and to designated compound / construction areas.

Table 17.2 Demolition & Construction Mitigation

Aspect	Demolition & Construction Phase Mitigation
	Pedestrian Construction Stage Measures to be implemented: To ensure the potential impact of the proposed development on the pedestrian routes will be slight with short term temporary neutral effect the following mitigation measures have been incorporated. • Promote usage of public transport by site staff by clearly displaying local bus, DART and rail services with a map and timetable indicating routes and travel times. • Works carried out in Howth Road, pedestrians will be directed via a temporary footpath, which will be clearly marked out and separated from the vehicle users. This will only be for short periods when drainage and utility connections works are being carried out in Howth Road. • Only Safe-Pass accredited personnel will be permitted on site and daily in-out attendance records will be maintained. • Hoarding to be set up around the perimeter to prevent pedestrian access. • Signage to be implemented to clearly indicate navigation routes around the site. • Provide bike parking locations on site to promote the usage of cycling by site staff.
7 - Material Assets: Built Services	Remedial and mitigation measures describe any corrective measures that are either practicable or reasonable, having regard to the potential effects discussed above. This includes avoidance, reduction, and remedy measures to reduce or eliminate any significant adverse effects identified. The **Construction Environmental Management Plan** submitted under separate cover incorporates a range of integrated control measures and associated management activities with the objective of mitigating the effect of the proposed development's on-site construction activities. The mitigation measures relevant to this chapter have been reproduced below. ***Water Supply*** Appropriate construction methodology as outlined in Irish Water – Code of Practice for Water Infrastructure, relating most specifically to quality control in material handling, laying, system testing and record keeping will be employed to ensure against contamination risk of the local water supply and all watermain connection works shall be carried out by the Irish Water accredited regional contractor. To avoid contamination of the local water supply and leaks in the system, all watermains will be tested in accordance with Irish Water Code of Practice for Water Infrastructure. ***Wastewater Drainage*** To prevent the ingress of ground water, all new sewers shall be tested and surveyed and, where necessary, repaired or replaced in accordance with Irish Water Code of Practice for Wastewater prior to connection to the public system. Any leakage from foul sewers will be cordoned off and contaminated effluent and soil collected and disposed of by a licenced contractor. The connection of the new foul sewer to the public wastewater sewer network will be carried out by the Irish Water Regional Contractor.

Table 17.2 Demolition & Construction Mitigation

Aspect	Demolition & Construction Phase Mitigation
	To prevent untreated ground water discharge to the surface water sewer system during construction of the basement, the Contractor will employ an on-site treatment system to treat ground water as necessary (refer to Construction Environmental Management Plan) to meet Irish Water or Fingal County Council temporary discharge licence requirements. The treatment will incorporate ongoing testing in accordance with the conditions of the licence agreement. ***Surface Water Drainage*** To prevent the ingress of ground water, all new sewers will be tested and surveyed and, where necessary, repaired in accordance with the Greater Dublin Area Regional Code of Practice for Drainage Works prior to connection to the public surface water system. To prevent untreated ground water discharge to the surface water sewer system, the Contractor will employ an on-site treatment system to treat ground water as necessary to meet Irish Water or Fingal County Council temporary discharge licence requirements. The treatment will incorporate ongoing testing in accordance with the conditions of the licence agreement. Dewatering measures should only be employed where necessary. A method statement for all works to be carried out will be prepared by the Contractor and agreed with Fingal County Council prior to commencement of works to outline what measures are to be taken to ensure there is no loss of service during the works. Road sweeping and/or wheel wash facilities will be provided, as required. All oils/diesel stored on site for construction equipment are to be located in appropriately bunded areas. Filters and silt traps will be used to prevent rain washing silts and other materials into the surface water network and creating blockages. ***Gas Supply*** The exact locations of the gas network infrastructure will be confirmed as part of the Detailed Design Phase. Prior to excavation, the Contractor will carry out additional site investigation, including slit trenches, in order to determine the exact location of the gas network pipes. This will mitigate against risk of underground gas network damage during the excavation phase prior to diverting the gas pipe. The gas diversion shall be carried out by GNI and its new location clearly documented to mitigate the risk of a gas main hit during the construction phase. The Contractor will be obliged to put measures in place to ensure that there are no interruptions to existing services and all services and utilities are maintained unless this has been agreed in advance with Gas Networks Ireland (GNI). All works in the vicinity of GNI infrastructure will be carried out in ongoing consultation with GNI and will be in compliance with any requirements or guidelines they may have including procedures to ensure safe working practices are implemented when working near live gas mains. ***Telecommunication*** The locations of the telecommunications network infrastructure relative to the proposed works will be confirmed as part of the Detailed Design Phase to mitigate the risk of damage to the telecoms infrastructure before construction starts. Prior to excavation the Contractor will carry out additional site investigation, including slit trenches, in order to determine the exact location of the telecommunications networks in close proximity to the works area. This will ensure that the underground telecommunications network will not be damaged during the construction phase.

Table 17.2 Demolition & Construction Mitigation

Aspect	Demolition & Construction Phase Mitigation
	The Contractor will be obliged to put measures in place to ensure that there are no interruptions to existing services and all services and utilities are maintained unless this has been agreed in advance with the relevant telecommunication provider. All works in the vicinity of the telecommunications providers infrastructure will be carried out in ongoing consultation with the relevant provider and will be in compliance with any requirements or guidelines they may have. Where new services are required, the Contractor will apply to the relevant provider for a connection permit where appropriate and will adhere to their requirements to ensure safety of installation. ***Electricity*** The exact locations of the below ground ESB Networks infrastructure will be confirmed as part of the Detailed Design Phase. Prior to excavation the Contractor will carry out additional site investigation, including slit trenches, in order to determine the exact location of the below ground network. This will mitigate against the risk of damage to underground electricity network during the excavation phase prior to diverting the ESB network. The ESB diversion shall be carried out by ESB and its new location clearly documented to mitigate the risk of a cable duct damage during the construction phase. The Contractor will be obliged to put measures in place to ensure that there are no interruptions to existing services and all services and utilities are maintained unless this has been agreed in advance with ESB Networks. All works in the vicinity of ESB Networks infrastructure will be carried out in ongoing consultation with ESB Networks and will be in compliance with any requirements or guidelines they may have including procedures to ensure safe working practices are implemented when working near live overhead/underground electrical lines.
8 - Material Assets: Waste Management	The Site-Specific Construction & Demolition Waste Management Plan prepared by Byrne Environmental (and included with the planning application) specifically addresses the following points: Waste materials generated by construction activities will be managed according to the Department of the Environment, Heritage and Local Government's 2006 Publication - Best Practice Guidelines on the Preparation of Waste Management Plans for Construction and Demolition Projects. Matters to be considered include; • Analysis of waste arisings / material surpluses • Specific Waste Management objectives for the Project including the potential to re-use existing on-site materials for further use in the construction phase. • Methods proposed for Prevention, Reuse and Recycling • Waste Handling Procedures • Waste Storage Procedures • Waste Disposal Procedures • Record Keeping

Table 17.2 Demolition & Construction Mitigation

Aspect	Demolition & Construction Phase Mitigation
	Waste minimisation and prevention shall be the primary responsibilities of the Construction Project Manager who shall ensure the following: • Materials will be ordered on an "as needed" basis to prevent over supply. • Materials shall be correctly stored and handled to minimise the generation of damaged materials. • Materials shall be ordered in appropriate sequence to minimise materials stored on site. • Sub-contractors will be responsible for similarly managing their wastes. ***Programme of Waste Management for Construction Works*** The construction contractor as part of regular site inspection audits will determine the effectiveness of the waste management statement and will assist the project manager in determining the best methods for waste minimisation, reduction, re-use, recycling and disposal as the construction phase progresses and waste materials are generated. ***Construction Waste Disposal Management*** From the outset of construction activities, a dedicated and secure compound containing bins, and/or skips, and storage areas, into which all waste materials generated by construction site activities, will be established within the active construction phase of the development site. In order to ensure that the construction contractor correctly segregate waste materials, it is the responsibility of the site construction manager to ensure all staff are informed by means of clear signage and verbal instruction and made responsible for ensuring site housekeeping and the proper segregation of construction waste materials. It will be the responsibility of the Project Construction Manager to ensure that a written record of all quantities and natures of wastes exported -off site are maintained on-site in a Waste File at the Project office. It is the responsibility of the Project Manager or his/her delegate that all contracted waste haulage drivers hold an appropriate Waste Collection Permit for the transport of waste loads and that all waste materials are delivered to an appropriately licenced or permitted waste facility in compliance with the following relevant Regulations: • Waste Management (Collection Permit) Regulations 2007 (SI No. 820 of 2007) • Waste Management (Collection Permit) Amendment Regulations 2008 (SI No. 87 of 2008) • Waste Management (Facility Permit and Registration) Regulations S.I.821 of 2007 and the Waste Facility Permit under the Waste Management (Facility Permit and Registration) Amendment Regulations S.I.86 of 2008. Prior to the commencement of the Project, the Construction / Project Manager shall identify and nominate a permitted Waste Contractor who shall be employed to collect and dispose of all wastes arising from the project works. In addition, the Construction / Project Manager shall identify and all waste licensed / permitted facilities that will accept all expected waste exported off-site and will maintain copies of all relevant Waste Permits / Licences as required.

Table 17.2 Demolition & Construction Mitigation

Aspect	Demolition & Construction Phase Mitigation
	On-Site Waste Reuse and Recycling Management Construction waste material such as soils, damaged or broken concrete slabs, blocks, bricks and tiles generated that is deemed by the Project Engineer to be suitable for reuse on the Project site for ground-fill material and landscaping. This initiative shall provide a positive environmental impact to the construction phase as follows: • Reduction in the requirement for virgin aggregate materials from quarries; • Reduction in energy required to extract, process and transport virgin aggregates; • Reduced HGV movements associated with the delivery of imported aggregates to the site; • Reduced noise levels associated with reduced HGV movements; • Reduction in the amount of landfill space required to accept C&D waste; and, • Reduction in the volume of soils to be exported off-site. ***Waste Storage Compound*** 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. ***Waste Soils*** Based on the analysis of the samples collected from the on-site excavations the material sampled is free of contamination. The material sampled was comprised of natural subsoils which were free of anthropogenic materials. Following an appraisal of the chemical analysis and the absence of anthropogenic materials the subsoils sampled are suitable for removal from site as a by-product which will not lead to overall adverse environmental or human health impacts. Based on the WAC analysis, it is intended to declare the excavated soils a by-product to the EPA in accordance with Article 27 of the European Communities (Waste Directive) Regulations 2011 and the EPA publication “Guidance on Soil and Stone By-Products in the context of Article 27 of the European Communities (Waste Directive) Regulations – Version 3 June 2019. The notification of a potential by-product gives industry an opportunity to demonstrate, with an appropriate level of rigour, that: • the material can have a further use and no longer be defined as waste; • the material can be used as a ‘secondary’ resource in place of, and fulfilling the same role as a non-waste derived or virgin ‘primary’ resource; and • the material can be used without causing overall adverse impacts to the environment or human health.

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Aspect	Demolition & Construction Phase Mitigation
	The by-product test is made up of four conditions, which represent the requirements of Article 27. All four of the following 'conditions' must be met for an economic operator to decide that a production residue is a by-product: 1. further use of the material is certain; 2. the material can be used directly without any further processing other than normal industrial practice; 3. the material is produced as an integral part of a production process; and 4. further use is lawful in that the substance or object fulfils all relevant product, environmental and health protection requirements for the specific use and will not lead to overall adverse environmental or human health impacts. Based on the type of material to be excavated i.e. virgin soils, the fact that it is being excavated to facilitate the proposed development and the results of the WAC analysis, conditions 2-4 above are met. Regarding Condition 1, at this stage, it is too early to identify a specific site where the material would be used. This is because, it is necessary first to secure planning permission to have certainty regarding the availability of the by-product and only then can a further use be identified. However, having regard to the scale of development taking place in Dublin, it is reasonably expected that there will be projects seeking to avail of this by-product. The selected location will be identified in the notification to the EPA. Soils at the site have been classified following WAC testing by Ground Investigations Ireland and the completion of a Waste Classification Assessment. The assessment concludes that on-site soils are classified with LoW Codes 17 05 04 may be classified as non-hazardous and are defined as a Category A Criteria as follows. "Soil and Stone only which are free from anthropogenic materials such as concrete and timber. Soils must be from "contamination" e.g. PAH's, Hydrocarbons and Asbestos. The Waste Classification Assessment completed as part of the Site Investigation Report shall be maintained by the main Contractor who shall issue them to facilities selected to export soils to during the construction phase. ***Contaminated Soils*** Where contaminated soils/materials are discovered or occur as a result of accidental spillages of oils or fuels during the construction phase, these areas of ground will be isolated and tested in accordance with the 2002 Landfill Directive (2003/33/EC) for contamination, and pending the results of laboratory WAC testing, will be excavated and removed to an appropriately licenced waste facility. ***Construction Waste Record Keeping*** It will be the responsibility of the Construction Project Manager or his/her delegate that a written record of all quantities and natures of all wastes reused / recycled and exported off-site and Article 27 declarations during the project are maintained in a Waste File at the Project office. The following information shall be recorded for each load of waste exported off-site: • Waste Type EWC Code and description • Volume of waste collected • Waste collection contractor's Waste Collection Permit Number and collection receipt including vehicle registration number

Table 17.2 Demolition & Construction Mitigation

Aspect	Demolition & Construction Phase Mitigation
	• Destination of waste load including Waste Permit / Licence number of facility • Description of how waste at facility shall be treated, disposal / recovery / export • The waste records shall be issued to FCC as required / requested.
9 - Land, Soils, Geology & Hydrogeology	A Construction Environmental Management Plan (CEMP) is included with this application under separate cover. It will be adopted by the construction contractor prior to commencement of construction. The CEMP will incorporate the mitigation measures outlined below as they relate to the construction phase. The CEMP will include emergency response procedures in the event of a spill, leak, fire or other environmental incident related to construction. This is an active document which is continuously updated to manage risk during the construction programme. All relevant personnel working on the site will be trained in the implementation of the procedures. As a minimum, the manual will be formulated in consideration of the standard best international practice including but not limited to: • CIRIA, (2001), Control of Water Pollution from Construction Sites, Guidance for Consultants and Contractors. • Construction Industry Research and Information Association (CIRIA) Environmental Good Practice on Site (C650), 2005. • BPGCS005, Oil Storage Guidelines. • Eastern Regional Fisheries Board, (2006), Fisheries Protection Guidelines: Requirements for the Protection of Fisheries Habitat during Construction and Development Works at River Sites.. • CIRIA 697, The SUDS Manual, 2007. • UK Pollution Prevention Guidelines (PPG) UK Environment Agency, 2004. ***Excavations*** The excavation will require soil and excavation and infill. The re-use of topsoil for completion of the main site works and landscaping will be evaluated. If it is adequate, topsoil will be stored and protected in an appropriate manner on site for the duration of the construction works. Previous uses of the site and site testing has not indicated any evidence of soil contamination at the site. However, where any excavated material is found to be contaminated, an appropriate disposal method shall be selected depending on the type of contaminant found. Testing will be carried out in pre-construction works by the contractor to determine the soil classification; i.e. inert, non-hazardous or hazardous (WAC testing). During the construction phase, all excavations and exposed sub-soils in open cuts will be blinded and protected with clean broken stone as soon as possible after exposing the subsoil in order to prevent erosion. Silt and sediment barriers will be installed at the perimeter of earthworks construction areas to limit transport of erodible soils outside of the site. An appropriate dewatering system and groundwater management system specific to the site conditions will be designed and maintained. These will include measures to minimise any surface water inflow into the excavation, where possible, and the prolonged exposure of groundwater to the atmosphere will be avoided. The pumping of water will be carried out under the conditions of a Trade Effluent Discharge License issued to the construction contractor by Irish Water.

Table 17.2 Demolition & Construction Mitigation

Aspect	Demolition & Construction Phase Mitigation
	Qualitative and quantitative monitoring will be adopted to ensure that the water is of sufficient quality to discharge. The use of silt traps will be adopted if the monitoring indicates the requirement for same with no silt or contaminated water permitted to discharge to the receiving water environment. Any discharge of construction surface water or groundwater from excavations shall pass through appropriate filtration and sedimentation system, designed in accordance with "Control of Water Pollution from Construction Sites, Guidance for Consultants and Contractors (CIRIA C532)". ***Accidental Spills and Leaks*** To minimise any impact on the underlying subsurface strata from material spillages, all oils, solvents and paints used during construction will be stored within temporary bunded areas. Leakages of oil from oil stores will be prevented by storing these oils in bunded tanks which have a capacity of 110% of the total volume of the stored oil. Ancillary equipment such as hoses and pipes will be contained within the bunded storage container. Drainage from the bunded area(s) shall be diverted for collection and safe disposal. Refuelling of construction machinery and vehicles and the addition of hydraulic oils or lubricants to vehicles will take place in designated refuelling areas using a prescribed re-fuelling procedure. Plant nappies or absorbent mats to be place under refuelling point during all refuelling to absorb drips. All relevant personnel will be fully trained in the use of this equipment. Guidelines such as "Control of Water Pollution from Construction Sites, Guidance for Consultants and Contractors" (CIRIA 532, 2001) will be complied with. Should there be an oil leak or spill, the leak or spill will be contained immediately using oil spill kits; the nearby dirty water drain outlet will be blocked with an oil absorbent boom until the fuel/oil spill has been cleaned up and all oil and any contaminated material removed from the area. This contaminated material will be properly disposed of in a licensed facility All ready-mixed concrete will be brought to site by truck. 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. The pouring of concrete will take place within a designated area using a geosynthetic material to prevent concrete runoff into the soil/groundwater media. Pours will not take place during forecasted heavy rainfall. Washout of concrete transporting vehicles will not take place on site. Concrete trucks will be washed out off site at the source quarry. To reduce the volume of cementitious water, only concrete truck chutes will be washed down on site. The concrete trucks will wash down their chutes at a designated chute wash down area in the site compound. The location of the chute washdown area will be appropriately located. The system is sealed with no overflow discharge to the drainage system. In the event of a spillage on site, the dirty water drains in the immediate area will temporarily be blocked and the pH levels of the water in the associated settlement ponds will be monitored and if necessary will adjust the pH levels using CO2 entrainment. Any spillage will be cleared immediately and deposited in the Chute wash down area. In the case of drummed fuel or other chemical which may be used during construction containers will be stored in a dedicated internally bunded chemical

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Aspect	Demolition & Construction Phase Mitigation
	storage cabinet and labelled clearly to allow appropriate remedial action in the event of a spillage.
10 - Water & Hydrology	A Construction Environmental Management Plan (CEMP) is included under separate cover and will be adopted by the construction contractor prior to commencement of construction. The CEMP incorporates the mitigation measures outlined below as they relate to the construction phase. The CEMP will include emergency response procedures in the event of a spill, leak, fire or other environmental incident related to construction. This is an active document which is continuously updated to manage risk during the construction programme. All relevant personnel working on the site will be trained in the implementation of the procedures. As a minimum, the manual will be formulated in consideration of the standard best international practice including but not limited to: • CIRIA, (2001), Control of Water Pollution from Construction Sites, Guidance for Consultants and Contractors. • Construction Industry Research and Information Association (CIRIA) Environmental Good Practice on Site (C650), 2005. • BPGCS005, Oil Storage Guidelines. • Eastern Regional Fisheries Board, (2006), Fisheries Protection Guidelines: Requirements for the Protection of Fisheries Habitat during Construction and Development Works at River Sites.. • CIRIA 697, The SUDS Manual, 2007. • UK Pollution Prevention Guidelines (PPG) UK Environment Agency, 2004. ***Management of sediment loading and water quality*** During the construction phase, specific measures to prevent the release of sediment over baseline conditions in the downstream receiving water environment. These measures include, but not limited to, the use of silt fences, silt curtains, settlement lagoons and filter materials. These will be maintained by the contractor to the satisfaction of Inland Fisheries Ireland for the entire construction period. Provision of exclusion zones and barriers (e.g. silt fences) between earthworks, stockpiles and temporary surfaces to prevent sediment washing into the existing drainage systems and hence the downstream receiving water environment. Compounds and internal access road will be graded so that all runoff is directed to the dirty water drains. A low mound will be constructed between the compounds / road and the clean water drain to ensure that runoff from the compound / road cannot flow into the clean water system. A wheel wash will be provided for heavy vehicles exiting the site to ensure that roads outside of the site boundary are clean. These can take the form of dry or wet wheel wash facilities. In the case of a wet wheel wash it is recommended that a designated bunded and impermeable wheel wash area is provided and that the resultant waste water is diverted to a settlement pond for settling out of suspended solids. The area of exposed ground will be kept to a minimum by maintaining where possible existing vegetation that would otherwise be subject to erosion in the vicinity of the development. The clearing of topsoil will be delayed until just before construction begins rather than stripping the entire site months in advance.

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Aspect	Demolition & Construction Phase Mitigation
	Permanent drainage measures such as the underground rainwater harvesting tank, foul tank, oil bypass separator and storm water filtration tank will be installed within the compound. Piped and channel drainage systems incorporating roadside gullies will be installed to collect storm water from the finished compound areas and internal access road. Collected storm water runoff will pass through the oil bypass separator before discharging to the storm water filtration tank. Excavation and stockpiling activities will be minimised during wet weather periods. Stockpiles of excavated soil and/or subsoil will be graded so as to shed water. Stockpiles of soil/subsoil will be restricted to less than 3m in height. Interception and channelling of surface water runoff over exposed soil/subsoil surfaces to sumps, silt traps or settlement ponds, will occur prior to discharge to existing drains or outfalls. Interception and diversion of surface water runoff away from open excavations will occur. Repeated handling of soil will be avoided and ideally all soil stockpiles will remain undisturbed pending later re-use for landscaping. In addition, any discharge of construction surface water or groundwater from excavations shall pass through appropriate filtration and sedimentation system, designed in accordance with "Control of Water Pollution from Construction Sites, Guidance for Consultants and Contractors (CIRIA C532)". ***Fuel and Chemical Handling*** To minimise any impact on the underlying subsurface strata from material spillages, all oils, solvents and paints used during construction will be stored within temporary bunded areas. Leakages of oil from oil stores will be prevented by storing these oils in bunded tanks which have a capacity of 110% of the total volume of the stored oil. Ancillary equipment such as hoses and pipes will be contained within the bunded storage container. Drainage from the bunded area(s) shall be diverted for collection and safe disposal. Refuelling of construction machinery and vehicles and the addition of hydraulic oils or lubricants to vehicles will take place in designated refuelling areas using a prescribed re-fuelling procedure. Plant nappies or absorbent mats to be place under refuelling point during all refuelling to absorb drips. All relevant personnel will be fully trained in the use of this equipment. Guidelines such as "Control of Water Pollution from Construction Sites, Guidance for Consultants and Contractors" (CIRIA 532, 2001) will be complied with. Should there be an oil leak or spill, the leak or spill will be contained immediately using oil spill kits; the nearby dirty water drain outlet will be blocked with an oil absorbent boom until the fuel/oil spill has been cleaned up and all oil and any contaminated material removed from the area. This contaminated material will be properly disposed of in a licensed facility. All ready-mixed concrete will be brought to site by truck. 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. The pouring of concrete will take place within a designated area using a geosynthetic material to prevent concrete runoff into the soil/groundwater media. Pours will not take place during forecasted heavy rainfall. Washout of concrete transporting vehicles will not take place on site. Concrete trucks will be washed out off site at the source.

Table 17.2 Demolition & Construction Mitigation

Aspect	Demolition & Construction Phase Mitigation
	To reduce the volume of cementitious water, only concrete truck chutes will be washed down on site. The concrete trucks will wash down their chutes at a designated chute wash down area in the site compound. The location of the chute washdown area will be appropriately located. In the event of a spillage on site, the dirty water drains in the immediate area will temporarily be blocked and the pH levels of the water in the associated settlement ponds will be monitored and if necessary will adjust the pH levels using CO2 entrainment. Any spillage will be cleared immediately and deposited in the Chute wash down area. In the case of drummed fuel or other chemical which may be used during construction containers will be stored in a dedicated internally bunded chemical storage cabinet and labelled clearly to allow appropriate remedial action in the event of a spillage.
11 - Biodiversity	***European sites*** The construction contractor will be required to implement the following specific mitigation measures as a condition if granted by An Bord Pleanála all of which will be incorporated into the CEMP, for release of hydrocarbons, polluting chemicals, sediment/silt and contaminated waters control: Specific measures to prevent the release of sediment over baseline conditions in the downstream receiving water environment, during the construction work. These measures include, but are not limited to, the use of silt fences, silt curtains, settlement lagoons and filter materials. • Provision of exclusion zones and barriers (e.g. silt fences) between earthworks, stockpiles and temporary surfaces to prevent sediment washing into the existing drainage systems and hence the downstream receiving water environment. • Provision of temporary construction surface drainage and sediment control measures to be in place before earthworks commence. • Weather conditions will be taken into account when planning construction activities to minimise risk of run-off from the site. • Prevailing weather and environmental conditions will be taken into account prior to the pouring of cementitious materials for the works adjacent to any surface water drainage features, or drainage features connected to same. Pumped concrete will be monitored to ensure no accidental discharge. Mixer washings and excess concrete will not be discharged to existing surface water drainage systems. Concrete washout areas will be located remote from any surface water drainage features, to avoid accidental discharge to watercourses. Washing out of any concrete trucks on site will be avoided. • Any fuels or chemicals (including hydrocarbons or any polluting chemicals) will be stored in a designated, secure bunded area(s) to prevent any seepage of potential pollutants into the local surface water network. These designated areas will be clearly sign-posted and all personnel on site will be made aware of their locations and associated risks.

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	• All mobile fuel bowsers shall carry a spill kit and operatives must have spill response training. All fuel containing equipment such as portable generators shall be placed on drip trays. All fuels and chemicals required to be stored on-site will be clearly marked. Care and attention will be taken during refuelling and maintenance operations. Particular attention will be paid to gradient and ground conditions, which could increase risk of discharge to waters.
	• A register of all hazardous substances, which will either be used on site or expected to be present (in the form of soil and/or groundwater contamination) will be established and maintained. This register will be available at all times and shall include as a minimum:
	  ○ Valid Safety Data Sheets;
	  ○ Health & Safety, Environmental controls to be implemented when storing, handling, using and in the event of spillage of materials;
	  ○ Emergency response procedures/precautions for each material; and,
	  ○ The Personal Protective Equipment (PPE) required when using the material.
	• Implementation of response measures to potential pollution incidents.
	• Robust and appropriate Spill Response Plan and Environmental Emergency Plan will be prepared prior to works commencing and they will be communicated, resourced, and implemented for the duration of the works. Emergency procedures/precautions and spillage kits will be available and construction staff will be trained and experienced in emergency procedures in the event of accidental fuel spillages.
	• All trucks will have a built-on tarpaulin that will cover excavated material as it is being hauled off-site and wheel wash/wheel cleaning facilities will be provided at all site egress points.
	• If groundwater is encountered during the proposed works and temporary pumping at a very localised location is required:
	  ○ An appropriate dewatering system and groundwater management system specific to the site conditions will be designed and maintained. These will include measures to minimise any surface water inflow into the excavation, where possible, and the prolonged exposure of groundwater to the atmosphere will be avoided.
	  ○ Qualitative and quantitative monitoring will be adopted to ensure that the water is of sufficient quality to discharge. The use of silt traps will be adopted if the monitoring indicates the requirement for same with no silt or contaminated water permitted to discharge to the receiving water environment.
	• Water supplies shall be recycled for use in the wheel wash/wheel cleaning facilities. All waters shall be drained through appropriate filter material prior to discharge from the construction sites.
	• The removal of any made ground material, which may be contaminated, from the construction site and transportation to an appropriate licenced facility shall be carried out in accordance with the Waste Management Act, best practice and guidelines for same.
	• A discovery procedure for contaminated material will be prepared and adopted by the appointed contractor prior to excavation works commencing on site. These documents will detail how potentially contaminated material will be dealt with during the excavation phase.

Table 17.2 Demolition & Construction Mitigation

Aspect	Demolition & Construction Phase Mitigation
	• Implementation of measures to minimise waste and ensure correct handling, storage and disposal of waste (most notably wet concrete, pile arisings and asphalt). • All of the above measures implemented on site will be monitored throughout the duration of construction to ensure that they are working effectively, to implement maintenance measures if required/applicable and to address any potential issues that may arise. **Nationally designated sites** Construction phase mitigation measures to protect downstream nationally designated sites are the same as those to protect European sites as discussed in section 0 above. ***Habitats*** The following mitigation measures are proposed: • All trees and hedgerows marked for retention as identified in the landscaping proposals will be fenced off at the outset of works and for the duration of construction to avoid damage to the trunk, branches or root systems of the trees and structures. • Temporary fencing will be erected at a sufficient distance from the tree so as to enclose the Root Protection Area (RPA) of the tree (NRA, 2005-2011). In general, the RPA covers an area equivalent to a circle with a radius 12 times the stem diameter (measured at 1.5m above ground level for single stemmed trees); • Where fencing is not feasible due to insufficient space, protection for the tree will be afforded by wrapping hessian sacking (or suitable equivalent) around the trunk of the tree and strapping stout buffer timbers around it. It will still be necessary to ensure that the area within the RPA is not used for vehicle parking or the storage of materials (including oils and chemicals). This measure is considered secondary to fencing of retained habitats, and should only be undertaken as a last resort; • Weekly checks of the fences will take place by the project ecologist and/or contractor. • Spoil materials such as rubble, topsoil, building goods and equipment, will not be placed within the RPA of trees or hedgerows. ***Bats*** Construction phase lighting has been designed by Ethos Engineering (2021) to be sensitive to the presence of commuting and foraging bats along the southern hedgerow and adheres to the following guidance: • Bats & Lighting: Guidance Notes for Planners, engineers, architects and developers (Bat Conservation Trust, 2010); • Guidance Notes for the Reduction of Obtrusive Light GN01/20 (Institute of Lighting Professionals, 2020); • Bats and Lighting in the UK – Bats and the Built Environment Series (Bat Conservation Trust UK, January 2008). ***Terrestrial mammals (excluding bats)*** There is no construction phase mitigation required for the protection of terrestrial mammals (excluding bats) within the proposed development site.

Table 17.2 Demolition & Construction Mitigation

Aspect	Demolition & Construction Phase Mitigation
	Breeding birds Where feasible, vegetation (e.g. hedgerows, trees, scrub and grassland) will not be removed, between the 1st March and the 31st August, to avoid direct impacts on nesting birds. Where the construction programme does not allow this seasonal restriction to be observed, then these areas will be inspected by a suitably qualified ecologist for the presence of breeding birds prior to clearance. Areas found not to contain nests will be cleared within 3 days of the nest survey, otherwise repeat surveys will be required. ***Wintering birds*** There is no construction phase mitigation required for the protection of wintering birds within the proposed development site.
12 - Noise & Vibration	The following noise management measures shall be implemented at the site from the outset of site activities to control and manage noise levels during the construction phase of the proposed development: **Noise Mitigation Measures Site Management** Site hoarding comprised of 18mm marine plyboard extending to a height of 4m shall be installed from the outset of site activities along the western site boundary adjacent residential receptors. Noise complaints shall be investigated by site management. **Construction Works Noise Control & Mitigation** Noise-related mitigation methods are described below and will be implemented for the project in accordance with best practice. These methods include: • no plant used on-site will be permitted to cause an ongoing public nuisance due to noise; • the best means practicable, including proper maintenance of plant, 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:

Table 17.2 Demolition & Construction Mitigation

Aspect	Demolition & Construction Phase Mitigation
	• 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 barriers as necessary around items such as generators or high duty compressors; and situate any noisy plant as far away from sensitive properties as permitted by site constraints. **Vibration Mitigation Measures** The following specific vibration mitigation and control measures shall be implemented during the construction phase: • Choosing alternative, lower-impact equipment or methods wherever 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. In order to protect the amenities enjoyed by nearby residents and a Construction and Environmental Management Plan (CEMP) (including traffic management) shall be included in the application documentation The CEMP which will include the mitigation measures set out in this section.
13 - Air Quality & Climate	• Avoid unnecessary vehicle movements and manoeuvring, and limit speeds on site so as to minimise the generation of airborne dust. • Use of rubble chutes and receptor skips during construction activities. • During dry periods, dust emissions from heavily trafficked locations (on and off site) will be controlled by spraying surfaces with water and wetting agents. • Hard surface roads will be swept to remove mud and aggregate materials from their surface while any un-surfaced roads will be restricted to essential site traffic only. • Re-suspension in the air of spillages material from trucks entering or leaving the site will be prevented by limiting the speed of vehicles within the site to 10kmh and by use of a mechanical road sweeper. • The overloading of tipper trucks exiting the site shall not be permitted. • Aggregates will be transported to and from the site in covered trucks. • Where the likelihood of windblown fugitive dust emissions is high and during dry weather conditions, dusty site surfaces will be sprayed by a mobile tanker bowser. • Wetting agents shall be utilised to provide a more effective surface wetting procedure. • Exhaust emissions from vehicles operating within the construction site, including trucks, excavators, diesel generators or other plant equipment, will be controlled by the contractor by ensuring that emissions from vehicles are minimised by routine servicing of vehicles and plant, rather than just following breakdowns; the positioning of exhausts at a height to ensure adequate local dispersal of emissions, the avoidance of engines running unnecessarily and the use of low emission fuels. • All plant not in operation shall be turned off and idling engines shall not be permitted for excessive periods.

Table 17.2 Demolition & Construction Mitigation

Aspect	Demolition & Construction Phase Mitigation
14 - Cultural Heritage: Archaeology	A suitably qualified archaeological consultant shall be appointed to undertake monitoring of works during the construction phase. Licenced archaeological monitoring of the excavation of topsoil during the construction phase of the development. This will be under license from the National Monuments Service of the Department of Culture, Heritage and the Gaeltacht. Should archaeological or architectural heritage features, deposits or structures be uncovered these will be cleaned by hand, investigated, and recorded. The DCHG and the NMI should be contacted and a strategy to resolve these finds should be formulated. This could include preservation in situ or preservation by record.
15 - Cultural Heritage: Built Heritage	Potential negative impacts on the building fabric and integrity of the built heritage arising from the removal of a section of the demesne wall can be minimised during the construction phase by adherence to best practice and to the Architectural Heritage Protection Guidelines for Planning Authorities (2011) and the Advice Series issued by the Department of Arts Heritage and the Gaeltacht. Best practice mitigation measures : • Using expert conservation advice • Protecting the special interest • Promoting minimum intervention • Promoting honesty of repairs and alterations • Using appropriate materials and methods The physical works to the demesne wall will be advanced with design and specifications to a detailed level to indicate all interventions to the wall fabric including interface with the new architectural treatment of the openings and any structural intervention required. As a result of dismantling sections of the wall a quantity of durable limestone will become available. It is proposed to reuse the stone elsewhere to carry out any repairs required to the wall and to integrate within the landscape proposals. The use of specialist contractors with relevant experience, skill and qualifications will be employed to carry out conservation works to the demesne wall. The proposed taking down of two sections of the historic boundary wall to the north of the site will be carried out with care and consideration, and in accordance with the Conservation Specification, (Appendix 15.3, Volume III of the EIAR). This will ensure minimal damage and loss of historic fabric. The proposed new openings will be carried out in accordance with the drawings by MCA Architects. The impact of the proposed design will be assessed under Section 15.12 – Residual Impact Assessment (Chapter 15). Conservation works to the historic demesne wall will be carried out to the surviving historic demesne wall along the northern boundary of the site.

Table 17.2 Demolition & Construction Mitigation

Table 17.3 Operational Phase Mitigation

Aspect	Operational Phase Mitigation
4 - Population & Human Health	No operational phase mitigation proposed.
5 - Landscape & Visual	No operational phase mitigation proposed.
6 - Material Assets: Traffic & Transport	The following mitigation measures are proposed for the operational phase of the Proposed Development with reference to the road network: ***Road Network Operational Stage Measures to be implemented:*** The proposed development will have a significant impact with a negative and long term effect on the Sutton Cross junction, the following mitigation measures have been incorporated into the design to limit the effect. The above traffic assessment details that Sutton Cross is at present a busy and congested junction during the morning and evening peak hours of travel, and will continue to experience increased congestion going into the future if the required conservative growth estimates are applied to existing surveyed network flow, with estimated total generated traffic from both proposed and planned adjacent development not adding significantly to existing and future predicted congestion levels at Sutton Cross – the critical junction within this comprehensive traffic analysis. Given that the critical junction under analysis is congested, it is appropriate that there is mitigation to minimise car usage by residents and visitors to the Proposed Development. This comprises the limited on-site car parking spaces It is proposed within this development to provide car parking space for 81% of the 162 no. apartment units proposed. The trip generation estimates for this project outlined within this report are conservative and robust as they are based on sites with greater car parking provision than proposed for the Proposed Development. It is highly likely, therefore, that the actual traffic impact of the proposal will be less than predicted, as the limited car parking provision will require residents to actively seek out alternative modes of travel particularly for their journey to work / college within the morning and evening peak. Table 6.22 (Chapter 6) demonstrates that, for existing residents close to the Proposed Development, 50%, just half commute by private car as detailed within the 2016 Census, with 29% commuting by bus or train and 8% cycling or walking. It is expected that residents at the Proposed Development would undertake a similar pattern of mode usage, thus resulting in reduced traffic impact on the local road network relative to that envisaged within the conservatively-framed traffic assessment.
7 - Material Assets: Built Services	***Water Supply*** Prior to completion of the defect liability period, a water audit will be carried out by Irish Water to ensure the construction is fully in compliance with Irish Water Code of Practice and standard details prior to taking in charge. The site watermain system will be metered as directed by Irish Water to facilitate detection of leakage and prevent ongoing water loss. ***Wastewater Drainage*** Prior to completion of the defect liability period, a wastewater audit will be carried out by Irish Water to ensure the construction is fully in compliance with Irish Water Code of Practice and standard details prior to taking in charge.

Table 17.3 Operational Phase Mitigation

Aspect	Operational Phase Mitigation
	Areas to remain in the charge of the applicant (private side drainage) will be maintained on a scheduled basis as part of the building management plan. ***Surface Water Drainage*** The development has been designed in accordance with Fingal County Council Drainage Department's guidelines for planning applications, the recommendations of the Greater Dublin Regional Drainage Study (GDSDS) and Ciria Guide C753 – The SuDS Manual, to incorporate best practice Sustainable Drainage Systems. Sustainable Drainage Systems are a collection of water management practices that aim to align modern drainage systems with natural water processes. Integration of SuDS make urban drainage systems more compatible with components of the natural water cycle such as storm surge overflows, soil percolation, and bio-filtration, mitigating the effect human development may have on the natural water cycle, particularly surface runoff and water pollution trends. In the context of this greenfield site, the provision of the sustainable drainage systems including, green roofs to intercept, filter and attenuate surface water at roof level, tree pits/permeable paving to intercept, filter and attenuate surface water at grade and attenuation storage devices to limit peak discharge rates to the public surface water sewer to pre-development flows. All sustainable drainage systems will be maintained by the applicant. Regular maintenance of the SuDS systems will maintain their function of treating surface water prior to discharge. This will prevent silt build-up and other contaminant discharge to the surface water network. Regular maintenance of the attenuation storage and flow control device will maintain controlled discharge of stormwater in rainfall events and prevent inundation of the surface water system. ***Gas Supply*** Gas is not proposed for the development. ***Telecommunication*** The design and construction of the required telecommunication services infrastructure in accordance with the relevant guidelines and codes of practice is likely to mitigate any potential service outage impacts during the operational phase of the development, with the exception of any routine maintenance of the site services. ***Electricity*** The power demands during the operational phase on the existing electricity network are considered to be low due to the energy efficient design including LED lighting and high performance heating equipment. The design and construction of the required electrical services infrastructure in accordance with the relevant guidelines and codes of practice is likely to mitigate any potential impacts during the operational phase of the development, with the exception of any routine maintenance of the site services.
8 - Material Assets: Waste Management	An Operational Waste Management Plan (OWMP) has been prepared by Byrne Environmental as a stand-alone report to accompany this application and has been prepared to demonstrate how the required infrastructure will be incorporated into the design and operational management of the development to ensure that domestic wastes will be managed and monitored with the

Table 17.3 Operational Phase Mitigation

Aspect	Operational Phase Mitigation
	objective of maximizing the quantity of waste segregated at source and maximizing the volume of clean recyclable materials generated by the residents of the development. The Goal of the OWMP is to achieve a compliance with The Eastern-Midlands Region Waste Management Plan 2015-2021 which defines the following Waste Targets: • 1% reduction per annum in the quantity of household waste generated per capita over the period of the plan. • Achieve a recycling rate of 50% of managed municipal waste by 2020. • Reduce to 0% the direct disposal of unprocessed residual municipal waste to landfill. Key Aspects of the OWMP to achieve Waste Targets: • All residential units shall be provided with information on the segregation of waste at source and how to reduce the generation of waste by the Facilities Management Company. • All waste handling and storage activities shall occur in the dedicated communal apartment waste storage areas located in the basement. • The development's Facility Management Company shall appoint a dedicated Waste Services Manager to ensure that waste is correctly and efficiently managed throughout the development. The OWMP is defined by the following stages of waste management for both the residential and commercial aspects of the development: • Stage 1 Occupier Source Segregation • Stage 2 Occupier Deposit and Storage • Stage 3 Bulk Storage and On-Site Management • Stage 4 On-site treatment and Off-Site Removal • Stage 5 End Destination of wastes The OWMP has been prepared with regard to British Standard BS 5906:2005 Waste Management in Buildings-Code of Practice which provides guidance on methods of storage, collection, segregation for recycling and recovery for residential building. The apartments will include a 3-bin waste segregation at source system together with the communal waste storage areas have been designed with regard to Section's 4.8 and 4.9 Refuse Storage of The Department of Housing, Planning and Local Government – Sustainable Urban Housing : Design Standards for New Apartments – Guidelines for Planning Authorities. 2018. The proposed development shall be designed and managed to provide residents with the required waste management infrastructure to minimise the generation of un-segregated domestic waste and maximise the potential for segregating and recycling domestic waste fractions. The Objective of the OWMP is to maximise the quantity of waste recycled by residents by providing sufficient waste recycling infrastructure, waste reduction initiatives and waste collection and waste management information services to the residents of the development.

Table 17.3 Operational Phase Mitigation

Aspect	Operational Phase Mitigation
	The Goal of the OWMP is to achieve a residential recycling rate of 50% of managed municipal waste by 2020 (and future targets in subsequent Eastern-Midlands Regional Waste Management Plans). All apartments will have sufficient space for a 3-bin system (non-recyclable, organic and recyclable) in each kitchen to encourage residents to segregate waste at source. Apartment residents will be provided with waste recycling and waste disposal information by the development's Facility Management Company who will be responsible for providing clean, safe and mobility impaired accessible communal waste storage areas for the apartment blocks. The Facility Management Company shall maintain a register of all waste volumes and types collected from the development each year including a break-down of recyclable waste and where necessary, shall introduce initiatives to further encourage residents to maximise waste segregation at source and recycling. They shall also provide an annual bulky waste and WEEE collection service for all residents.
9 - Land, Soils, Geology & Hydrogeology	No operational phase mitigation proposed.
10 - Water & Hydrology	No operational phase mitigation proposed.
11 - Biodiversity	***European sites*** There is no operational phase mitigation required for the protection of European sites. ***Nationally designated sites*** There is no operational phase mitigation required for the protection of nationally designated sites. ***Habitats*** There is no operational phase mitigation required for the protection of habitats within the proposed development site. ***Bats*** Operational phase lighting has been designed by Ethos Engineering (2021) to be sensitive to the presence of commuting and foraging bats along the southern hedgerow and adheres to the following guidance: • Bats & Lighting: Guidance Notes for Planners, engineers, architects and developers (Bat Conservation Trust, 2010); • Guidance Notes for the Reduction of Obtrusive Light GN01/20 (Institute of Lighting Professionals, 2020); • Bats and Lighting in the UK – Bats and the Built Environment Series (Bat Conservation Trust UK, January 2008). ***Terrestrial mammals (excluding bats)*** There is no risk of the proposed development on terrestrial mammals (excluding bats), mitigation measures intended to avoid or reduce any harmful effects of the proposed development are not required. Increased urbanisation with hindered access to gardens by e.g. stonewalls has led to the decline of hedgehog populations in Ireland. To increase the urban habitat connectivity for hedgehogs, it is recommended that hedgehog holes

Table 17.3 Operational Phase Mitigation

Aspect	Operational Phase Mitigation
	measuring 13cm by 13cm^2 are left in boundary walls and fences where possible to facilitate their movement through the urban landscape. ***Breeding birds*** There is no operational phase mitigation required for the protection of breeding birds within the proposed development site. ***Wintering birds*** There is no operational phase mitigation required for the protection of wintering birds within the proposed development site.
12 - Noise & Vibration	Roof Garden The Facility Management Company shall be responsible for the maintenance and security of the 5th floor roof garden amenity spaces.
13 – Air Quality & Climate	No operational phase mitigation proposed.
14 - Cultural Heritage: Archaeology	No operational phase mitigation proposed.
15 - Cultural Heritage: Built Heritage	No operational phase mitigation proposed.

Table 17.3 Operational Phase Mitigation

[2] More information on increasing habitat connectivity for hedgehog can be found at: https://www.hedgehogstreet.org/help-hedgehogs/link-your-garden/ [Accessed: 31/03/2021]