ENVIRONMENTAL IMPACT ASSESSMENT REPORT

VOLUME 1:

NON TECHNICAL SUMMARY

MIXED USE DEVELOPMENT

AT

CLAREMONT, HOWTH, COUNTY DUBLIN

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Planning & Development Consultants
Chartered Town Planners & Chartered Surveyors

In Association with:

HJL Architects | BMCE | Enviroguide Consulting | Golder Associates | AWN Consulting | B-Fluid Ltd. | J.V.Tierney & Co. | Archaeological and Built Heritage Consultancy | Historic Building Consultants | The Paul Hogarth Company | Maurice Johnson Partners | ORS | Modelworks

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NON-TECHNICAL SUMMARY

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1. INTRODUCTION

This document has been prepared as a Non-Technical Summary to the main Environment Impact Assessment Report (EIAR). The purpose of the report is to give persons who are not experts a summary and an understanding of the project and its environmental impacts in non-technical terms. The detailed data and scientific discussion is presented in Volume II, the EIAR. This document is required under Article 5(1)(e) of the EIA Directive, which requires the project proponent – the developer in this instance - to include a Non-Technical Summary (NTS) of the Environmental Impact Assessment Report (EIAR). It is transposed into Irish law under article 94(c) of the Planning and Development Regulations 2001, as amended.

1.1 The EIAR and the Planning Process

1.1.1 The Planning Process

The planning process requires that certain developments over a certain type, size or threshold or due their location in a sensitive environment, need to be examined for their potential impact on the environment. These environmental impacts are to be identified and where possible, mitigation measures proposed to ameliorate adverse impacts on the environment. The purpose of the Environmental Impact Assessment Report is to provide this information. During the process of preparing the EIAR, mitigation measures or design development may occur to avoid, mitigate or minimise impacts. The process is iterative so the proposed development changes of information is fed into the design process. The EIAR and in this case, the planning application, is made to An Bord Pleanala, who is the consenting authority for Strategic Housing Developments in Ireland. An Bord Pleanala then examines the EIAR, the submissions made by prescribed bodies, such as Fingal County Council and the general public. Following this consultation process, An Bord Pleanala will conduct an Environmental Impact Assessment (EIA) reach a reasoned conclusion of the likely significant effects on the environment arising from the proposed development. The outcome of the EIA process may not determine the outcome of the planning application. An Bord Pleanala may grant planning permission, with or without conditions or refuse planning permission for the proposed development, after considering the application on its own merits, taking account of the application, consultation process, reports and the proper planning and sustainable development of the area.

1.1.2 Public Consultation

The public may give their views on the proposed development and the EIAR by making an observation to An Bord Pleanala, within 5 weeks of the publication of the proposed development, accompanied by a fee of €20. This document and all the documents submitted with the planning application can be found on the website www.claremontshd.ie. Copies are also available at Fingal County Council and An Bord Pleanala for inspection. Fingal County Council and prescribed bodies may also make a submission on the application. Copies of the application have been sent to:

An Taisce; The Department of Culture, Heritage, and the Gaeltacht; The Heritage Council; Irish Water; The National Transport Authority; Transport Infrastructure Ireland; Iarnrod Eireann; Irish Fisheries Ireland; The Irish Aviation Authority; and Dublin Airport Authority.

Pre-application consultation has been had with Fingal County Council, An Bord Pleanala, Irish Water, Iarnrod Eireann, the Department of Culture, Heritage and the Gaeltacht, and the Irish Aviation Authority.

2. PROJECT DESCRIPTION AND DESCRIPTION OF ALTERNATIVES

2.1. Site Location

The proposed development is for a mixed-use development in Howth, County Dublin.

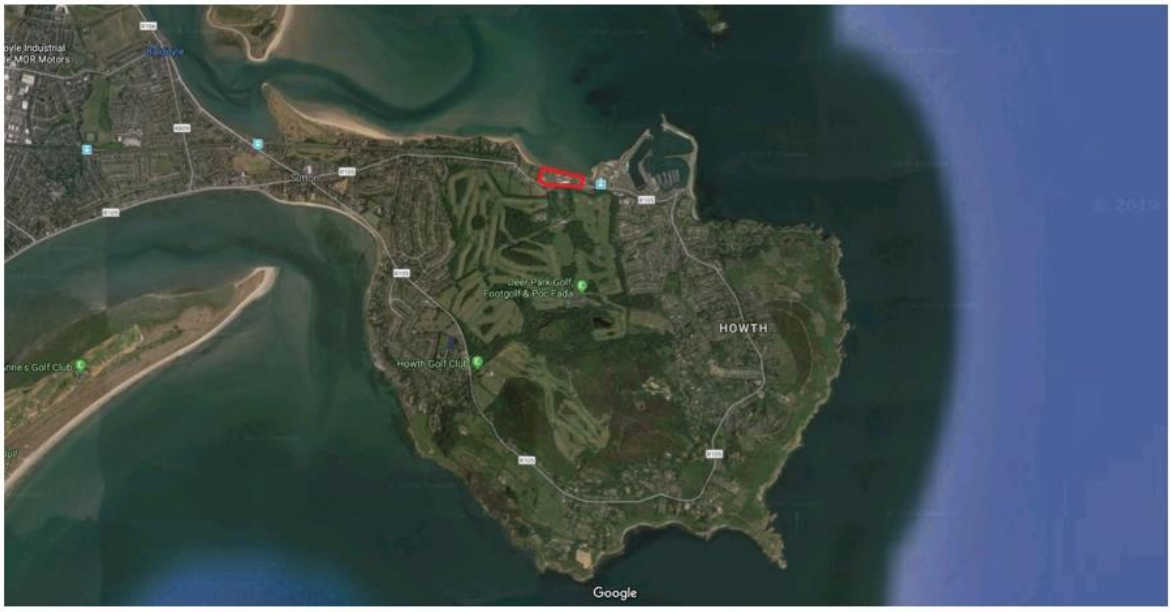


Figure 2.1 Site Context – Source: Google.ie

Figure 2.2 Site Location – Source: Google.ie

2.2. Project Description

The proposed development will include the demolition of all structures on site (c.8,162sqm GFA) and excavation of a basement. The proposed development comprises of the provision of a mixed use development of residential, retail/restaurant/cafe uses and a creche in 4 no. blocks (A to D), over part basement. Blocks A, B, C and D with a height up to a maximum of seven storeys of apartments over lower ground floor and basement car parking levels (a total of eight storeys over basement level). The residential component will consist of 512 no. residential units. The proposed development includes the provision of two vehicular entrances on to Howth Road, excavation of basement to provide for car parking, plant, waste storage and ancillary use. Additional car parking spaces shall be provided at lower ground floor level. A total of 439 no. car parking spaces and 1,335 no. bicycle parking spaces, including 49 no. bicycle spaces to cater for the retail units and creche shall be provided. One vehicular access is located at Block A, serving car parking spaces. The second is at Block C,

providing access to the basement, residential and retail parking, and a service area for the retail units. A service route will be provided along part of the northern perimeter of the site with access from the western end of the site at a junction with Howth Road and at the main vehicular entrance at Block C;

A publicly accessible walkway/cycleway to the north of the site shall be provided at podium level. A civic plaza will be provided between Blocks D and C, and a landscaped park to the west of Block A. A channel to the sea for the Bloody Stream with associated riparian strip shall be incorporated as a feature within a designed open space between Blocks A and B. Communal gardens will be provided for Blocks A, B and C;

The residential component consists of 512 no. residential units, which includes 4 no. studio, 222 no. one bed, 276 no. two bed, 10 no. three bed apartments, and communal facilities of 708 sqm. Ground floor units onto the Howth Road will have own door access. The units will be served by balconies or terraces on all elevations;

Block A, with a maximum height of seven storeys of apartments over lower ground level car park (a total of eight storeys), will provide for 234 residential units, with residents' amenities to include a gym, residents' lounge, residents' support office, and 2 no. residents' multi-purpose rooms. Block B, with a maximum height of seven storeys of apartments over lower ground floor and basement car park (a total of eight storeys over basement), shall provide for 154 no. units, residents' lounge, residents' multi-purpose room, and creche of 236 sqm with outdoor play area. Own door access will be provided at ground floor. Block C, with a maximum height of seven storeys over basement car parking (a total of seven storeys) will provide for 83 no. residential units in two wings over a retail unit and Block D, with a maximum of 6 storeys over basement, shall provide for 41 no. residential units over retail units;

The commercial component in Blocks C and D consists of 4 no. units with 2,637 sqm gross floor area. In Block C, it consists of a 1,705 sqm anchor unit, accessed from the civic plaza. In Block D, it consists of a restaurant (243 sqm) and retail unit (603 sqm) and café (86 sqm). The restaurant and retail units are accessed from Howth Road, and the café is accessed from the upper level of the civic plaza.

The proposed development includes the provision of public and communal open space, green roofs, landscaping, boundary treatments, set down locations, substations, meter rooms, waste management and all ancillary site works, including upgrading of the public paths along Howth Road and relocation of bus stop in new setback with a bus shelter. Two set down areas are provided at either end of the site;

The gross floor area of the proposed development is 48,252 sqm (excluding enclosed car parking) on a site of 2.68 ha.

2.3. Consideration of Alternatives

This section explains what alternative options were considered when designing the proposed development. These are then compared to the proposed development, to examine the environmental considerations underlying the choice of development.

2.3.1. Do-Nothing Scenario

This option is to do nothing with the site. The site is presently unoccupied. If this alternative was chosen, the site would fall into disrepair, decay and dereliction. The buildings currently block views to the sea and detract from the entrance to Howth.

2.3.2. Alternative Designs and Layouts

The main alternatives examined in this EIAR are the two extant (live) permissions on site – F11A/0028 ABP Ref. PL 06F.240171, F15A/0362 ABP Ref. PL 06F.246151, the refused application on the site F08A/1172 ABP Ref. PL 06F.235083 and the current application.

Figure 2.8 F11A/0028 (PL 06F.240171) - Source: Duignan Dooley Architects

Fig 2.9 F15A/0362 (PL 06F.246151) – Source: Duignan Dooley Architects

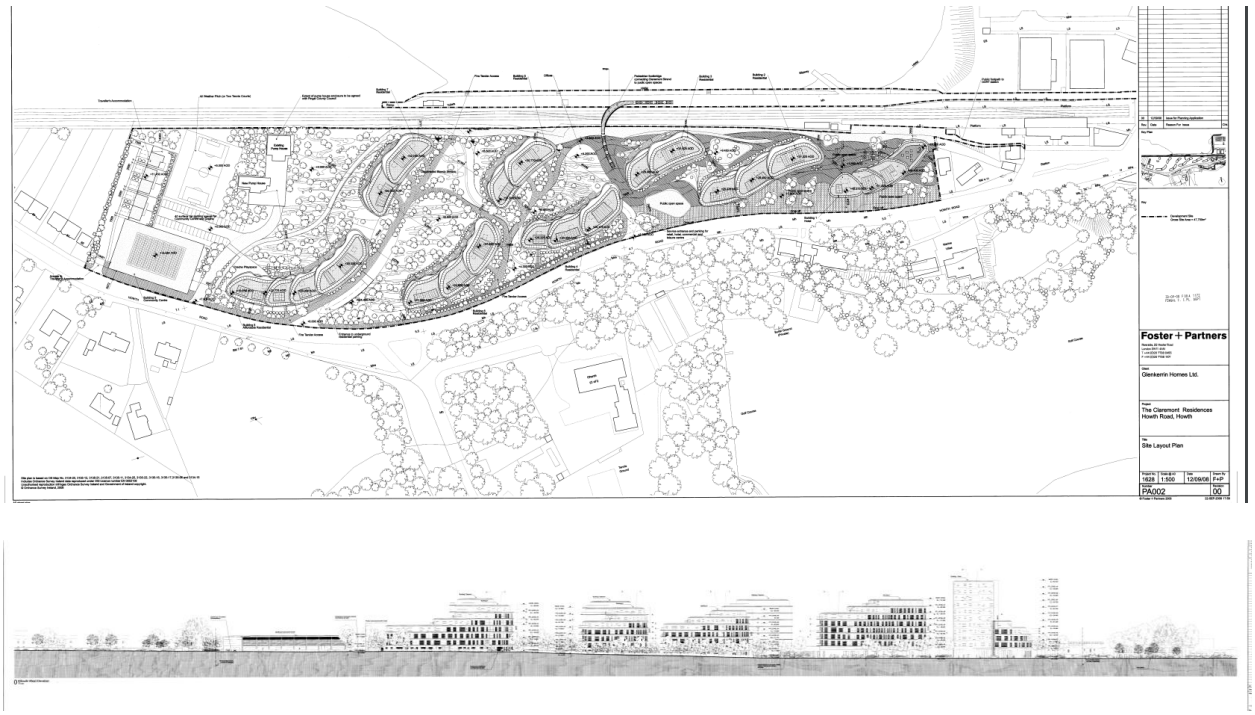


Figure 2.10 F08A/1172 PL06F.304637 - Source: Fosters + Partners

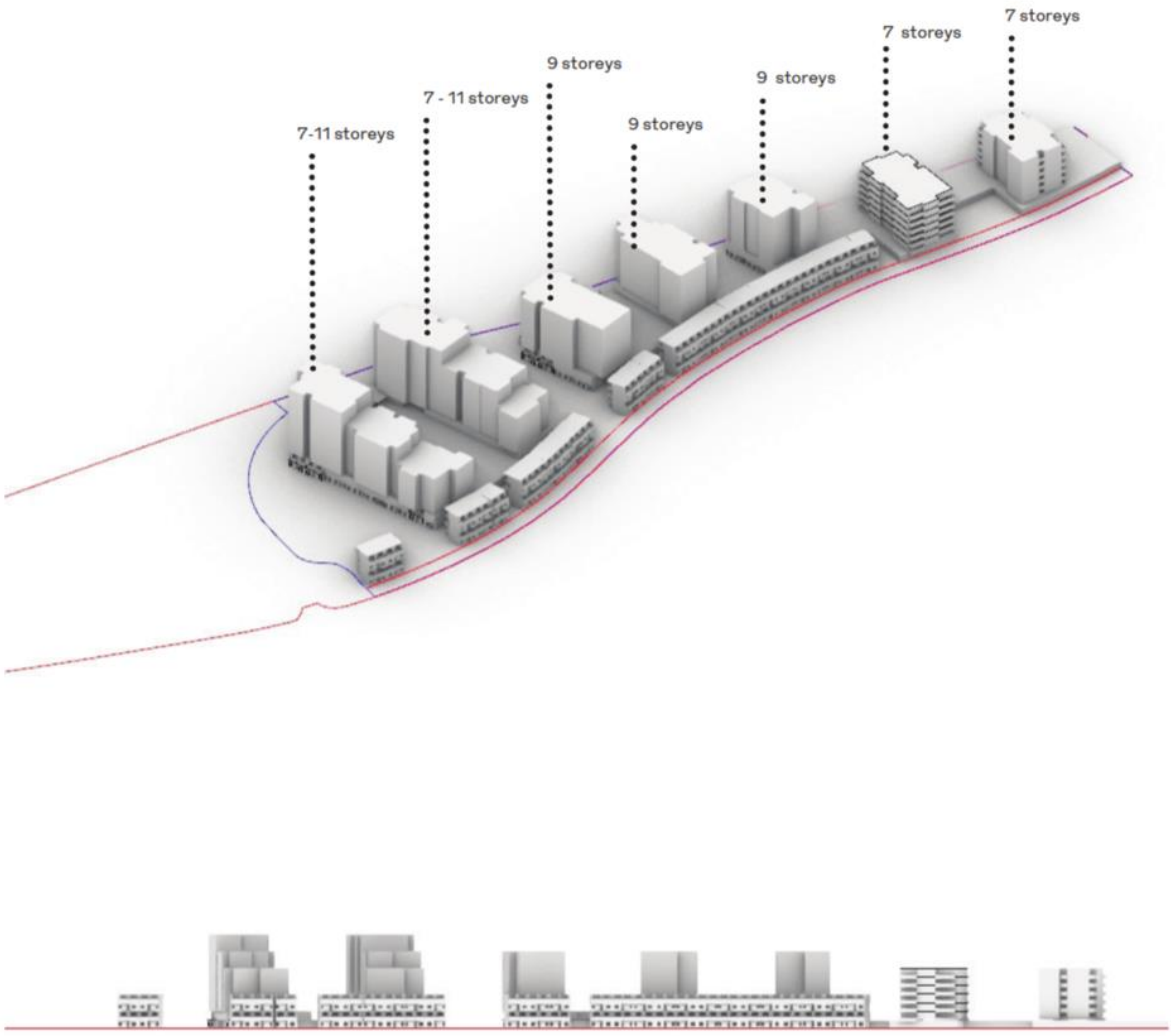
Figure 2.11 Current Proposal Source Henry J Lyons Architects

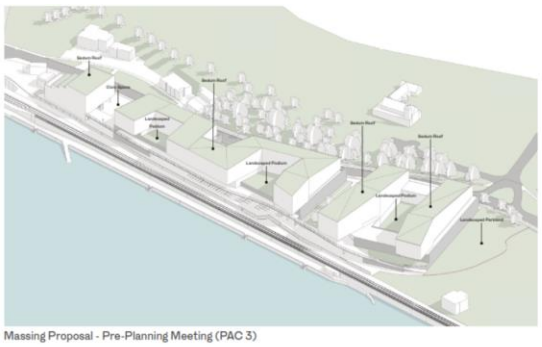
Table 2.1 Environmental Impacts of the Alternative Projects

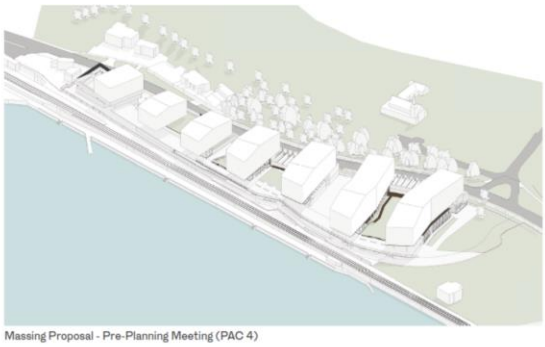
Application	**F08A/1172 304637 (Option 1)**	**F11A/0028 240171 (Option 2)**	**F15A/0362 246151 (Option 3)**	**Proposed (Option 4)**
Projects	Residential, hotel, leisure centres, commercial, community centre, sports facilities, and open spaces.	Residential, retail, office, leisure, restaurant and community uses.	Residential, commercial, community and open space	Residential, commercial, retail, restaurant, café, creche and community.
GFA	56,133 sqm	36,477 sqm	34,500 sqm	47,898 sqm
No. of residential units	386 units + 5 traveller units	250 units + 5 traveller units	127 apartments, 106 houses + 4 traveller units	512 units
Commercial floor space	11,036 sqm	3,275 sqm	2,391 sqm	2,630 sqm
Creche	305 sqm	274 sqm	227 sqm	220 sqm
Height range:	3-11 storeys	3-5 storeys	3-6 storeys	1 to 8 storeys
Size of basement	36,600 sqm (double)	8,692 sqm (double)	c. 8,064 sqm (double)	c. 9,038 sqm (basement part) 9,828 sqm (lower ground floor)
Materials	Pre-cast buff concrete, ceramic, composite stone panels, glass and steel	Stone, brick, render, aluminium, timber, metal cladding, glass	Stone, brick, render, aluminium, timber, metal cladding, ply membrane, solar panels and glass	Brick, ceramic, aluminium, steel, concrete, glazing
Car Parking	935 spaces	462 spaces	487 spaces	439 spaces
Cycle spaces	548 spaces	464 spaces	332 spaces	1,286 spaces
Plot ratio	1:1.28	1:0.83	1:0.78	1:1.79

These were assessed and compared from an environmental perspective. The assessment found that the proposed development constituted the best use of scarce, residentially zoned and serviced land; the scale of parking would limit impacts on the wider road network and encourage greater use of sustainable modes of travel such as walking, cycling and public transport. Finally, because of the high standards of building construction and energy efficiency required by current building regulations, the energy required for each unit would be less. Therefore, the carbon footprint per unit would be less than of the other options.

The development of the design of the scheme is also discussed in this chapter. The design changed significantly over the pre-application process.




Massing Proposal - Pre-Planning Meeting (PAC 3)


Massing Proposal - Pre-Planning Meeting (PAC 4)


Massing Proposal - Pre-Planning Meeting (PAC 5)


Current Proposal

Figure 2.12 Design Development of Current Proposal – Source: Henry J Lyons Architects

3. POPULATION AND HUMAN HEALTH

3.1. Introduction

This chapter considers the population of the area and how it will be impacted by the proposed development. It also considers how the environmental impacts of the proposed development, during construction and operation will impact on human health. The environmental health impacts arising from each individual chapter are brought together in this consolidated chapter.

3.2. Methodology

The methodology is a mix of desktop studies, site visits to determine the baseline condition and sensitive receptors and then specialist studies, such as noise testing, ground investigations, etc.

3.3. Potential Impacts

Census 2016 shows that the census of Howth is 8,294 persons. This is a slight increase since Census 2011 of 38 persons. However this figure is still well below the population of Howth in Census 1996, where it stood at 9,008 persons. Housing stock grew by 54 units from 2011 to 2016, exceeding the population growth. The proposed development would increase the population of Howth circa between 896 persons to 1,075 persons, assuming a national average occupancy of 2.1 persons per apartment. This figure is a projection. It is noted that the average occupancy in Howth was 1.75 persons per apartment in the Census of 2011, when the national occupancy rate was 1.98 persons. Therefore it is credible that the increase will be lower than 1,075 persons. However, the higher population figure has been adopted for the purpose of this study, as a worst case scenario. While this population increase would be a significant increase for the Electoral District, it is a 4% increase on population levels in 1996.

The potential increase in population arising from the permitted development in Balscadden is anticipated to range between 285 – 342 persons. The cumulative increases between both developments range between 1,181 persons to 1,417 persons. This constitutes a circa 17% increase in population in Howth ED.

3.4. Mitigation Measures

In order to protect the amenity of nearby residents, premises and employees, a Construction and Environmental Management Plan, including traffic management plan, will be prepared by the contract for the developer and implemented during the construction phase. This will deal with noise, dust and other issues that may give rise to amenity or public health issues.

3.5. Residual Impacts

The proposed development will increase the population in Howth. This is considered a positive impact. It will redress the population decline / stagnation that Howth has experienced from a population high of 9,369 persons in 1996. It will provide additional services, such as a creche and convenience store large enough to provide for a weekly shop for the citizens of Howth. This will reduce the need to travel by car to Sutton Cross. There will be a negative, moderate, long term impact on traffic congestion at Sutton Cross.

The additional parks and civic space, walkways and cycleways will improve the recreational opportunities in Howth and enhance public health by providing more opportunities for exercise.

4. LAND, SOILS AND GEOLOGY

4.1. Introduction

An assessment of the potential impact on the existing land, soil, geological and hydrogeological environment was carried out by Enviroguide Consulting for the proposed development site.

4.2. Methodology

The assessment was carried out taking cognisance of appropriate national guidelines and standards for EIA using data collected from a detailed desk study and site specific ground investigations and assessments. The site investigations included drilling of boreholes, sampling, laboratory analysis or groundwater and soil samples. The results of these assessment provided information on the baseline conditions at the proposed development site. A detailed assessment of the potential impacts was undertaken and appropriate mitigation measures were identified to reduce the potential impact associated with the proposed development.

4.3. Potential Impacts

The potential impacts of the proposed development on the receiving land, soils and geological and hydrogeological environment are associated with the following activities and attributes:

- Excavation and removal off-site of soil and bedrock for the Proposed Development that will result in the removal of the primary contaminant source associated with the current site condition. This will have an overall significant positive impact on the receiving environment.
- Potential accidental release of construction materials or contaminated materials to ground or water during construction works.
- Importation of fill and aggregates.
- Dewatering and water management during construction works will result in a slight but temporary impact on the receiving environment.

These potential impacts are primarily associated with the construction phase of the proposed development that will include excavation of 70,551m3 of soil and rock for basement structures and is unavoidable taking account of the site setting and alternatives considered for the proposed development.

4.4. Mitigation Measures

Any potential significant impacts are related to the construction phase of the proposed development and primarily associated with basement construction which is unavoidable for the proposed development. Proposed mitigation measures to include:

- Controlled management of the basement excavation and construction methodology taking cognisance of the receiving environment including strict management procedures for dealing with any contaminated materials;
- Reuse of subsoil on site or compliant recovery / re-use for other projects offsite where possible;
- Offsite removal of materials in compliance with relevant environmental legislation in particular the Waste Management Act;
- Robust dewatering methodology to include control measures to prevent any potential impact on the Baldoyle Bay SAC;
- Strict operating and management procedures to prevent and to mitigate against any accidental spills and reduce potential impacts on the receiving environment; and
- Implementing a detailed Construction Management Plan and Construction and Demolition Waste Management Plan will be put in place and will specific methods to manage and control the construction phase to ensure that any potential issues are mitigated appropriately and prevent any impact to the receiving land, soil, geology and hydrogeology environment associated with the proposed development.

4.5. Residual Impacts

The Proposed Development includes excavation of soil and bedrock for the construction of a basement which will result in a permanent, positive impact on the receiving environment associated with the bulk removal of existing contaminant sources.

There will be no adverse impact on the receiving water environment including Claremont Strand and Baldoyle Bay SAC.

Overall there will be no adverse impacts on the receiving land, soils, geology and hydrogeology environment with a positive impact on and water quality associated with the Proposed Development at the site.

5. WATER, HYDOLOGY AND HYDROGEOLOGY

5.1. Introduction

An assessment of the potential impact on the existing water (hydrological and hydrogeological) environment was carried out by Enviroguide Consulting for the Proposed Development Site.

5.2. Methodology

The assessment was carried out taking cognisance of appropriate national guidelines and standards for EIA using data collected from a detailed desk study and site specific ground investigations and assessments. The site investigations included drilling of boreholes, sampling and laboratory analysis water samples. The results of these assessment provided information on the baseline conditions at the Proposed Development Site. A detailed assessment of the potential impacts was undertaken and appropriate mitigation measures were identified to reduce the potential impact associated with the Proposed Development.

5.3. Potential Impacts

The potential impacts of the Proposed Development on the receiving water environment are associated with the following activities and attributes:

- Excavation and removal off-site of soil and bedrock for the Proposed Development that will result in the removal of the primary contaminant source associated with the current site condition. This will have an overall significant positive impact on the receiving water quality.
- Construction of a water-tight basement that will be in part below the groundwater table will have a negligible impact on the aquifer and Baldoyle Bay.
- Potential accidental release of construction materials or contaminated materials to water courses or groundwater during construction works.
- Dewatering and water management during construction works will result in a slight but temporary impact on the receiving environment.
- The opening up of the Bloody Stream from the existing culvert into a landscaped riparian strip that will have an overall positive impact on water quality.

These potential impacts are primarily associated with the construction phase of the proposed development that will include excavation of a basement and dewatering required for the construction works.

5.4. Mitigation Measures

Any potential significant impacts are related to the construction phase of the proposed development and primarily associated with construction phase of the Proposed Development. Proposed mitigation measures to include:

- Controlled management of the basement excavation and construction methodology taking cognisance of the receiving environment including strict management procedures for dealing with any contaminated materials;
- Protection of the Bloody Stream during construction to prevent any potential impact on the water quality of the Bloody Stream and Baldoyle Bay SAC.
- Robust dewatering methodology to include control measures to prevent any potential impact on the Baldoyle Bay SAC;
- Strict operating and management procedures to prevent and to mitigate against any accidental spills and reduce potential impacts on the receiving environment; and
- Implementing a detailed Construction Management Plan and Construction and Demolition Waste Management Plan will be put in place and will specific methods to manage and control the construction

phase to ensure that any potential issues are mitigated appropriately and prevent any impact to the receiving water environment associated with the proposed development.

5.5. Residual Impacts

The Proposed Development a basement which will result in a negligible impact on the aquifer.

There will be no adverse impact on the receiving water environment including Claremont Strand and Baldoyle Bay SAC.

Overall there will be a positive impact on the water quality associated with the Proposed Development at the Site.

6. AIR, CLIMATE AND MICROCLIMATE

6.1. Air Quality and Climate

6.1.1. Introduction

AWN Consulting Limited has been commissioned to conduct an assessment of the likely impact on air quality and climate associated with the proposed development site on Howth Road, Howth, Co. Dublin. The development site is made up of three separate sites, a precast manufacturing plant – formerly Techrete, a motor garage- formerly Teeling Motors and a garden centre. This EIAR chapter is completed as part of the proposed development and outlines the methodology used to assess the potential air quality and climate impacts of the proposed development.

Dr. Avril Challoner completed this Chapter, she is a Senior Consultant in the Air Quality section of AWN Consulting. She holds a BEng (Hons) in Environmental Engineering from the National University of Ireland Galway, HDip in Statistics from Trinity College Dublin and has completed a PhD in Environmental Engineering (Air Quality) in Trinity College Dublin. She is a Chartered Scientist (CSci), Member of the Institute of Air Quality Management and specialises in the fields of air quality, EIA and air dispersion modelling.

6.1.2. Methodology

An appraisal has been carried out to assess the risk to sensitive receptors of dust soiling, health impacts and ecology due to the construction phase in accordance with the Institute of Air Quality Management's publication Guidance on the Assessment of Dust from Demolition and Construction (IAQM, 2014).

The operational impact of the development was assessed based on emissions of the pollutants nitrogen dioxide, particulate matter less than 10 microns, particulate matter less than 2.5 microns, carbon monoxide and benzene using the UK Design Manual for Roads and Bridges screening model which is a recommended screening model for assessing the impact of traffic on air quality. The inputs to the air dispersion model consist of information on road layouts, receptor locations, annual average daily traffic movements, annual average traffic speeds and background concentrations. The climatic impact based on greenhouse gas (GHG) emissions of CO2 was also assessed using the Design Manual for Roads and Bridges screening model.

6.1.3. Potential Impacts

The greatest potential impact on air quality during the construction phase is predicted to be from construction dust emissions and the potential for nuisance dust. In order to minimise dust emissions during construction, a series of mitigation measures were prepared in the form of a Dust Minimisation Plan. When the dust minimisation measures set out in the plan are implemented, fugitive emissions of dust from the site will be insignificant and pose no nuisance at nearby receptors.

There is the potential for a number of emissions to the atmosphere during the operational phase of the development. In particular, the traffic-related air emissions may generate quantities of air pollutants such as NO2, CO, benzene and PM10.

The development site is located within close proximity to Baldoyle Bay SAC, with some impacted road links in proximity to North Dublin Bay SAC. An assessment of the ecological impact of the proposed development due to construction phase dust and operational phase traffic emissions was conducted. The likely overall magnitude of the changes on ecological impacts in the construction and operational stages are not significant and the project ecologist has been made aware of the findings.

6.1.4. Mitigation Measures

In order to sufficiently ameliorate the likely air quality impact, a schedule of air control measures has been formulated for the construction phase associated with the proposed development. A Construction Environmental Management Plan will provide detailed mitigation measures.

Construction phase dust monitoring will be put in place to ensure dust mitigation measures are controlling emissions. Dust monitoring will be conducted using the Bergerhoff method in accordance with the requirements of the German Standard VDI 2119. The Bergerhoff Gauge consists of a collecting vessel and a stand with a protecting gauge. The collecting vessel is secured to the stand with the opening of the collecting vessel located approximately 2m above ground level. The TA Luft limit value is 350 mg/(m2*day) during the monitoring period between 28-32 days.

There is no proposed monitoring for the operational phase of the development with respect to air quality or climate.

6.1.5. Residual Impacts

Construction Phase

When the dust minimisation measures detailed in the mitigation section of this chapter are implemented, fugitive emissions of dust from the site will be short-term, localised, not significant and pose no nuisance at nearby receptors.

Due to the size and nature of the construction activities with appropriate mitigation measures, CO2 and N2O emissions during construction will have a short-term, localised and imperceptible impact on climate, and therefore not be significant.

Operational Phase

The results of the air dispersion modelling study indicate that the residual impacts of the proposed development on air quality and climate are predicted to be imperceptible and localised with respect to the operational phase for the long term and therefore not significant.

6.2. Wind and Microclimate

6.2.1. Introduction

Wind and Micro-climate assessment have been carried out to identify the possible wind patterns around the proposed Claremont Development considering mean and peak wind conditions typically occurring in Dublin. The criteria of Lawson's Wind Comfort and Distress have been adopted to define if a specific area of the development could be comfortable and safe to pedestrians for its designated activity (i.e. standing/walking/strolling).

Results of the wind analysis have been discussed with the design team so as to configure the optimal layout for proposed Claremont Development for the objective of achieving a high-quality environment for the scope of use intended of each areas/building (i.e. comfortable and pleasant for potential pedestrian) and without compromising the wind impact on the surrounding areas and on the existing buildings.

6.2.2. Methodology

The wind modelling study has been performed through an Advanced Computational Fluid Dynamics (CFD) analysis; this numerical methodology simulates the movement of wind within the prescribed area. The simulations have been carried out using the concept of Large Eddy Simulation (LES) and Reynolds Average Navier-Stokes (RANS).

A total of 18 different wind scenarios have been studied considering variation of wind magnitude and directions in line with their frequency of occurrence based on 30 years of historical weather data.

The wind profile built using the data from Dublin Airport was also compared with the one obtained using the data collected on-site. Generally, both the wind speed daily mean and the wind gust daily mean recorded on site followed the same patterns as recorded at Dublin Airport. Despite the coastal location of the site, the speed levels registered on-site were below those ones registered at Dublin Airport. This confirmed the fact that using wind data from Dublin Airport ensures a conservative analysis of the wind impact on the development.

Through the wind assessment it was possible to highlight, at design stage, areas of concern in terms of downwash/funnelling/downdraft/ and to identify locations where wind speed could accelerate.

The assessment has been carried out considering the impact of wind on the following configurations:

- The ”Existing Receiving Environment”: in this case the assessment has considered the impact of the local wind on the existing area / buildings prior to construction of the proposed development. For this assessment a statistical analysis of 30 years of historical weather wind data has been carried out to find the most critical wind speeds and directions and the frequency of occurrence of the same.

- The ”Potential Impact”: in this case the assessment has considered impacts of wind on the existing environment area, the proposed Development, and its immediate vicinity, with the aim to identify potential impacts on nearby buildings. For this scenario, Claremont Development will introduce no negative wind effect on adjacent, nearby or within its vicinity.

6.2.3. Potential Impacts

The Potential Impact of the Proposed Development on impact of wind in the existing area has been tested. The analysis has been used to identify the critical areas of the proposed development that requires implementation of mitigation measures.

CFD modelled results of the proposed development scheme showed that:

- The proposed Claremont Development will produce a high-quality environment that is attractive and comfortable for pedestrians of all categories.

- The surrounding environment and development properly shield all paths/walkways around and within the development. Pedestrian footpaths are always successfully shielded and comfortable.

- The development communal open spaces are generally suitable for long term sitting, short term sitting, standing, walking and strolling activities.

- The proposed development does not impact or give rise to negative or critical wind speed profiles at the nearby adjacent roads, or nearby buildings.

- Pedestrian comfort assessment, performed according to the Lawson criteria, identified the areas that are suitable for different pedestrian activities in order to guarantee pedestrian comfort. In terms of distress, no critical conditions were found for “Frail persons or cyclists” in the surrounding of the development. No critical conditions have been found for members of the” General Public”.

- During the proposed Claremont Development construction phase the predicted impacts are classified as negligible.

6.2.4. Mitigation Measures

The proposed mitigation measures for this development is landscaping using tree plantings, which can change wind direction and reduce the speed of incoming wind. Therefore, wind impacts on the buildings, public spaces or pedestrian paths are reduced. This proposed tree planting mitigation measures are needed to be implemented within the development, particularly at the corners of the development, and to mitigate some funnelling effects as reported in the EIAR Volume 2 Chapter 6.

6.2.5. Residual Impacts

The impacts of implementing mitigation measures such as tree planting will result in further shielding of public spaces and pedestrian footpaths from wind. This impact is a positive effect.

6.3. Daylight

6.3.1. Introduction

A three dimensional digital model of the proposed development and, of existing buildings in the area was constructed by JV Tierney and Company (JVT) based on drawings and three dimensional models supplied by the Design Team, on drawings and information available from the Fingal County Council online planning register; and with reference to on-site, satellite and aerial photography.

6.3.2. Methodology

Using the 3-D model of the proposed development and of the existing buildings surrounding the development site using proprietary daylight analysis software in order to quantify the likely impact of the proposed development on the living and bedroom spaces within the development and spaces adjacent to it, which had a reasonable expectation of daylight.

6.3.3. Potential Impacts

The impact of daylight on existing buildings is imperceptible either due to their distance from the site or the spaces adjacent are not impacted. The design meets with the principles of the BRE guide - “Site Layout Planning for Daylight and Sunlight” (i) and the latest guidelines for new apartments as issued by the Department of Housing with good quality daylight available across a substantial portion of the development.

6.3.4. Mitigation Measures

Early stage testing concluded that the “developed design” maintained good Average Daylight Factors while optimizing the largest balcony area for living spaces. Furthermore, in large scale developments it is common to see ground floor apartments receive lower amounts of daylight when compared to the upper levels. In order to mitigate this design constraint, the lower level apartments are designed for the maximum amount of glazing that is feasible to ensure that the development still receives good levels of light penetration

6.3.5. Residual Impacts

The proposed development is unlikely to result in any undue adverse effects on daylight access within buildings in the wider surrounding area.

6.4. Sunlight

6.4.1. Introduction

A three dimensional digital model of the proposed development and, of existing buildings in the area was constructed by JV Tierney and Company (JVT) based on drawings and three dimensional models supplied by the Design Team, on drawings and information available from the Fingal County Council online planning register; and with reference to on-site, satellite and aerial photography.

6.4.2. Methodology

Using the digital model, shadows were cast by JVT at several times of the day at the equinox and presented on shadow study diagrams submitted in the Daylight & Suncast Report with this Environmental Impact Statement Assessment Report. JVT also analysed the 3-D models of the proposed development and of the existing buildings surrounding the development site using proprietary sunlight analysis software in order to quantify the likely impact of the proposed development on the gardens and open spaces which could have a reasonable expectation of sunlight.

6.4.3. Potential Impacts

JVT's suncast analysis indicated that the potential of the proposed development to result in overshadowing of lands outside the application site is negligible and will have no imperceptible impact on the surrounding beaches or surrounding houses in terms of overshadowing.

6.4.4. Mitigation Measures

Due to the orientation of the development the potential for impacting on surrounding areas has been minimised due to the East – West axis of the development and the u -shape of the buildings which allows for the sunlight to be maximised within the development and surrounding areas.

6.4.5. Residual Impacts

The proposed development will have no imperceptible impact on the surrounding beaches or surrounding houses in terms of overshadowing.

7. NOISE AND VIBRATION

7.1. Introduction

Chapter 7 of the EIAR provides information on the assessment of noise and vibration effects on the surrounding environment during both the construction and operational phases of the proposed mixed use development at the former Techrete site, Claremont, Howth.

The proposed development is located off the R105 Howth Road, Co. Dublin on an existing brownfield site. The site is bound to the north by the DART rail line and the coast beyond, by the R105 Howth Road to the south with residential dwellings beyond and to the east and west by residential dwellings. The principal receptors external to the proposed development are those located along the eastern boundary ("Ashbury" residential property), dwelling houses and Marine Villas apartments buildings along the south-eastern boundary off the Howth Road.

The main noise sources in the area are from road traffic, passing DART trains and general suburban noise sources including rustling foliage, birdsong and pedestrians.

7.2. Methodology

The study has been undertaken using the following methodology:

- A baseline noise survey has been undertaken within and in the vicinity of the site to determine the existing noise climate;
- A review of the most applicable standards and guidelines has been conducted in order to set a range of acceptable noise and vibration criteria for the construction and operational phases of the proposed development;
- Predictive calculations have been performed to assess the potential impacts associated with the construction and operation of the development at the most sensitive locations surrounding the development site;
- A schedule of mitigation measures has been proposed to reduce, where necessary, the identified potential impacts relating to noise and vibration from the proposed development.

7.3. Potential Impacts

The construction phase will involve site clearance, demolition, piling, foundation construction and main building construction works over a number of sequential phases. A range of indicative noise calculations have been undertaken for the construction phase assuming typical construction plant items. The assessment has determined that special consideration will need to be given to residential dwellings located along the immediate eastern boundary. Construction noise levels at remaining noise sensitive locations further south and south west of the site boundary will also require noise mitigation measures to ensure the construction noise criteria is not exceeded, particularly during the initial construction phases.

During the operational phase of the development, the primary source of outward noise in the relates to any changes in traffic flows along the local road network. The predicted increase in noise levels associated with the addition of development related traffic along the surrounding road network is an imperceptible impact of long-term, neutral effect.

Operational plant or fixed installation noise used to serve the ancillary elements within the development buildings and any potential operational noise sources from retail, amenity and creche areas are potential noise sources. Noise levels associated with operational mechanical and electrical plant will be designed to ensure the prevailing background noise environment at existing noise sensitive locations is not increased by a significant level such that potential adverse noise impacts are avoided. During the detail design stage, the prevailing background noise environment will be verified through updated baseline studies at the nearest noise sensitive locations in order to set appropriate noise limits in accordance with

BS 4142 (2014) Methods for Rating and Assessing Industrial and Commercial Sound. Assuming the operational noise levels do not exceed the adopted design goals included within the EIAR, the resultant residual noise impact from this source will be of neutral, minor, long term impact.

Due to the nature of the proposed development, there are no sources of vibration in the operational context.

7.4. Mitigation Measures

The best practice control measures set out in BS 5228 Code of practice for noise and vibration control on construction and open sites (2009 + A1 2014) Parts 1 and 2 will be complied with which are set out in the EIAR chapter and the Construction Environmental Management Plan (CEMP). In addition to the above, strict hours of operation and construction noise limits will ensure impacts are controlled. Similarly, vibration impacts during the construction phase will be well controlled through the use of low impact equipment and adherence to strict limit values which will be subject to monitoring at the nearest sensitive buildings.

The development will be designed to ensure that the design goals outlined in Chapter 7 are achieved for occupants of the dwelling units within the proposed development and that background noise levels at off-site noise sensitive buildings are limited to avoid any form of adverse noise impact in accordance with line with BS 4142 (2014). Mitigation measures will include selection of low noise equipment, siting noisy plant away from noise sensitive boundaries, installing solid screening to any external plant, and or installing attenuation to plant venting to atmosphere, where required.

7.5. Residual Impacts

During the construction phase, the assessment has determined that noise impacts will be negative moderate short-term and, in some instances, negative significant and temporary depending on the activities involved at the closest noise sensitive locations. The use of best practice noise control measures, hours of operation, scheduling of works within appropriate time periods, strict construction noise limits and noise monitoring during this phase will ensure impacts are controlled to within the adopted criteria. Similarly, vibration impacts during the construction phase will be well controlled through the use of low impact equipment and adherence to strict limit values which will be subject to monitoring at the nearest sensitive buildings.

The predicted noise level associated with additional traffic is predicted to be of insignificant impact along the existing road network. It can be concluded that, once operational, noise levels associated with the proposed development will not contribute any significant noise impact to its surrounding environment.

The likely impact from mechanical and electrical services serving the proposed development will be not significant with long-term neutral effects.

The likely impact residential amenity, retail, creche and restaurant areas serving the proposed development will be not significant with long term slight effects.

8. BIODIVERSITY

8.1. Introduction

This EIAR chapter describes the Biodiversity of the Site of the Proposed Development, with emphasis on habitats, flora and fauna, and outlines the methodology of assessment.

It also provides an assessment of the impacts of the Proposed Development on habitats and species, particularly those protected by national and international legislation or considered to be of particular conservation importance and proposes measures for the mitigation of these impacts.

8.2. Methodology

A number of specialist surveys were carried out to describe the baseline biodiversity of the Site, including:

- Desk-top study of protected Sites within 15km of then Proposed Development;
- Desk-top study of all species recorded with the 10km, 2km and 1km grid squares;
- Habitat Surveys;
- Bat surveys (2018 and 2019);
- Breeding bird surveys (2019);
- Wintering bird surveys (2018/2019);
- Mammal survey; and
- Amphibian survey.

There are 18 no. European Sites located within 15km of the proposed development. The closest of which are Baldoyle Bay Special Area of Conservation (SAC), 0.02km east of the proposed development site and Irelands Eye Special Protection Areas (SPA) 1.20km east of the proposed development site. There are 17 proposed Natural Heritage Areas (pNHAs) within 15km of the proposed development, the closest being Baldoyle Bay, 0.02km east of the proposed development site.

The following habitats were identified within the proposed development site and immediate surrounding area:

- Buildings and Artificial Surfaces (ED3)
- Dry Meadows and Grassy Verges (GS2)
- Scrub (WS1)
- Hedgerows (WL1)
- Treelines (WL2)
- Earth Banks (BL2)
- Depositing / Lowland Rivers (FW2)

The Site is predominately Buildings and Artificial Surfaces (ED3).

The following is a brief summary of the survey results:

- No rare or protected terrestrial mammal species were directly recorded during site surveys. The habitats within the proposed development site are of variable value for mammals. There is potential habitat for hedgehog within the scrub areas in the western area of the site. No badger setts were recorded during the site survey and it is considered unlikely that badgers would utilise the project site. There are no open watercourses or areas of woodland within the project site.
- Three different bat species were recorded foraging within and commuting across the study area.
- Some evidence of roosting bats in B1 and B2 was found during the roost inspection surveys undertaken in 2019.

- A breeding bird survey was undertaken in May 2019 and a total of 11 species were identified within the Site of the Proposed Development with 1 No. species identified as 'confirmed breeding'; Zero No. species identified as 'probable breeders', and 10 No. species identified as 'possible breeders' based on activity observed during the survey.
- Wintering bird surveys were undertaken along Claremont Strand and Deer Park, during winter 2018/2019. The numbers of most species were highest around low tide and reduced significantly at high tide. Waders were recorded in relatively low numbers at the site for the given habitat type, with Oystercatcher and Curlew being the most frequently recorded, albeit in low numbers. The tidal defence mound north of Claremont Beach was used by various species as a high tide roost. Species frequently recorded here included Oystercatcher, Ringed Plover, Black-headed Gull, Herring Gull, Greenshank and Turnstone.

8.3. Potential Impacts

Without the implementation of mitigation, the Proposed Development could result in potential significant impacts:

- Construction-related surface water discharges could result in a reduction in water quality at a European Site namely Baldoyle Bay SAC.
-
- Construction-related groundwater water discharges could result in a reduction in water quality at a European Site namely Baldoyle Bay SAC.
-
- Localised disturbance to feeding or roosting birds.
-
- Impacts to breeding birds due to noise or physical disturbance or direct habitat loss of suitable breeding habitat.
-
- Impacts on bats as a consequence of the removal of a potential bat roost i.e. the existing building and other vegetation. Impacts as a relighting

8.4. Mitigation Measures

Mitigation measures that will be implemented will include:

- Specific measures during the Construction and Operational Phases to ensure no impact on European Sites as a consequence of construction-related surface water discharges;
- Specific dewatering measures during the Construction Phase to ensure no impact on European Sites because of construction-related ground water discharges;
- Removal of potential bat roost (B1 and B2) under the supervision of an experienced bat ecologist;
- Lighting during Construction and Operational Phases to follow relevant current guidance in order to minimise impacts on bats.
- Erecting 3 No. bat boxes post Construction to compensate for any potential loss of roost sites; and,
- Timing of demolition works outside the breeding bird season.
- Creation of additional biodiversity habitat in the form of the proposed riparian strip.

8.5. Residual Impacts

Following the implementation of mitigation, the proposed development will result in no significant residual impacts.

9. ARCHAEOLOGY, CULTURE AND ARCHITECTURAL HERITAGE

9.1. Archaeology

9.1.1. Introduction

This chapter aims to articulate the potential significance and sensitivity of the existing archaeological and architectural environment and to evaluate the likely impacts of the proposed development on this environment.

9.1.2. Methodology

The methodology undertaken in the production of this chapter included a desk-based assessment of the known archaeological and settlement history of the immediate area and a walk-over site inspection. Existing legislation relating to archaeological and architectural heritage was also considered, especially in relation to the Howth Castle Architectural Conservation Area.

9.1.3. Potential Impacts

There are no known archaeological monuments within the boundary of the proposed development site, where prior to the construction of the railway, the site constituted part of the foreshore. The foreshore was however possibly the location of a battle between the Anglo-Normans and the Norse of Howth in August 1177 and there are several accounts of human remains, presumably relating to the battle, being uncovered in the general area. The development will therefore potentially impact on any surviving sub-surface material associated with the battle. Should such material survive, the impact will be Significant.

9.1.4. 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, with the agreement of the statutory authorities an area surrounding the material will be opened 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.

9.1.5. Residual Impacts

There are no specific residual impacts following the implementation of the archaeological mitigation measures outlined above. The site however borders on the Howth Castle Architectural Conservation Area where existing vistas through and from the entrance gates of Howth Castle (RPS Ref. 0556) will be permanently altered.

9.2. Architectural Heritage

9.2.1. Introduction

The architectural heritage section of chapter 9 was compiled by Rob Goodbody, Historic Building Consultant. He holds a Master's in Urban and Building Conservation (MUBC) from University College, Dublin, a Masters in Local History (MA) from Maynooth University, a post-graduate diploma in Applied Building Repair and Conservation (DipABRC) from Trinity College, Dublin and a post-graduate diploma in Environmental Planning from the Chelmer Institute, Essex. His primary degree in Natural Science (BA(mod)) was awarded by Trinity College, Dublin. He is a member of the Irish Planning Institute (MIPI)

and a member of ICOMOS, the International Committee on Monuments and Sites and is a former director of ICOMOS Ireland.

9.2.2. Methodology

An understanding of the location of those buildings and other structures that may be of architectural heritage significance was compiled from historic maps, Fingal Development Plan and an examination of the application site and its surrounding area. The maps included eighteenth- and nineteenth-century maps from before the Ordnance Survey and Ordnance Survey maps from the nineteenth and twentieth centuries.

Fingal Development Plan 2017-2023 includes the Record of Protected Structures, which lists four buildings within 100 metres of the application site that are protected structures, while there are none within the site. One protected structure, the signal box at Howth Railway Station immediately adjoins the application site. The four protected structures are Howth Castle, including its 19th-century entrance gates, Howth Railway Station, including the signal box, the former station master's house and St. Mary's Church of Ireland church. The development plan also defines two architectural conservation areas within the vicinity of the application site – Howth Demesne Architectural Conservation Area, to the south of the application site and Howth Historic Core Architectural Conservation Area, which lies to the east.

The National Inventory of Architectural Heritage completed its survey of the Fingal area in 2000 and this includes the protected structures in the vicinity of the site and also an arch that was part of the viaduct that carried the Hill of Howth Tram over Harbour Road. This arch lies to the west of the railway station.

A historical background to the application site was compiled and is included in the chapter.

9.2.3. Potential Impacts

Potential impacts arising from the proposed development were identified either through an impact on any of the protected structures in the vicinity or on either of the two architectural conservation areas. It was found that there would be no impact on Howth Castle and generally there would be no impact on the gateway, with the exception of a slight impact on the character of the gateway when approaching it from the south. No impact on the architectural character of Howth Railway Station was identified, though there would be a slight positive impact on the setting of the signal box. The development would also have a moderate long-term negative impact on the setting of St Mary's Church and the former station master's house. No impact on the character of the Howth Historic Core Architectural Conservation Area will occur, while there would be a moderate long-term negative impact on the northernmost part of the Howth Demesne Architectural Conservation Area, where it runs alongside Howth Road. Where any impacts on architectural heritage occur, they would be in line with emerging trends in the development of the area

9.2.4. Mitigation Measures

The assessment concluded that none of the potential impacts on the settings of protected structures or architectural conservation areas will be of such magnitude that they would require any mitigation measures.

9.2.5. Residual Impacts

Construction Phase

There will be no residual impacts on architectural heritage as a result of the construction phase.

Operational Phase

Following the completion of construction there would be a continuing slight or moderate impact on the setting of some of the protected structures and on the northern edge of the Howth Demesne Architectural Conservation Area, though these impacts would be in keeping with trends.

10. LANDSCAPE AND VISUAL

10.1. Introduction

This Landscape and Visual Impact Assessment (LVIA) has been prepared by The Paul Hogarth Company who have also been appointed to undertake the design of the external environment and public realm. It presents an assessment of the landscape and visual impacts of the proposed development.

The purpose of the LVIA is to identify any likely significant effects on the landscape and visual resource as a result of the proposed development. In accordance with the published guidance, Landscape and visual effects are assessed separately, although the procedure for assessing each is closely linked.

The landscape assessment considers how the proposed development would impact on the physical features and perceptual characteristics of the landscape and its resulting character and quality. The visual assessment considers how the proposed development would impact on specific views experienced by visual receptors in the wider landscape and on visual amenity.

The authors of the LVIA are chartered members of the Landscape Institute, who are experienced in both the design and delivery of large-scale public realm and urban design projects and the production of landscape and visual impact assessments. Experience has been calibrated across a wide-ranging portfolio of project types and landscape contexts across Ireland and the UK.

Photomontages that illustrate how the proposed development will appear from a number of locations in the wider landscape have been prepared by Model Works Ltd.

10.2. Methodology

The existing landscape and visual context of the study area was established through a process of desktop study, site survey work and photographic surveys. The following key guidance documents were followed:

- Guidelines for Landscape and Visual Impact Assessment (GLVIA3) (The Landscape Institute and the Institute of Environmental Management & Assessment 2013); and
- Guidelines on the information to be contained in Environmental Impact Assessment Reports - Draft (Environmental Protection Agency, 2017).

Landscape and visual effects have been determined through a comparison between the nature of the change (magnitude of change) against the significance/sensitivity of the existing landscape and visual environment. The significance of the effects is the importance of the outcome of the effects. All criteria used in identifying landscape and visual effects are founded within key guidance. The significance of effects criteria presented in the EPA Guidelines on the information to be contained in Environmental Impact Assessment Reports, Draft (2017), includes a consideration of existing and emerging trends and as such the Development Plan Zoning and permissions on the site are incorporated.

All effects are considered, including construction/operation; positive/neutral/negative; short-term/long-term; direct/indirect; do-nothing; residual; cumulative; and the effects arising from interaction between environmental factors.

The Landscape Assessment assesses how the development would impact directly on any existing landscape features or elements (e.g. removal of trees etc.). It then considers impacts on landscape character with reference to identified landscape character areas.

The visual assessment has adopted a comparative visual technique to understand the impact of the proposed development. Accurate photomontages incorporating the proposed development have been prepared for thirty locations in the landscape surrounding the site including locations directly adjacent to the site, within the village and more distant locations to the north, east, south and west of the site. Viewpoint

locations were agreed in consultation with Fingal County Council during extensive pre-application discussions, with photography taken during winter months to allow a worst-case level of visibility to be understood.

For consistency, it has been deemed appropriate to draw on characterisation and viewpoint studies undertaken as part of assessments of previous permitted development applications on the site given the strong degree of commonality between the proposed scheme and these previous developments. The adoption of previous characterisation studies and viewpoints for use within this assessment has been subject to critical review and numerous pre-application consultation meetings with Fingal County Council.

Numerous site visits have been undertaken November 2018 and May 2019 to gain a comprehensive understanding of landscape character and visibility. These included a site familiarisation visit on the 08/11/2018, and site visits to locations in the wider landscape on 16/11/2018, 04/04/2019 and 18/04/2019.

10.3. Potential Impacts

Construction Phase

Potential landscape and visual impacts during the construction phase will relate primarily with the removal of existing features on the site and the activity and movement within the confines of the site boundaries. Effects during the construction stage would arise as a result of:

- Removal of existing vegetation;
- Demolition of all existing buildings on the site;
- Site preparation works and groundwork operations (including excavation for basement, intrusive foundation work and stockpiling of material) resulting in a change of ground levels;
- Site infrastructure and access including site – hoarding, lighting, cranes, car parking, storage areas;
- Installation of foundations and services;
- Construction of building and external spaces;
- Vehicular and plant movements including the presence of tower cranes;
- Construction traffic, dust and emissions;
- Construction lighting.

The construction phase will result in a fundamental change of use and change of character. Effects however are short term and temporary.

Operational Phase

The proposed redevelopment of the site will result in the replacement of existing derelict-built features and vegetation with new built form and associated external spaces. During its operation, the proposed development has the potential to result in landscape and visual effects as a result of:

- new built form in the landscape;
- new planting and open spaces;
- the intensification of activity on the site, including vehicle movements and pedestrian activity associated with future occupants and those walking through the development.

The operational phase will result in a fundamental change to the use and character of the site.

10.4. Mitigation Measures

In order to avoid, reduce or remediate adverse landscape and visual impacts, it is recognised that the development layout, architectural character, external spaces and material treatments have been developed as part of an iterative approach to design and assessment. The design of the scheme draws

reference to baseline studies and various technical specialist inputs, such that the proposals are grounded in, and respect, the key characteristics of the receiving landscape and visual environment.

Key considerations include:

- The building proportions along Howth Road, which seek to minimise the impact of taller built elements and be of a scale that is consistent with the village frontage;
- The creation of a vegetated tree lined avenue character along Howth Road that moderates the visual impact of the proposed development, contributes to the sylvan setting of the road and generates a strong sense of approach into the village;
- The relationship between the built form, the topography of the wider peninsula and the tree line along Howth Road when viewed from locations in the wider landscape;
- The distribution of height in 'finger blocks' to capitalise on sunlight penetration to courtyards and the Northern Promenade and to reduce the massing of built form when viewed from the wider landscape;
- The layout of the development to generate a new vista towards St. Mary's Church Spire from the Northern Promenade;
- The incorporation of vegetation around the built form and within open spaces to generate a strong sylvan character close to the road and a more coastal character along the northern edge of the site.

Specific concerns were raised by Fingal County Council during the course of pre-application consultation meetings in terms of the visual impacts experienced when travelling northbound towards Howth Road from the approach road to Howth Castle. This relating to a map-based objective 'to preserve' views.

In response to these concerns, the disposition of built form at the western end of the proposed development was considered in detail in terms of safeguarding a visual relationship with the sea when viewed between the gates on the exit of Howth Castle. The built form was aligned with extant permitted development applications on the site such that the development does not infringe further into this view to the sea than that previously identified as being acceptable.

In addition, the layout and design of the western parkland sought to improve the character of views towards the sea when viewed from this location.

Construction Phase

No specific construction phase mitigation measures are proposed. Construction phase mitigation measures are inherent within good site management and industry best practice construction standards, proposed within the Construction Management Plan.

Operational Phase

Due to the iterative approach to design and assessment adopted, mitigation proposals are substantially inherent within the scheme being assessed.

Whilst tree planting along Howth Road and within the western part of the site would not screen the development fully (nor would any planting undertaken throughout the proposed scheme), it is considered to be of particular importance to the proposed development in terms of moderating the adversity of visual impacts on the approach into the village, generating a strong sense of approach at this primary gateway location and integrating the development with the sylvan character of Howth Road. Therefore, tree planting along the western edge of the site and along Howth Road is considered to be mitigation for the purposes of assessment.

10.5. Residual Impacts

Landscape

During the construction phase:

- The construction phase would involve the comprehensive removal of existing features on the site. This would be restricted to the land within the boundaries of the site and will influence only the character of the immediate site environs and views from the immediate locality. None of the features on site are considered to be of any notable quality or amenity value.
- Direct effects on Landscape Character Area A (Harbour) within which the site would be located, would result from the removal of existing built form and features on the site, and the construction phase activities. As part of this wider area of landscape character, the effect of the proposed development would be moderate.
- Indirect effects on the landscape character of other surrounding landscape character areas identified, would result from the indirect influence of the removal of built features on the site, crane activity and the emerging built form. It is not considered that effects would be any greater than moderate.
- Effects are adverse but will be short term and temporary.
- Effects are not considered to differ in any meaningful way from those that have been found to be previously acceptable at the site.

During the operational phase:

- The low sensitivity of the land use combined with the high magnitude of change, results in a moderate effect on land use of the site. Effects are considered to be positive.
- The low sensitivity of the landform combined with the medium magnitude of change, results in a slight effect on the landform of the site. Effects are considered to be positive
- The sensitivity of the urban grain of the site is negligible. With a medium magnitude of change, the effect on the urban grain is moderate. Through the consideration of frontages, external spaces and connectivity, effects are considered to be positive.
- In recognition of the unmanaged character and limited quality, vegetation on the site is considered to be of Low sensitivity. With a high magnitude of change, the effect on vegetation is moderate. Due to the extensive planting proposed throughout the scheme, the quality of the effect is considered to be positive.
- Direct effects on Landscape Character Area A (Harbour) as a result of the proposed development would be moderate. Effects are considered to be positive owing to the replacement of derelict large scale, industrial buildings with high quality development and public realm that complements the character of the LCA and offers public accessibility and opportunities to obtain views of the sea.
- Indirect effects on the landscape character of other surrounding landscape character areas identified, would result primarily from the influence of new built form. It is not considered that effects would be any greater than moderate tending to slight with the majority of effects being Slight or less. With the exception of one Slight negative effect, effects are considered positive or neutral.

Visual

During the construction phase:

- Significant effects were identified at 8 of the 30 viewpoint locations. These relate to locations near to the site where the intensity of the activities and the scale of the construction plant would result in notable changes to existing views.
- Moderate effects were identified at 10 of the 30 viewpoint locations. At these locations, whilst features of the construction activities would be partially visible, this would generally be consistent with emerging trends for the site and would alter a small part of the overall visual composition
- Moderate-slight effects or less were identified at the remaining 12 viewpoint locations.

- Effects are adverse but are short term and temporary. Effects of this nature are an inevitable consequence of any comparable development proposal at this proximity and are consistent with those associated with extant permitted development applications on the site.

During the operational phase:

- Significant effects were identified at 3 of the 30 viewpoint locations. These were in locations directly adjacent to the site and were due to the extent to which views would be influenced. At this proximity, the scale of the development would inherently represent a notable change to existing views and would affect a large proportion of the overall visual composition. When considered in the context of the existing visual composition, the high quality architectural and landscape treatments employed are considered to be positive in their effect.
- Moderate effects were identified at 9 of the 30 viewpoint locations. Effects were considered to be positive or neutral, with the exception of views from the northern façade of St. Mary's Church and from Muck Rock where effects were considered on balance to be negative.
- Moderate-slight effects or less were identified at 13 of the 30 viewpoint locations. Effects were considered to be positive or neutral, with the exception of views from the golf course where effects were considered negative.
- No effects, because of a lack of visibility were identified at 5 of the 30 viewpoint locations. This demonstrates the influence of screening elements in the wider landscape.
- Views of the proposed development from within the village would be minimal. Where visible it would form a minor part of a wider urban context and bring about a small change in the overall visual composition.
- The visual impact of the proposed development varies substantially within the wider landscape. With distance, although potentially visible and noticeable, the visual effect of the proposed development will be moderated by other more dominant features such as the expansive seascape context, the distinctive landform of Ireland's Eye and the Hill of Howth.

'Do nothing' impact

The 'do nothing' impact presents the situation or environment that would exist if the proposed development were not carried out. In this regard, the site would continue to exist as a vacant and inaccessible brownfield site at the entrance to Howth and continue to contribute negatively to the landscape and visual amenity of the locality.

In the absence of management and given the deteriorating nature of features on the site, existing vegetation (as well as weed and pioneer vegetation species) are likely to continue to establish and existing features and built form likely to deteriorate further and potentially provide opportunities for antisocial behaviour and illegal waste disposal.

In the event that the development does not proceed, it is likely that the subject site would be developed in the future for some residential and open space use, in line with its zoning in the Fingal Development Plan.

11. MATERIAL ASSETS

11.1. Traffic

11.1.1. Introduction

An analysis of both the existing network traffic volumes and the traffic generated by this proposed development and the nearby Balscadden development to determine the impacts of this development and cumulatively with the Balscadden development has been carried out.

11.1.2. Methodology

A series of meetings with the traffic department in Fingal County Council have been held, and on foot of those meetings, traffic surveys on 6 junctions local to the site have been carried out. The TRICS database has been used to predict projected traffic flows generated by the proposed development, and TRL Junction Analysis software Oscady and Picady have been used to analyse junction capacities.

11.1.3. Potential Impacts

The analysis demonstrates that junctions locally are well within capacity, except for the Sutton Cross signalised junction which is presently operating at or just over capacity. The analysis within this report demonstrates that the proposed development will add marginally to the queuing at all approaches to this junction on the day of opening of the development relative to the assumed 'without development' scenario. The additional queuing is predicted to become significant in the design year in 2039, fifteen years after the projected opening day. These queues are predicted based on 21% traffic growth in the 2019 to 2039 period. Such a growth assumption is highly pessimistic given existing transport planning policies in place within the Greater Dublin area.

The 2019 traffic surveys carried out for this project, when compared with the 2015 surveys undertaken for a previous application on the subject site, is consistent with the argument that traffic growth year on year is presently at very low levels, well below the values assumed within this report. Lower network growths would further decrease additional queuing at the critical approaches to Sutton Cross.

Thus, it can be stated that the impact of the proposed development, relative to those of the 'without project' are neutral, thus making the proposal totally sustainable in transport planning terms.

The impact is thus not significant in the long-term.

The impact during the construction phase on the traffic route network is described in detail in the report. During the excavation phase of the construction, which is the most critical, there will be an increase of 0.03% on the existing traffic volumes during peak periods at Sutton Cross. The impact on other more local junctions to the site is up to 5% but as these junctions currently perform well within capacity the impact will also be slight.

Thus, the impact during this construction phase will be slight negative and temporary.

11.1.4. Mitigation Measures

The provision of car club spaces and the existence of a comprehensive range of non-car-based alternative modes of travel for residents and visitors will act to both mitigate and reduce the likelihood of car trips to and from the proposed development attaining the robust and conservatively high levels predicted within the traffic assessment for the proposal.

Significant cycle parking facilities (1335) have been included within the development proposal to encourage further modal shift, which will act to further mitigate the traffic flows generated.

The impact during the construction phase on the traffic route network is described in detail in the report. During the excavation phase of the construction which is the most critical, there will be an increase of 0.03% on the existing traffic volumes during peak periods at Sutton Cross. The impact on other more local junctions to the site is up to 5% but as these junctions currently perform well within capacity the impact will also be slight.

Thus, the impact during this construction phase will be slight negative and temporary.

11.1.5. Residual Impacts

The cumulative effect of an additional significant development proposed in Howth, the Balscadden development, during both its construction and operation phases, is considered within this analysis. During the construction phase, the Balscadden development will be largely serviced via the Carrickbrack Road, hence avoiding significant cumulative impact with the proposed development at Claremont.

The impact is thus not significant in the long-term

During the operational phase, both developments are considered within the 'with development' analyses as set out above, with predicted flows from the Blascadden development added to those predicted for the proposed development, with the impact of these total generated flows on nearby critical junctions fully assessed within the analysis submitted. The impact on Sutton Cross junction will be negative, moderate and long term.

11.2. Waste

11.2.1. Introduction

An assessment of the potential impact on the existing waste environment was carried out by Enviroguide Consulting for the proposed development site.

11.2.2. Methodology

The assessment was carried out taking cognisance of appropriate national guidelines and standards for EIA using data collected from a detailed desk study and the Construction Management Plan for the Proposed Development. A desktop study was carried out which provided information on the baseline conditions at the proposed development site and the receiving environment in relation to waste. A detailed assessment of the potential impacts was undertaken, and appropriate mitigation measures were identified to reduce the potential impact associated with the proposed development.

11.2.3. Potential Impacts

The potential impacts of the proposed development on the receiving environment include:

- The storage, control and transfer offsite for reuse/recovery/disposal of excavated material and waste generated by the demolition of existing buildings and general construction wastes.
- Accidental release of waste materials or contaminated materials to ground or water during construction phase waste removal.
- The storage, control and management of waste generated once the proposed development is operational.

These potential impacts are associated with the construction and operational phases of the proposed development.

11.2.4. Mitigation Measures

Any potential significant impacts related to the construction and operational phases of the proposed development can be mitigated against. Proposed mitigation measures to include:

- Strict management procedures and supervision for dealing with any contaminated materials removed during excavation and demolition and construction;
- Reuse of subsoil on site or compliant recovery / re-use for other projects offsite where possible;
- Offsite removal of materials in compliance with relevant environmental legislation in particular the Waste Management Act;
- Strict operating and management procedures to prevent and to mitigate against any accidental release of waste and reduce potential impacts on the receiving environment; and
- A detailed Construction Management Plan, a Construction and Demolition Waste Management Plan, a Construction Environmental Management Plan and an Operational Waste Management Plan will be put in place and will include specific methods to manage and control the construction and operational phases to ensure that any potential issues regarding waste are mitigated appropriately and prevent any impact to the receiving environment associated with the proposed development.
- Waste storage areas to be designed to maximise waste segregation and recycling rates and to ensure no environmental nuisances occur.
- Property Management Contracts to include conditions for proper waste management, information and awareness to residents and tenants on segregation of waste and waste reduction and recycling.

11.2.5. Residual Impacts

The proposed development will not have lasting impacts once the mitigation measures outlined in this EIAR are implemented. During the construction phase, the impacts from waste will be short term and not significant. During the operational phase the impacts from waste will be long term but not significant due to adequate waste management services in the region.

11.3. Utilities

11.3.1. Introduction

The impacts associated with the proposed development in respect of built services are set out in this section. The services assessed are potable water supply, Waste water, Electricity, Gas and Telecommunications.

11.3.2. Methodology

In relation to potable water, a desk study has been carried out with reference to Irish water records and Fingal county council drainage infrastructure records. Consultation with Irish Water has been ongoing through the pre-connection enquiry process and the subsequent application to Irish Water which resulted in the issuance of the Irish Water Statement of design acceptance included in the appendix to this section of the EIAR. Waste water records are relatively recent and reference was made to the construction drawings relating to the new foul sewer in Howth road and upgrade to the Howth pumping station works that were carried out as part of the Dublin Bay project Contract 5.1a in 2001/2002.

Similar studies have been carried out for the purposes of this EIAR with respect to Electricity Supply networks (ESB records), Gas Supply (Gas Networks Ireland (GNI) records) and Telecommunications (Eir records). As part of a desktop study of the existing services infrastructure, serving the development site, the following data was sourced online – maps, information from previous planning applications to inform the potential impact of the development.

11.3.3. Potential Impacts

Irish Water have set out a series of upgrade works required to facilitate the development – a new 300mm diameter trunk main to be laid between the North Fringe water supply pipeline and Corr Bridge, a new cross connection upstream of Corr bridge and the installation of a pressure reducing valve downstream of that cross connection as well as the upgrade of 220m of existing 100mm UPV water main in Howth road to 150mm.

The above works constitute an upgrade to the local infrastructure and are designed to take account of this proposed development and make allowances for future developments that may or may not happen locally. The impact in respect of potable water is significant and positive and long term.

The 2002 works to the Howth Pump station and new foul drainage in Howth road have been installed to take account of potential new development such as is proposed. The impact, in respect of waste water, of this development is thus neutral.

Regarding Electricity consultation has taken place with ESB networks regarding the capacity of the network to accommodate this development and the proposal is to include new substations within the development with the existing substation at Parsons being retired. The impact, in respect of Electricity supply, of this development is thus neutral.

Regarding Gas supply, consultations have taken place with GNI and no concerns regarding capacity have been raised. From this respect the impact of this development is therefore neutral.

Predicted Impacts from this study included the requirement for local diversions, temporary outages, provision of additional resilience within each utility network and an increase in use of existing utilities due to the development of the site.

Based on the information received from EIR and consultation with relevant communications providers there are no capacity concerns. Regarding telecommunications, the impact of this development is therefore neutral.

In relation to the impacts in respect of installation and connection to the main networks for all services there will be some disruption, but this will be temporary. The impact in this respect will be slight negative and temporary.

11.3.4 Mitigation Measures

Mitigation measures in respect of water supply will be to ensure the proposed upgrade works are carried out in accordance with appropriate standards and good practice and in accordance with the requirements of Irish Water. To reduce leaks on connection the entire new system will be tested before live connection. The water demand for the development will be reduced by the use of metered leak detection system together with the use where appropriate of dual and low flush and water economy outlets.

Regarding wastewater installation all sewers will be tested and inspected prior to live connection to ensure against foul spills. The installation will be constructed to current drainage standards that afford adequate access and control measures to facilitate proper maintenance.

Regarding Electricity, Gas, and Telecommunications, there will be measures put in place, including accurate location of existing services, liaison with statutory service providers, appropriate permit arrangements etc to ensure where possible that no interruption to existing service on main lines will occur. To minimise the impact on the existing material assets (utilities), a number of mitigation measures will be put in place including;

- The Contractor will be obliged to put measures in place during the construction phase 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 service provider and local authority
- All works in the vicinity of utilities infrastructure will be carried out in ongoing consultation with the relevant utility company and/or local authority and will be in compliance with any requirements or guidelines they may have. All relevant utility providers will be contacted to allow for any new strategic infrastructure in the area
- Where new services are required, the Contractor will apply to the relevant utility company for a connection permit where appropriate and will adhere to their requirements.

11.3.5 Residual Impacts

In relation to the water supply, given the proposed upgrades to the network set out in the letter of Design acceptance from Irish Water will result in better supply locally including maintained water pressures in periods of high demand.

In relation to waste water the impact on downstream facilities such as the Ringsend waste water treatment plant and Sutton cross pump station will be imperceptible.

There will be imperceptible impact to the receiving networks in respect of Electricity, Gas, and Telecommunications.

Taking into account the above mentioned mitigation measures, there will be no residual impacts to the utility infrastructure following the construction phase. Any residual impacts on the built services during the construction phase is considered to be temporary in nature and not significant, where service is unavoidably disrupted to facilitate the construction phase.

12. RISK ASSESSMENT

12.1 *Risk Management*

12.1.1 Introduction

This chapter identified and assessed the likelihood and potential significant adverse impacts on the environment arising from the vulnerability of the proposed development to the risk of major accidents and/or natural disasters. It considered whether the proposed development is likely to cause accidents and/or disasters and its vulnerability to them.

The purpose of the chapter is to ensure that the safety and precautionary measures necessary to protect the proposed development in the event of a major accident and/or natural disaster are identified and that appropriate mitigation measures are provided that would protect the environment in the event of such occurrences.

12.1.2 Methodology

This risk assessment is developed with the knowledge that the project will be constructed in line with best practice and, as such, major accidents and / or natural disasters will be very unlikely. Measures to control risks associated with construction chase activities are incorporated into the Construction Environmental Management Plan.

The Flood Risk Assessment was completed by Barrett Mahony Consulting Engineers, in accordance with the guidelines outlined in the OPW publication "*The Planning System and Flood Risk Assessment Guidelines for Planning Authorities*".

Contaminated ground was identified in early site investigation works by IGSL. Golder Associates have completed extensive further investigation of ground, soil and water contamination. The results and analysis of this investigation is included in the submission. A risk analysis-based approach methodology which covers the identification, likelihood and consequence of major accidents and / or natural disasters has been used for the assessment. This type of risk assessment approach is an accepted methodology.

12.1.3 Potential Impacts

The potential impacts of the development were reviewed from a direct and indirect perspective, during construction, during operation and in the event that the development does not proceed ("do nothing scenario").

12.1.4 Mitigation Measures

The potential impacts of the development were reviewed from a direct and indirect perspective, during construction, during operation and in the event that the development does not proceed ("do nothing scenario").

During construction, the following strategies will be put in place, with detailed control measures:

- Construction Safety & Health Plan
- Environmental Management Plan
- Emergency & Incident Response Plan
- Traffic Management Plan
- Materials Management & Remedial Strategy

During the operational phase, the open Bloody Stream is designed with a riparian strip that will be a designated flood zone. Other measures for mitigating flooding of the Bloody Steam include:

- A water gate to collect any large items before entering the underground section
- Installation of an easily accessible manhole for maintenance
- Underground section has been designed to facilitate access for maintenance personnel
- An alternative overflow route has been provided, in the event of blockage

12.1.5 Residual Impacts

The residual impact of the development, as designed and constructed in accordance with current regulations and best practice, is negligible in regard to major accidents or natural disasters. As a derelict building (identified to contain asbestos) will be removed and management of the Bloody Stream improved, there is the potential for positive residual impacts on completion of the development

12.2 *Flood Risk Management*

12.2.1 Introduction

Chapter 12 details an assessment of the possible flood risks at the proposed development and sets out associated appropriate mitigation measures.

12.2.2 Methodology

The baseline condition was determined via onsite surveys, data taken from Fingal County Council maps, flood maps obtained from the Office of Public Works (OPW) website, tidal maps obtained from CCTV surveys of existing drains and excavations where appropriated on site to determine precise locations of relevant underground pipes. Flood risk for the development was assessed in accordance with guidelines outlined in the OPW publication “The Planning System and Flood Risk Assessment Guidelines for Planning Authorities”, Fingal County Council Surface Water Management Plan (SWMP), Flood Parameters taken from Fingal County Council and Hydrology Report No. 124 method. A series of meetings were held with Fingal County Council drainage department officials and Irish water were consulted to determine interface with Irish water assets on the site.

12.2.3 Potential Impacts

The proposed development falls into the classification of Less Vulnerable Development as people can safely exit, in the event of a flood, onto Howth Road from the podium level which is set at +6.4m OD level. Lower levels within the proposed development are generally carparking and service access areas and are not classified as habitable space. Intermediate levels within the proposed development are maintained above the High End Future Scenario (HEFS) levels set out below.

Fluvial/Pluvial

The existing site is covered by buildings and hard standing areas that make up 70% of the total site area. Surface water from this, flows, in part to the piped bloody stream that crosses the site and partly in undefined simple run off from hard standing areas to open ground. The Bloody Stream comes from the hill of Howth trough the golf course and outfalls on the southern side of Howth road where it is brought across the road in a 450mm*225mm culvert and into the site. It is piped via a 600mm diameter pipe across the site. The level of this is such that it was interrupted by two existing large storm overflow pipes (1200mm and 1500mm) coming from Howth pump station managed by Irish water. These large overflow pipes continue out to sea and discharge near Irelands eye. The Bloody Stream pipe goes under these and discharges through a culvert referred to by Fingal County personnel as the “Bob Davis” culvert. The culvert flows under the Dart line and discharges to Baldoyle Bay. The level of the culvert is above the invert of the Irish water storm overflow pipes so the Bloody Stream pipe discharges into a holding tank configuration

that is designed to surcharge in order to facilitate outflows to the" Bob Davis" culvert. At the outfall into Baldoyle Bay the invert level of the "Bob Davis" culvert is below high tide, making this stream tidal influenced.

The existing configuration causes an interruption in flow and results in significant maintenance issues associated with silt build up. We are advised by Fingal County Council maintenance personnel that regular inspections and cleaning of sand from the mouth of the culvert occurs on a regular basis many times a year. Currently flooding can only happen if the underground system is blocked and fluvial flow through the bloody stream causes the manholes on site to surcharge over their cover levels. The likelihood of a flood happening due to the stream is low providing that such maintenance is carried out.

There have been recorded incidents of blockage to the bloody stream causing local flooding within the site, these were associated with storm events and significant blockage of the system. Even in those scenarios the site levels are such that, water makes its way overground to the (lower)western end of the development site and flows on the roadside toward Howth harbour.

In line with Fingal County Council policy, some 65m of the bloody stream, as it passes through the site, will be formed as a 3m wide open stream laid in a 12m-17m wide riparian strip. As a result of recent drainage works (2002) carried out by Fingal County Council, the foul sewer in Howth road is at a deeper level than had previously existed, and thus the opportunity exists to raise the level of the Bloody stream as it crosses the road. This facilitates carrying the stream at a level that can go over the Irish Water storm overflow pipes. This has the effect of greatly enhancing the hydraulic gradient at which the flow traverses through the Bob Davis Culvert and with the introduction of new inspection chambers, the maintenance requirements will be significantly reduced and much more readily accessed.

This is a significant positive impact of the development and reduces the risk of local flooding.

Ground Water

Existing ground water levels are between 2.0m and 2.5m below existing ground. Block A which is proposed in the western end of the site has a lower ground floor carpark slab which is above the ground water table. Blocks B, C and D which are proposed on the eastern half of the site have basement carpark levels up to 2.5m below ground water levels. The construction proposed is watertight concrete inside a secant piled wall. Therefore, the risk of flooding due to ground water when construction is complete, is low.

During construction of the deeper basement to Blocks B C and D, there is a high risk of flooding of the excavation due to ground water and a detailed dewatering plan is proposed to control the ground water levels inside a secant piled box to facilitate the construction.

Tidal

The site is located beside the Irish Sea. It is currently protected by the existing public promenade and DART line defence wall, the latter is at 5.1m OD, and is significantly higher than the HEFS precautions set out in Fingal County Council Surface Water Management Plan. The 1 in 1000 high tide level is 3.34m obtained from the Fingal flood maps and a 1.0m freeboard gives a HEFS level of 4.34mOD. The likelihood of a flood happening due tidal events is very unlikely.

There is some tidal response to the ground water levels, but this is small and does not effect the conclusion regarding the construction and operational risks associated with ground water set out above.

To protect the development from tidal, overtop breach, a retaining wall will be construction along the northern boundary between the DART line and the development. This will act as an independent protection to the site. It will be constructed to 4.5m OD, providing a freeboard in excess of the 1 in 1000-year high tide level.

In addition, all threshold entrances to carpark levels located above the HEFS level set out, and thus integrity of the basements in use is maintained. The likely hood of flooding to these basements is low.

12.2.4 Mitigation Measures

Several mitigation measures are introduced as part of the proposed development to improve the Bloody Stream, groundwater quality and tidal influence. There are as follows:

1) The stream flowing through the Bob Davis culvert will have improved flow characteristics which will mitigate against silt build up and provide for a more efficient maintenance and inspection regime.
2) The Bloody Stream itself will have access chambers to allow proper maintenance, water grates to stop large items entering the piped system and an overflow chamber in the event of a blockage in the riparian strip.
3) In the unlikely event that the existing sea defence measures (ie the Dart line) were removed, the site will have its own sea defence wall.
4) All habitable areas of the development are located at levels significantly above the HEFS levels.
5) The open section of the Bloody stream channel itself will afford significant attenuation in the event of downstream blockage.
6) A comprehensive dewatering plan is proposed in conjunction with the provision of a full secant piled wall socketed into the underlying rock to mitigate against flooding in the construction stage.
7) The presence of a pedestrian walkway on northern side of the site at a level some 3m above the 1 in 1000 year high tide provides excellent protection to pedestrians from any sea storm events.

All of the above will have a significant positive effect on the protection of the site from flooding.

12.2.5 Residual Impacts

In the permanent condition, the impact on ground water flows will be slight as the rock profile falls off very steeply to the western end of Block B near the riparian strip and much of the dig below ground water level is in the rock. This would mean that the existing ground water flows are predominantly west of this deeper basement dig and that scenario will not change with the construction of the proposed basements.

Thus, from flood risk perspective the development will have a imperceptible effect on the ground water regime.

13. INTERACTIONS

The construction, operational and cumulative impacts of the proposed development have been assessed individually, but also in terms of where there may be interactions of impacts between each of the separate disciplines. Many disciplines have impacts that are slight or subtle interactions with other disciplines. The Table below highlights those main interactions which are considered to potentially be of a moderate or significant nature. Discussions of the nature and effect of the impact is presented in the individual assessments within Volume II, EIAR.

Table 13.1: Interactions

Interaction	Population & Human Health		Biodiversity		Land & Soils		Air & Climate		Noise & Vibration		Water		Archaeology, Architecture & Cultural Heritage		Landscape		Material Assets: Traffic, Waste, & Utilities		Risk Asssesment	
	Construction	Operation	Construction	Operation	Construction	Operation	Construction	Operation	Construction	Operation	Construction	Operation	Construction	Operation	Construction	Operation	Construction	Operation	Construction	Operation
Population & Human Health			✗	✗	✓	✗	✓	✓	✓	✓	✓	✓	✗	✗	✓	✓	✓	✓	✓	✓
Biodiversity					✓	✓	✓	✓	✓	✗	✓	✓	✗	✗	✗	✗	✓	✗	✓	✗
Land & Soils							✓	✗	✓	✗	✓	✓	✓	✗	✓	✗	✓	✗	✓	✗
Air & Climate									✓	✓	✓	✓	✗	✗	✗	✗	✓	✓	✓	✗
Noise & Vibration											✓	✓	✓	✓	✓	✗	✓	✓	✓	✗
Water													✓	✓	✓	✓	✓	✓	✓	✓
Archaeology, Architecture & Cultural Heritage															✓	✓	✓	✗	✓	✗
Landscape																	✗	✗	✗	✗
Material Assets: Traffic, Waste, & Utilities																			✓	✗
Risk Assessment																				

✓ Interaction
✗ No Interaction

14. MITIGATION AND MONITORING MEASURES

The main mitigation measures are set out above under each section of the Non Technical Summary. For convenience, all the mitigation measures from each chapter are brought together in EIAR Volume 2 Chapter 14.

15. CUMULATIVE IMPACTS

The EIAR has been prepared have regard to permitted development in the vicinity of the site and relevant permissions that have a bearing on the site from a wider context. The permissions are:

- A mixed-use application proposed for the lands between Balscadden Road and Main Street in Howth. This proposed development will consist of the demolition of a currently disused sports building, the construction of 163 no. residential units in 3 separate apartment blocks along with commercial/retail space. This was granted by An Bord Pleanala in September 2018, ABP–301722-18. The decision of An Bord Pleanála is subject to judicial review proceedings.

  The company is now seeking a new permission on this site for an increased residential component of 177 units. See www.rennieplaceshd.ie for details.

- Two permissions have also been granted for sites to the north of the current site on the west pier. These were for an extension to an existing fish processing factory (F17A/0553) and for industrial units (F18A/0267). A third permission (F18A/0074) provides for a new quay wall on the east side of the middle pier and associated berthing.

- Permission has been granted for a new Regional Wastewater Treatment Plant of 500,000 P.E in Clonsaugh, including a sludge hub centre, regional biosolids storage facility, orbital sewer and outfall pipe under ABP-301908-18 and ABP 302039-18.

These applications form the cumulative assessment of the proposed development where there may be cumulative impacts in regard to traffic, population change, visual impact, etc.