



Enviroguide
CONSULTING

Volume 1

EIAR Non-Technical Summary

FOR

Mixed Use Residential Development

AT

**Lands to the East of St. Paul's College, Sybil Hill Road,
Raheny, Dublin 5**

AUGUST 2022

ON BEHALF OF

Raheny 3 Limited Partnership

Prepared by
Enviroguide Consulting

 **Dublin**

3D Core C, Block 71, The Plaza,
Park West, Dublin 12

 **Kerry**

19 Henry Street
Kenmare, Co. Kerry

 **Wexford**

M10 Wexford Enterprise
Centre, Strandfield BP
Rosslare Road, Wexford

 www.enviroguide.ie

 info@enviroguide.ie

 353 1 565 4730

 **Enviroguide**
CONSULTING

TABLE OF CONTENTS

LIST OF TABLES

ERROR! BOOKMARK NOT DEFINED.

LIST OF FIGURES

ERROR! BOOKMARK NOT DEFINED.

1	INTRODUCTION	1
2	OVERVIEW OF THE PROPOSED DEVELOPMENT	1
2.1	Construction Phase	2
3	SITE DESCRIPTION	2
4	ENVIRONMENTAL IMPACTS	4
4.1	Population and Human Health	4
4.2	Biodiversity	5
4.3	Land and Soil	12
4.3.1	Ground Investigations	12
4.3.2	Potential Impact of the Proposed Development	14
4.3.3	Avoidance, Remedial & Mitigation Measures	14
4.3.4	Residual Impacts	16
4.3.5	Monitoring	16
4.3.6	Reinstatement	16
4.4	Hydrology and Hydrogeology	16
4.5	Air Quality and Climate	18
4.6	Noise and Vibration	20
4.7	Landscape and Visual	21
4.8	Archaeology and Cultural Heritage	23
4.9	Material Assets: Traffic	24
4.9.1	Pedestrian and Cycling Facilities	25
4.9.2	Public Transport Facilities	25
4.9.3	Potential Impact of the Proposed Development	26
4.9.4	Avoidance, Remedial & Mitigation Measures	27
4.9.5	Residual Impacts	27
4.9.6	Monitoring	27
4.10	Material Assets: Utilities and Waste	28
4.11	Risk Management	31
4.12	Interactions	31

4.13 Mitigation and Monitoring Measures

32

LIST OF TABLES

Table 4-1: Groundwater Monitoring Levels.....	13
Table 4-2: Construction Noise Limits (Source: TII, 2004)	20
Table 4-3: Existing Bus Network	25

LIST OF FIGURES

Figure 3-1: Location of the Proposed Development	3
Figure 3-2: Proposed Site Layout.....	3

1 INTRODUCTION

This Environmental Impact Assessment Report (**EIAR**) has been commissioned by the applicant, Raheny 3 Limited Partnership, in respect of an application for a mixed-use development on lands to the east of St Paul's College, Sybil Hill Road, Raheny, Dublin 5.

An Environmental Impact Assessment Report (EIAR) is an assessment and analysis of potential impacts on the receiving environment that may arise as a result of the Proposed Development. An EIAR is required to accompany a planning application for development of a class set out in Schedule 5, Part 1 of the Planning and Development Regulations which exceeds a limit, quantity or threshold set for that class of development.

Schedule 5, Part 2 of the Planning Regulations defines projects that are assessed on the basis of set mandatory thresholds for each of the project classes including:

"Schedule 5, Part 2 - Infrastructure projects

10. (b) (i) Construction of more than 500 dwelling units.

The Proposed Development provides for 580 no. residential units, which triggers the requirement for mandatory EIA.

In assessing the environmental impacts, this EIAR will evaluate the existing situation and assess any potential impacts of the Proposed Development. Where potential impacts are identified, mitigation measures will be proposed. In addition, the in-combination effects of any other known plans or projects will be identified and assessed.

This Non-Technical Summary (NTS) describes the Proposed Development, the Environmental Impact Assessment (EIA) process and summarises the key environmental impacts arising from each of the environmental assessments carried out by a panel of experts in accordance with best practice. The environmental assessments involved desktop studies, site visits, surveys, and site-specific investigations. The NTS also outlines the mitigation and monitoring measures proposed along with a list of any residual impacts that may occur from the Proposed Development.

2 OVERVIEW OF THE PROPOSED DEVELOPMENT

Raheny 3 Limited Partnership are applying for permission for development on lands to the east of St Paul's College, Sybil Hill Road, Raheny, Dublin 5. The site is bound to the north, east and south by St Anne's Park and to the west by residential development at The Meadows, Sybil Hill House (a Protected Structure) and St Paul's College. Vehicular access to the site is from Sybil Hill Road. The Proposed Development consists of the construction of a residential and nursing home development set out in 7 no. blocks, ranging in height from 4-7 storeys to accommodate 580 no. apartments, residential tenant amenity spaces, a crèche and a 100-bed nursing home. The site will accommodate car parking spaces, bicycle parking spaces, storage, services and plant areas and both basement and podium level. Landscaping will include extensive communal amenity areas, and a significant public open space provision. The proposed application includes all site landscaping works, green roofs, substations,

boundary treatments, lighting, servicing, signage, surface water attenuation facilities and associated and ancillary works, including site development works and services above and below ground.

2.1 Construction Phase

The Proposed Development is to be constructed in two stages which will include, in broad terms, the following:

- Stage I: Site demolition works, site clearance and preparation work for the construction. A site compound including offices and welfare facilities will be set up by the Main Contractor.
- Stage II: Site development and construction. The development includes all associated site works and infrastructure which includes roads, utilities, foul and surface water drainage.

The Construction Phase is intended to be an 18-month programme. The operational hours for the site will be 08:00 to 17:00 Mondays to Fridays and 08:00 to 14:00 Saturdays. No work is permitted on Sundays or public holidays. Deviation from these hours will only be allowed in exceptional circumstance with prior written approval from the planning authority.

3 SITE DESCRIPTION

The Site is bound to the North and South by St Anne's Park; to the east by the St Anne's Park and the Millennium Arboretum; and to the west by a residential development at The Meadows, Sybil Hill House (a Protected Structure) and St Paul's College.

The majority of the application site, together with the adjoining St Paul's College and the Vincentian Order in Sybil Hill House, is zoned objective Z15 in the Development Plan: *"To protect and provide for institutional and community uses"*. Under the zoning objective, the proposed residential use is open for consideration.

A small section of the site is zoned Z9 as this includes lands within St. Anne's Park required to provide for the routing of a surface water discharge from the site via St. Anne's Park to the Naniken River.



Figure 3-1: Location of the Proposed Development

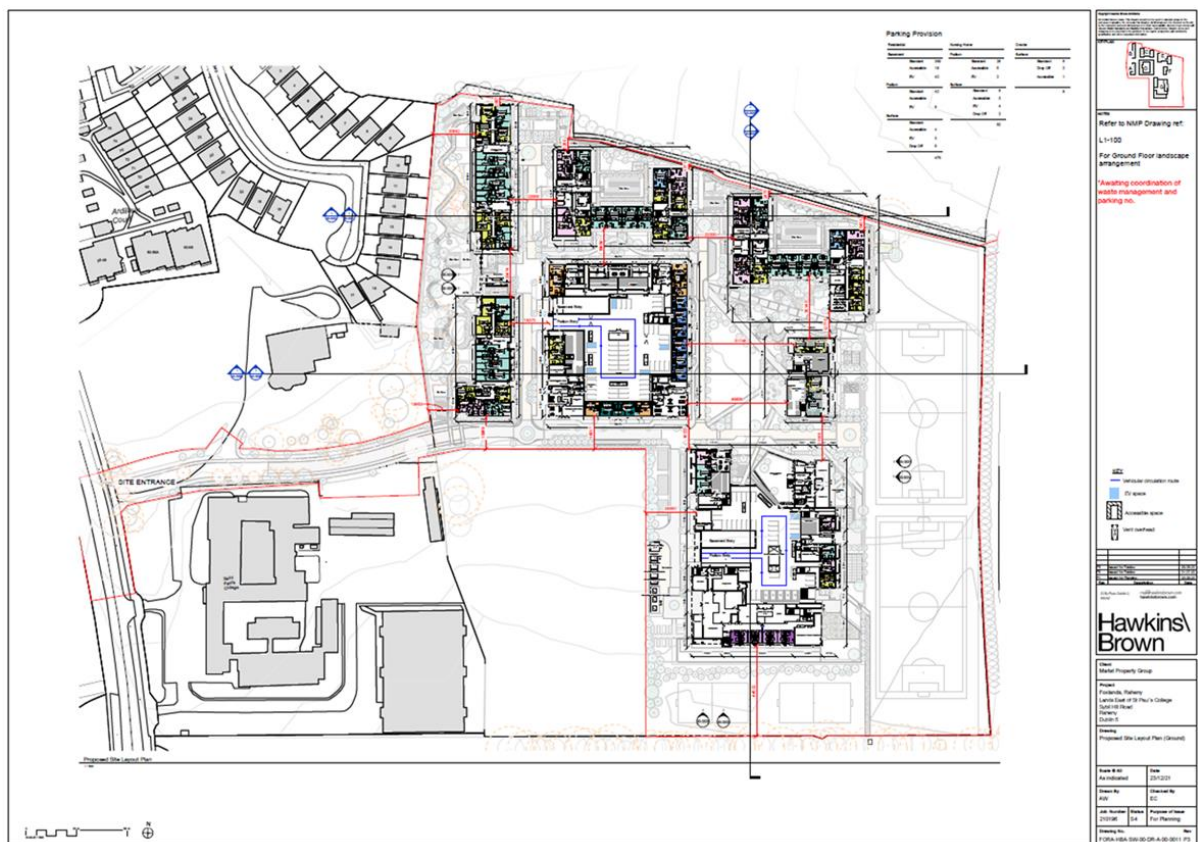


Figure 3-2: Proposed Site Layout

4 ENVIRONMENTAL IMPACTS

The potential Environmental Impacts of the Proposed Development during all phases of the Proposed Development are addressed in the EIAR under the following headings as prescribed under the EIA Directive:

- Population and Human Health
- Biodiversity
- Land and Soils
- Hydrology and Hydrogeology
- Air Quality and Climate
- Noise and Vibration
- Landscape and Visual Amenity
- Archaeology and Cultural Heritage
- Material Assets: Traffic, Waste and Utilities

Additionally, risk management and interactions between environmental factors have been examined, and a programme of mitigation and monitoring measures has been set out.

4.1 Population and Human Health

'Population and Human Health' looks at the potential effects of the Proposed Development on human beings, living, working and visiting in the vicinity of the application site at St Paul's College, Sybil Hill Road, Raheny, Dublin 5.

This assessment focuses on the socio-economic impacts and is focused in particular on relevant issues such as residential amenity, economic activity, tourism and population levels. One of the principal concerns in any Proposed Development is that the local population experiences no reduction in the quality of life as a result of the development on either a permanent or temporary basis.

A desk-based study was undertaken in June 2022 where data from the Central Statistics Office (CSO) was reviewed in-depth to assess information regarding population, age structure, economic activity, employment, and unemployment within the vicinity of the Proposed Development. Relevant legislation and published documents were also assessed. The aim of the study was to assess the positive and negative impacts of the Proposed Development on the socio-economic environment.

The study finds that the Proposed Development will have a slight positive impact on economic activity. The Proposed Development will generate economic activity in the locality during the construction period, which is anticipated to extend over a period of approximately 18 months and employ approximately 300 people. The operational phase is expected to generate 24 permanent creche staff members, 1-2 permanent apartment building management and 110 nursing home staff with spin-off economic activity created for local retail and service providers. Employment and income are among the most significant determinants of long-term health. Therefore, the Proposed Development has the potential to provide health improvements due to the creation of additional employment which will provide a slight positive impact both directly and indirectly to the local economy and employment.

The Proposed Development will provide 580 no. residential accommodation units which will provide an enhanced choice of tenure in the area, affording greater flexibility to those who may be seeking to rent an apartment in the area or looking to purchase a dwelling. This will have a long-term positive impact on population due to the provision of a wide range of dwelling unit types and will cater for a wide cohort of persons. The Proposed Development will be a positive effect for the local area and will provide a significant positive impact to the overall economy of the local area through indirect socioeconomic benefits to local services including local shops, service stations, cafes and restaurants. Furthermore, there is a high number of people in the Clontarf Local Electoral Area who are not in the workforce; 16.7% of the population is aged 65 or over which is higher than the State average of 13.3%. The proposed 100-bed nursing home will facilitate the needs of the ageing population in the area. Community amenities such as education, childcare, health and wellbeing, sports and recreation, retail, religious and faith institutions have also been assessed as part of this planning application. There is sufficient capacity in the surrounding area to accommodate the future residents of the Proposed Development.

The Construction Phase of the Proposed Development will potentially cause some additional noise, mobility of heavy vehicles, dust and the arrival and departure of construction workers into the area. The impacts of the construction phase will be short term and will only last for the duration of the construction works. Construction Phase mitigation measures will be put in place and no significant impacts have been identified in terms of population and human health.

The assessment concludes that the Proposed Development will provide employment, accommodation, childcare and nursing home care which will be a positive impact for the local area and the overall economy.

4.2 Biodiversity

The EIAR Biodiversity Chapter describes the Biodiversity of the Site of the Proposed Development and surrounding environs, with emphasis on habitats, flora, and fauna. It details the methodology of assessment used in each case and 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 Conservation Importance, and proposes measures for the mitigation of any potential impacts where appropriate.

A suite of ecological surveys have been carried out at the Site of the Proposed Development to inform this assessment; conducted between 2015 and 2022. Surveys for 2018, 2019, 2020, 2021 and 2022 were undertaken by Enviroguide Consulting (**EG**), the authors of this report. Surveys carried out from 2015 to 2017 were undertaken by Scott Cawley (**SC**) Ltd. in respect to a previous strategic housing development application at the Site (Planning Reference: 300559-18). These surveys include habitat, flora and invasive plant surveys; mammal surveys; bat activity and emergence surveys; breeding bird surveys; winter waterfowl and shorebird surveys; an amphibian survey and a freshwater biological assessment of the Naniken River.

The value of the ecological resources at the Site i.e., the habitats and species present or potentially present, was determined using the ecological evaluation guidance provided in the National Roads Authority's Ecological Assessment Guidelines (NRA, 2009). Key Ecological Receptors (KERs) are those ecological features which are evaluated as Locally Important (higher value) or higher and that are likely to be impacted significantly by the Proposed

Development. This evaluation scheme has been adapted here to assess the value of habitats and fauna within the Site of the Proposed Development. The value of habitats is assessed based on the condition, size, rarity, conservation, and legal status. The value of fauna is assessed on its biodiversity value, legal status, and conservation status. Biodiversity value is based on its national distribution, abundance or rarity, and associated trends. Using the evaluation criteria as described above, the habitats and species identified as being present or potentially present were assessed. As per the NRA guidelines, impact assessment is only undertaken of KERs.

Designated Sites

An Appropriate Assessment Screening Report (AA) and Natura Impact Assessment (NIS) have been prepared as part of the planning application for the Proposed Development. These reports assess the potential for the Proposed Development to have significant negative effects on European Sites, and if such impacts are identified; suitable mitigation will be proposed to negate them.

The AA Screening has identified the potential for significant effects on North Dublin Bay SAC (000206), North Bull Island SPA (004006), South Dublin Bay and River Tolka Estuary SPA (004024), Baldoyle Bay SPA (004016), Malahide Estuary SPA (004025) and Rogerstown Estuary SPA (004015); as a result of Construction and Operational Phase surface water run-off entering the Naniken River causing decreases in water quality; and disturbance and/or displacement of SCI bird species associated with nearby SPAs. These Sites are assessed in the NIS which accompanies this application under separate cover.

One nationally designated site; the North Dublin Bay proposed Natural Heritage Area (pNHA) was identified as being potentially at risk of significant effects as a result of the Proposed Development; due to the presence of a hydrological connection via the Naniken River, which will receive treated operational surface waters from the Site. There is also a risk of construction related sediment and pollutants entering the river during the Construction Phase.

To address this impact pathway to the pNHA a suite of mitigation measures has been designed, which will ensure that any risk of construction related surface waters entering the Naniken River will be minimised. These will include the presence of an Ecological Clerk of Works (ECoW) during any works on the Naniken itself, the installation of temporary construction surface water management infrastructure on-site e.g., settlement ponds, and the usage of sediment control measures e.g., silt fencing etc., as appropriate. A suite of Sustainable Drainage Systems (SuDS) has also been incorporated into the project design; to manage and treat Operational Phase surface water generated at the Site. These measures will ensure that the quality of water leaving the Site and entering the Naniken River will be such that it will not cause pollution related impacts downstream.

Habitats and Flora

No protected flora were recorded at the Site, and it is not expected that any will be impacted by the Proposed Development. No high-impact invasive alien plant species were recorded at the Site. Several lesser impact non-native species were recorded, namely Himalayan Honeysuckle (*Leycesteria formosa*), Sycamore (*Acer pseudoplatanus*), Holm oak (*Quercus Ilex*), Winter Heliotrope (*Petasites pyrenaicus*).

The following habitats were identified as KERs at the Site of the Proposed Development: Scrub (WS1), Scattered Trees and Parkland (WD5), (Mixed) Broadleaved Woodland (WD1), Treelines (WL2) and Stone Walls and Other Stonework (BL1); for their potential to support bird, bat and mammal populations. The Proposed Development will result in the loss of some largely non-native ornamental treeline (WL2) habitat along the proposed access road to the Site. Collectively this will represent a **negative, slight, permanent** impact to treelines at a local scale. The majority of treelines at the Site (e.g., the mature Holm Oaks within St. Anne's Park adjacent) and the mixed broadleaved woodland (WD1) habitat, are located outside of the Site boundary and will not be significantly affected by the works.

The Proposed Development will result in the loss of scattered trees and parkland (WD5) habitat in the north-west of the Site in the form of some mature trees, most of which are noted by the project arborist as being of poor condition, category U trees; recommended for felling regardless of the development of the Site. A section of scrub (WS1) habitat in the north-western corner of the Site will also be lost as it stands within the building footprint of Block B. Their loss solely as habitat features represents a **negative, slight, permanent** impact at a local scale; based on their limited presence onsite and their abundance and widespread nature in the surrounding St. Anne's Park. The stone walls and other stonework (BL1) is to be retained in the project design.

The proposed landscape plan for the Site entails the planting of 714 new trees to replace the 33 trees to be removed as part of the proposed works. These trees will be largely native species and will include a woodland buffer running north-south along the eastern front of the Proposed Development, separating them from the eastern green space/ playing fields, an area of native tree planting in the north-eastern corner of the Site and a series of 'Gardens' comprising diverse tree and shrub planting. The north-western corner of the Site in particular will encompass the 'Garden of Goodness', a landscaped woodland area where it is proposed to plant 14no. large semi-mature trees in advance of construction works; to provide additional screening of the Site from the west and to replace the existing trees to be removed in this corner of the Site. A further 40-50 large standard trees are planned for this part of the Site.

The proposed landscaping of the Site will offset the loss of the trees to be removed as part of the Proposed Development and will have a **positive, significant, permanent** effect on habitat provision at the Site; through the replacement of the existing rank grassland field and sections of scrub, with a more diverse habitat mosaic including a high degree of native and non-native tree planting and diverse understorey planting.

Fauna

The following faunal species/groups were identified as KERs at the Site; Badger, Pygmy shrew, Hedgehog, bats, birds and European Eel.

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

Other mammals

Widespread small mammal species: hedgehog and Pygmy shrew may be present at the site based on the grassland and scrub habitats present and the surrounding St. Anne's Park. There is the potential for impacts such as entrapment in building waste (**negative, slight, short-term**), habitat loss (**negative, slight, permanent**) and noise disturbance (**negative, short term, significant**) to these species as a result of the Proposed Development, in the absence of mitigation. These impacts will be addressed through good site tidiness and noise control measures. The loss of habitat will not be significant based on the abundant habitat present in the park surrounding the Site.

Bats were recorded foraging and commuting along the wooded margins of the Site. Several trees with bat roost potential exist at the Site, with a few mature trees marked for removal in the north-west of the Site. Should bats be present roosting in these trees during their felling, then there is the potential for **negative, significant, short-term** impacts through the injury/mortality of roosting bats, in the absence of mitigation measures. This will be addressed by carrying out pre-felling bat surveys of such trees by a bat specialist and subsequent supervised felling where deemed necessary. Any activities requiring potential disturbance to bats will be carried out under NPWS guidance and where appropriate supervision.

The loss of potential roost trees will be compensated by the provision of at least 3+ no. 2 F Schwegler General Purpose woodcrete bat boxes or similar at the Site (this number can be increased as appropriate based on the results of the pre-felling roost surveys).

Temporary lighting required during the Construction Phase could illuminate previously unlit feeding areas/flyways (a **negative, significant, short-term** impact in the absence of mitigation). Permanent lighting at the Site during its lifetime could also impact bats in a similar manner; a **negative, significant, permanent** impact at a local scale if not mitigated. Bat friendly lighting measures will be incorporated into the development design to minimise any lighting related disturbance to bats.

There will be no significant loss of foraging/commuting habitat for local bats associated with the Proposed Development; the lands are largely comprised of rank grassland and the boundary treelines are all being retained at the Site. Therefore, there will be a **negative, slight, permanent** impact through some habitat loss at a local scale.

Birds

Breeding bird surveys identified a total of 31 species utilising the Site of the Proposed Development in between 2019 and 2021. This included one red-listed species Swift (*Apus apus*) and 7 amber-listed species; House Martin (*Delichon urbicum*), Swallow (*Hirundo rustica*), Starling (*Sturnus vulgaris*), Linnet (*Carduelis cannabina*), Goldcrest (*Regulus regulus*), Herring Gull (*Larus argentatus*) and Lesser Black-backed Gull (*Larus fuscus*).

A total of five (5) no. Special Conservation Interest (SCI) species were recorded during bird surveys of the Site of the Proposed Development and St. Paul's School pitch between 2015 and 2022; Light-bellied Brent geese (*Branta bernicla hrota*), Curlew (*Numenius arquata*),

Oystercatcher (*Haematopus ostralegus*), Black-tailed Godwit (*Limosa limosa*) and Black-headed Gull (*Chroicocephalus ridibundus*). These species are addressed in detail in the Natura Impact Statement that accompanies this application under separate cover.

During the clearance of vegetation there is the potential for **negative, significant, short-term** effects to local breeding bird populations through nest destruction and mortality in the absence of any pre-clearance checks for nests. A pre-felling nest survey will be conducted by an ecologist prior to vegetation removal. Any active nests found will be suitably protected until eggs have hatched and young have fledged, as per the instruction of the project ecologist. Construction related noise will represent a **negative, slight, short-term** impact at a local level in the absence of mitigation. The loss of potential nesting habitat in general at the Site, through the replacement of existing grassland and scrub habitats with buildings, will represent a **negative, moderate, permanent** impact at a local scale. However, the proposed increase in tree cover at the Site will represent a **positive, moderate, permanent** impact at a local scale, thus the overall impact will be a neutral impact in terms of habitat loss/provision. It is noted that collision with site structures during the Operational Phase will not be an issue for bird species in the locality; due to the insignificant heights proposed and the well broken up, heterogenous nature of the facades of the buildings proposed.

Wintering SCI species and related impacts in terms of ex-situ usage are addressed in detail in the NIS submitted as part of this planning application under separate cover. Such species are evaluated based on scientific information detailed in the NIS and based on the results of the scientific studies carried out. It can be concluded that the Proposed Development will not adversely affect the integrity of any European Sites, either alone or in combination with other plans and projects, taking into account the conservation objectives of said sites. The species that were recorded in winter only related to these European Sites and are addressed in the NIS. There are no wintering species other than these that are directly related to the Site of the Proposed Development and therefore no impact on non-SCI wintering species is anticipated.

Amphibians

Amphibian surveys carried out in 2019 and 2022 (by Enviroguide and Amphibian specialist Rob Gandola respectively) provided no evidence of Common Frog (*Rana temporaria*) or Smooth newt (*Lissotriton vulgaris*) or suitable breeding habitat for these species, at the Site of the Proposed Development. No impacts to these species are envisaged as part of the Proposed Development. The Site of the Proposed Development supports no areas of standing water nor other wetland habitats i.e., no suitable breeding habitat, and no amphibians were recorded or would be expected at the Site according to Mr Gandola's report, which concludes that the Proposed Development is unlikely to have any direct impacts on common frogs or smooth newts. However, mitigation measures proposed to protect the Naniken River during the Construction Phase, and the SUDS measures to be in place to treat Operational Phase surface water, will protect potential amphibian habitat downstream of the Site.

European Eel

European Eel (*Anguilla anguilla*) has been recorded in the 'Duck Pond' downstream of the Site of the Proposed Development. The Naniken River forms a connection with 'Duck Pond' prior to its outflow into Dublin Bay and as such a temporary hydrological connection exists between the Construction Phase of the Proposed Development and this pond.

There is the potential for construction related contaminants, such as cementitious materials, sediment and oils, to enter the river during works, which will entail amendments to the riverbank to install a new surface water outflow.

In a worst-case scenario and in the absence of mitigation measures, this could lead to a potential **negative, significant, short-term** impact at a local scale to European Eel, should they be present in the 'Duck Pond' at the time of the works and should such pollutants reach the pond. Mitigation measures to negate this impact will include the presence of an Ecological Clerk of Works (ECoW) during any works on the Naniken itself, the installation of temporary construction surface water management infrastructure on-site e.g., settlement ponds, and the usage of sediment control measures e.g., silt fencing etc., as appropriate.

In the absence of mitigation, there is the potential for contaminants from the Site's operation to enter the Naniken River and reach the pond in question. Such contaminated waters would likely include soapy run-off from future residents washing their cars, and hydrocarbon pollutants collected on vehicular roads within the Proposed Development. Due to the intermittent nature of activities such as private car washing, any potential impact linked with surface water run-off containing soap is likely to be limited and somewhat dependent on rainfall levels at the Site. Potential impacts in the absence of mitigation are therefore assessed in a precautionary manner as **negative, slight, permanent** as the impact source will exist as long as the development exists.

A suite of Sustainable Drainage Systems (SuDS) have been incorporated into the project design; to manage and treat Operational Phase surface water generated at the Site. These measures will ensure that the quality of water leaving the Site and entering the Naniken River will be such that it will not cause pollution related impacts downstream. Even in the absence of these measures, significant impacts to European Eel are not considered likely due to the intermittent nature of the pollution source and the dilution potential within the receiving waterbodies (Naniken River and Duck Pond) during high rainfall events.

In terms of cumulative impacts, it is not envisaged that the Proposed Development will have any significant cumulative impacts on habitats or fauna; due to the limited habitats being lost to the development, and the nature of the hydrological connection to downstream designated sites. The development of the Site lands does have the potential to act in-combination with other greenfield developments in Dublin City, as they could contribute to an overall loss of *ex-situ* feeding sites to SCI species listed for coastal SPAs. This issue is addressed in detail in the NIS which accompanies this application.

[REDACTED]

4.3 Land and Soil

This chapter of the Environmental Impact Assessment Report (EIAR) provides an assessment of the impact that the Proposed Mixed-Use Development at Foxlands in Raheny, Dublin 5 will have on the surrounding soil and geology in the vicinity of the site. It also sets out mitigation and remedial measures and methods of monitoring once the development is operational. It also sets out mitigation and remedial measures and methods of monitoring while the development is operational.

The Proposed Development site is located in Raheny, Dublin 5. It is bounded by St. Anne's Park to the north, east and south, and by St. Paul's Secondary School and a residential street known as The Meadows to the west. The site is a greenfield site. Topographic survey data indicates that the site falls generally from west to east, with a high point of approximately 25.5m OD Malin at the west of the site and a low point of approximately 21.4m OD Malin at the south-eastern corner of the site.

The site falls within the catchment of the Naniken River, located approximately 100m north of the site. Although it is culverted further upstream of the site, the Naniken River is visible for its entire lower course where it flows through St. Anne's Park. The river discharges via a culvert beneath the James Larkin Road (R807) to the sea between North Bull Island and the mainland.

The Proposed Development site lies within the Lucan Formation, which covers much of Dublin. This formation comprises dark-grey to black, fine-grained, occasionally cherty, micritic limestones that weather paler, usually to pale grey. There are rare dark coarser grained calcarenitic limestones, sometimes graded, and interbedded dark-grey calcar. The beds are predominantly fine-grained distal turbidites in the north Dublin Basin, and the formation ranges from 300m to 800m in thickness. The National Aquifer Bedrock Map prepared by the Geological Survey of Ireland was also consulted. From this map, it was established that the entirety of the site is within the designation LI, which represents locally important moderately productive aquifer. From the GSI groundwater vulnerability map, the vulnerability of the aquifer in the vicinity of the proposed site is low.

4.3.1 Ground Investigations

Intrusive ground investigations were carried out at the site by Ground Investigations Ireland Ltd. in September and October 2015. The scope of the site investigation works carried out at the site comprised the following:

- 10 No. Cable Percussion boreholes were drilled to a maximum depth of 8.0m below ground level using a Dando 2000 drilling rig with regular in-situ testing and sampling undertaken to facilitate the production of geotechnical logs and laboratory testing.
- Disturbed samples were taken from the boring tools at suitable depths, so that there is a representative sample at the top of each change in stratum and thereafter at regular intervals down the borehole until the next stratum was encountered. The disturbed samples were then sealed and sent to the laboratory where they were visually examined to confirm the description of the relevant strata.
- Standard Penetration Tests were carried out in the boreholes.

- Standpipe installations and groundwater monitoring to allow the equilibrium groundwater level to be determined.
- Samples were selected from the boreholes for a range of geotechnical classification laboratory testing to provide information for the proposed design.

The sequence of strata encountered were consistent across the site and are generally consisted of:

- Made Ground
- Cohesive Deposits

Made Ground deposits were encountered beneath the ground surface or Topsoil and were present to depths of between 0.8 and 1.5m BGL in the boreholes. These deposits were described generally consisted of brown/grey sandy gravelly CLAY.

Stiff brown cohesive deposits were present below the Made Ground deposits in the boreholes and were typically described as brown sandy gravelly CLAY with occasional cobbles. This stratum was present to a depth of up to 2.3m BGL and was underlain by a stiff to very stiff black slightly sandy gravelly CLAY with occasional cobbles and boulders to a maximum depth of 8.0m BGL.

Groundwater strikes were generally not encountered during the investigation in the cohesive deposits. However, it is noted that the exploratory holes did not remain open for sufficiently long periods of time to establish the hydrogeological regime and groundwater levels would be expected to vary with the time of year, tidal influence, rainfall, nearby construction, and other factors.

To better understand the hydrogeological regime and groundwater levels, standpipes were installed in BH1, BH2, BH3, BH6 and BH9. This allowed for the equilibrium groundwater level to be determined, as per Table 4-1:

Table 4-1: Groundwater Monitoring Levels

Borehole	Date	Groundwater	
		m BGL	m OD
BH1	19/10/2015	1.08	23.772
BH2	19/10/2015	1.79	20.699
BH3	19/10/2015	2.17	19.773
BH6	19/10/2015	Dry	-
BH9	19/10/2015	2.40	19.021

An allowable bearing capacity of 150kN/m² is recommended for the stiff brown cohesive deposits below the made ground depths of 0.80 – 1.50m below ground level. An allowable bearing capacity of 300kN/m² is recommended for deeper foundations based on the stiff black cohesive deposits. Excavations in the areas where deeper Made Ground deposits were encountered may require to be appropriately battered or the sides supported due to the variable strength of these deposits.

4.3.2 Potential Impact of the Proposed Development

The Proposed Development will include all associated site development works, landscaping and boundary treatment, cycle parking, bin stores, substation, drainage and service connections. The Proposed Development, with respect to soils and geology, includes the following characteristics: -

- Stripping of topsoil.
- Excavation of foundations and basements.
- Excavation of drainage sewers and utilities.
- Regrading and landscaping.
- Disposal of any surplus excavated soils including any contaminated material.

The removal of topsoil during earthworks and the construction of roads, services and buildings, in particular basements and foundations, will expose subsoil to weathering and may result in the erosion of soils during adverse weather conditions. Surface water runoff from the surface of the excavated areas may result in silt discharges to the Naniken River. Excavations for basements, foundations, roadworks and services will result in a surplus of subsoil. Surplus subsoil will be used in fill areas where applicable. Dust from the site and from soil spillages on the existing road network around the site may be problematic, especially during dry conditions. Accidental oil or diesel spillages from construction plant and equipment, in particular at refuelling areas, may result in oil contamination of the soils and underlying geological structures.

During the Operational Phase of the Proposed Development, it is not envisaged that there will be any ongoing impacts on the underlying soil as a result of the Proposed Development. Any hydro-geological impacts are temporary and associated with the construction of the Proposed Development.

4.3.3 Avoidance, Remedial & Mitigation Measures

To reduce the quantity of soil to be removed from or imported into the site, the floor levels of the proposed buildings and roads are designed to match existing levels as closely as is feasible, to minimise the cut and fill balance. The number of vehicle movements offsite will be minimised by this optimisation. However, given that there are two large basements proposed, it is anticipated that there will be a surplus of soil to be removed from the site.

Surplus subsoil and rock that may be required to be removed from site will be deposited in approved fill areas or to an approved waste disposal facility. Surplus subsoil will be stockpiled on site, in such a manner as to avoid contamination with builders' waste materials, etc., and so as to preserve the materials for future use as clean fill.

Soil samples taken from the site during the site investigations showed no evidence of contamination. However, any contaminated soils that are encountered during the works will be excavated and disposed of off-site in accordance with the Waste Management Act 1996, as amended, and associated regulations and guidance provided in Guidelines for the Management of Waste from National Road Construction Projects published by the National Roads Authority in 2008.

In the case of topsoil, careful planning and on-site storage can ensure that this resource is reused on-site as much as possible. Any surplus of soil not reused on site can be sold.

However, topsoil is quite sensitive and can be rendered useless if not stored and cared for properly. It is therefore important that topsoil is kept completely separate from all other construction waste, as any cross-contamination of the topsoil can render it useless for reuse.

It is important to ensure that topsoil is protected from all kinds of vehicle damage and kept away from site-track, delivery vehicle turning areas and site plant and vehicle storage areas.

If topsoil is stored in piles of greater than two metres in height, the soil matrix (internal structure) can be damaged beyond repair. It should also be kept as dry as possible and used as soon as possible to reduce any deterioration through lengthy storage and excess moving around the site.

Records of topsoil storage, movements and transfer from site will be kept by the C&D Waste Manager.

The provision of wheel wash facilities at the construction entrance to the development will minimise the amount of soils deposited on the surrounding road network. The adjoining road network will be cleaned on a regular basis, as required, to prevent the build-up of soils from the development site on the existing public roads. Dampening down measures with water sprays will be implemented during periods of dry weather to reduce dust levels arising from the development works.

Measures will be implemented throughout the Construction Phase to prevent contamination of the soil and adjacent watercourses (in particular the Nanekin River) from oil and petrol leakages. Suitable bunded areas will be installed for oil and petrol storage tanks. Designated fuel filling points will be put in place with appropriate oil and petrol interceptors to provide protection from accidental spills. Refuelling will be restricted to these allocated re-fuelling areas. This area is to be an impermeable bunded area designed to contain 110% of the volume of fuel stored.

During excavation works, temporary sumps will be used to collect any surface water run-off thereby avoiding standing water within the excavations. If groundwater is encountered during excavations, mechanical pumps will be required to remove the groundwater from sumps. Sumps should be carefully located and constructed to ensure that groundwater is efficiently removed from excavations and trenches.

Silt traps, silt fences and tailing ponds will need to be provided by the contractor where necessary to prevent silts and soils being washed away by heavy rains during the course of the Construction Phase. Surface water runoff and water pumped from the excavation works will be discharged via a silt trap / settlement pond to the existing foul drainage network. Straw bales will be used at the outfall to filter surface water to remove contaminants.

After implementation of the above measures, the Proposed Development will not give rise to any significant long term adverse impact. Moderate negative impacts during the Construction Phase will be short term only in duration.

A Construction Environmental Management Plan, Traffic Management Plan and a Construction & Demolition Waste Management Plan will be implemented by the contractor during the Construction Phase to control the above remedial measures.

On completion of the Construction Phase and following replacement of topsoil, a planting programme will commence to prevent soil erosion. Sustainable Drainage Systems (SuDS)

and filtration devices are proposed to be provided as part of the development. These will help to remove pollutants from rainwater runoff. The SuDS proposals will also encourage infiltration of surface water to the ground.

4.3.4 Residual Impacts

With the protective measures noted above in place during excavation works, any potential impacts on soils and geology in the area will not have significant adverse impacts, and no significant adverse impacts on the soils and geology of the subject lands are envisaged.

The Proposed Development will result in a surplus of excavated material, which may contain contaminants. Any contaminated material will be exported to an approved licensed waste facility.

On completion of the Construction Phase and following replacement of topsoil and implementation of a planting programme, no further impacts on the soil are envisaged.

SuDS measures, including permeable paving, bioretention tree pits and open areas with low level planting, will assist with treating surface water runoff while replenishing the natural ground water table. No significant adverse impacts are predicted on soils or geology.

4.3.5 Monitoring

Monitoring during the Construction Phase is recommended, in particular in relation to the following:

- Adequate protection of topsoil stockpiled for reuse.
- Adequate protection from contamination of soils for removal.
- Monitoring of surface water discharging to existing watercourses, ditches and the Nanekin River.
- Monitoring cleanliness of the adjoining road network.
- Monitoring measures for prevention of oil and petrol spillages.
- Dust control by dampening down measures close to the boundaries of the site, when required due to unusually dry weather conditions.

During the Operational Phase, the surface water network (drains, gullies, manholes, Access Junctions (AJs), SuDS devices, attenuation system) will need to be regularly maintained and where required cleaned out. A suitable maintenance regime of inspecting and cleaning should be incorporated into the safety file/maintenance manual for the development.

4.3.6 Reinstatement

Excavations and trenches opened during construction will be backfilled with subsoil to reinstate existing ground levels. Upon completion no impact is foreseen.

4.4 Hydrology and Hydrogeology

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

The assessment was carried out taking cognisance of appropriate national guidelines and standards for Environmental Impact Assessment using data pertaining to the Proposed Development including published data, site specific data from site surveys and assessments for the Site as well as the design drawings and documents Proposed Development. The results of the assessment provided information on the baseline conditions of the receiving water environment at the Proposed Development Site. A detailed assessment of the potential impacts on the receiving water environment was undertaken, and appropriate avoidance and mitigation measures were considered and identified to reduce any identified potential impact associated with the Proposed Development Site.

The Proposed Development will consist of the demolition of existing structures at the Site on the Sybil Hill Rd., Raheny, Dublin 5 and the construction of a mixed-use residential development to include:

- Construction of 6 no. residential blocks and 1 no. mixed-use block accommodating 580 no. apartments comprising of 272 no. 1 bed units, 248 no. 2 bed units and 60 no. 3 bed units;
- Construction of a 6 no. classroom creche and a 100 bed nursing home in Block G;
- Construction of 2 no. single basements under Block D and G used for car parking and 1 no. single basement under Block C used as a plant room;
- Excavation during the Construction Phase to reduce levels to 19.825mOD locally under Block C, 19.825mOD under Block D and to 19.30mOD under Block G will require bulk excavations;
- Connection of water supply to the Proposed Development Site to mains supply in accordance with a connection agreement from Irish Water per consent per Irish Water Confirmation of Feasibility (COF) letter for the Proposed Development (Ref.: CDS19006864) and the currently pending Irish Water Statement of Design Acceptance;
- Construction of new surface water drainage system that incorporates SUDs measures in accordance with the requirements of the Greater Dublin Strategic Drainage Study (GSDS) to collect runoff from paved areas along roads and impermeable areas at the Proposed Development site with discharge by gravity to the Naniken Stream via by-pass petrol interceptor and attenuation.
- Construction of new foul water drainage system with connection to the existing 1,350mm North Dublin Drainage Scheme Trunk Sewer immediately south of the site with agreement from Irish Water as per Irish Water Confirmation of Feasibility letter for the Proposed Development (Ref.: CDS19006864) and the currently pending Irish Water statement of Design Acceptance.

All works during the Construction Phase of the Proposed Development will be undertaken in accordance with a detailed methodologies incorporated in the Construction Management Plan (CMP), Construction Environmental Management Plan (CEMP) and Construction Demolition Waste Management Plan (CDWMP) that will be prepared by the contractor in accordance with industry best practice standards including CIRIA - C532. The CEMP will include detailed measures to protect the receiving groundwater, surface water bodies, in this case the Naniken Stream and the associated coastal waterbody quality and associated ecological receptors. The measures will address the main activities of potential impact which include:

- Control and Management of Water including surface runoff and groundwater;

- Control and management of earthworks;
- Fuel and Chemical handling, transport and storage; and
- Accidental release of contaminants.

The CEMP will outline measures for the control and treatment of water encountered during excavations at the Proposed Development and a methodology outlining the treatment of water prior to discharge from the Site.

There is no requirement for large-scale dewatering of groundwater during the Construction Phase. There will be a requirement for localised dewatering during the construction of basements and other substructures.

There will be no unauthorised discharges to sewers or drains during the Construction Phase avoiding any discharge into the Naniken Stream.

Management of surface runoff from instream works will be undertaken by the contractor to ensure that there is no runoff from the Site to the Naniken Stream. These measures will include at a minimum:

- Silt fences will be appropriately located around earthworks areas as appropriate to manage runoff in particular.
- The Naniken Stream and the adjacent open water courses will be protected by a 10m constraint zone to avoid suspended sediment or other potential contaminants being released into the water course.
- Site vehicles will only be permitted within this 10m buffer to facilitate instream works to enable construction of the outfall to the Naniken Stream.

Emergency response procedures are outlined in the CEMP for the unlikely event of spillages of fuels or other chemicals and materials used during construction works. There will be no bulk storage of fuels and any required chemicals will be stored in accordance with EPA standards.

There is no flood risk identified for the Proposed Development or elsewhere and the proposed surface water drainage design takes account of climate change.

There will be no risk to any receiving water body as a result of the Proposed Development.

Overall, there will be no significant adverse impacts as a result of the Proposed Development on the receiving groundwater and surface water environment.

4.5 Air Quality and Climate

This chapter examines the potential for the Proposed Development to impact upon air quality and climate within the vicinity of the Proposed Site. This chapter also describes and assesses the impact of the Proposed Development on local climate and on global climate in a wider context.

The primary sources of dust identified during the Construction Phase of the Proposed Development include soil excavation works, demolition, bulk material transportation, loading and unloading, stockpiling materials, cutting and filling, and vehicular movements (HGVs and on-site machinery).

According to Transport Infrastructure Ireland guidelines (TII, 2011), it is difficult to accurately quantify dust emissions arising from construction activities. Therefore, it is not possible to easily predict changes to dust soiling rates or particulate matter (PM10) concentrations. TII recommend a semi-quantitative approach to determine the likelihood of significant impact in this instance. This should also be combined with an assessment of the proposed mitigation measures. In order to account for a worst-case scenario, the Proposed Development can be considered moderate in scale due to the size of the Site and the duration of construction activities. Therefore, it can be assumed that there is potential for significant dust soiling 50m from the Site. There are a number of high-sensitivity receptors (residential dwellings) located within 50m of the Site boundary; these are situated to the south of the Proposed Development Site. Therefore, in the absence of mitigation, it is considered that there is potential for dust impacts to occur at these locations. Appropriate mitigation measures have been recommended and will be implemented at the Site in order to minimise the risk of dust emissions arising during the Construction Phase, provided such measures are adhered to, it is not considered that significant air quality impacts will occur.

Construction vehicles and machinery during this phase will temporarily and intermittently generate exhaust fumes and consequently potential emissions of volatile organic compounds, nitrogen oxides, sulphur oxides, and particulate matter (dust). Dust emissions associated with vehicular movements are largely due to the resuspension of particulate materials from ground disturbance. According to the Institute of Air Quality Management (IAQM, 2014), experience from the assessment of exhaust emissions from on-site machinery and Site traffic suggests that they are unlikely to make a significant impact on local air quality, and in the vast majority of cases they will not need to be quantitatively assessed. Air pollutants may increase marginally due to construction-related traffic and machinery from the Proposed Development; however, any such increase is not considered significant and will be well within relevant ambient air quality standards. According to TII (2011), the significance of impacts due to vehicle emissions during the Construction Phase will be dependent on the number of additional vehicle movements, the proportion of HGVs and the proximity of sensitive receptors to Site access routes. If construction traffic would lead to a significant change (> 10%) in Annual Average Daily Traffic (AADT) flows near to sensitive receptors, then concentrations of nitrogen dioxide, PM10 and PM2.5 should be predicted in line with the methodology as outlined within TII guidance. Construction traffic is expected to result in a significant change (> 10%) in AADT flows near to sensitive receptors. Therefore, concentrations of NO2 and PM10 have been predicted in the Opening Year (2023).

The air dispersion modelling concluded that the Proposed Development is likely to result in a long-term increase in traffic on the roads surrounding the Proposed Development Site; however, this increase in traffic has been determined to have an overall insignificant impact in terms of local air quality. Furthermore, the increase in traffic has been determined as marginal with regard to climatic impacts. Therefore, no adverse residual impacts are anticipated from the proposed scheme in the context of air quality and climate.

There is the potential for combustion emissions from onsite machinery and traffic derived pollutants of Carbon Dioxide (CO2) and Nitrous Oxide (N2O) to be emitted during the Construction Phase of the development. However, due to the size and duration of the Construction Phase, and the mitigation measures proposed, the effect on national greenhouse gas (GHG) emissions will be insignificant in terms of Ireland's obligations under the Kyoto

Protocol and therefore will have no considerable impact on climate. Overall, climatic impacts are considered to be short-term and imperceptible.

All construction phase monitoring will be carried out in line with the Construction Environmental Management Plan (CEMP) for the Site. Due to the negligible impact on air quality and climate from the Operational Phase of the Proposed Development, no specific monitoring is recommended during this stage.

B-Fluid Limited carried out the Wind Microclimate Study for the Proposed Development. This assessment concluded that under the assumed wind conditions typically occurring within Dublin for the past 30 years, the development is designed to be a high-quality environment for the scope of use intended for each area/building (i.e., comfortable and pleasant for potential pedestrians).

4.6 Noise and Vibration

Amplitude Acoustics have been engaged as Acoustic Consultants for the Proposed Development. As part of the post planning preconstruction acoustic design, Amplitude will be undertaking site measurements, an inward noise impact assessment, operational noise assessment and construction noise and vibration assessment.

The likely noise and vibration impacts associated with the Proposed Development have been evaluated, and changes that are likely to impact the surrounding environs have been considered.

The noise-generating activities associated with the current Site are as follows:

- Site clearance, including demolition works of the pre-fab building within the grounds;
- Building construction works;
- Trucks entering and exiting the Site.

In relation to this development, there is no published statutory Irish guidance relating to the maximum permissible noise level that may be generated during the construction phase of a project. Given the suburban context, a limit value of 70dB LAeq,T for construction is considered to be reasonable.

This limit value is in agreement with those set by Transport Infrastructure Ireland (TII) for construction projects. The 2004 TII document "Guidelines for the Treatment of Noise and Vibration in National Road Schemes" outlines the following construction noise limit values, as outlined in Table 4-2:

Table 4-2: Construction Noise Limits (Source: TII, 2004)

Days and Times	LAeq	LAmax
Monday to Friday (07:00 to 19:00 hours)	70	80
Monday to Friday (07:00 to 20:00 hours)	60*	75*
Saturdays (08:00 to 16:30 hours)	65	75
Sundays & Bank Holidays (08:00 to 16:30 hours)	60*	65*

Three Noise Sensitive Locations (NSL) were identified in relation to the Proposed Development. Noise prediction calculations have been completed for noise from the use of onsite plant up to 250m from the source using the inverse square law. According to the inverse square law, for each doubling of distance from a point source, the sound pressure level decreases by approximately 6 dB.

As per industry guidelines, the predicted noise levels from onsite machinery during the construction phase of the Proposed Development comply with the specified limit value(s) at these NSLs. Predicted noise levels from all plant items are expected to fall below the daytime noise limit of 70dB(A) at the nearest NSLs.

There is potential for the adopted criteria of 70dB (A) to be exceeded at St. Pauls College during demolition works of the prefab. In the event that demolition works are scheduled during normal school terms and during school hours, there is the potential for short-term intermittent significant impacts in the absence of mitigation measures. There is also the potential for the adopted criteria to be exceeded during demolition works at the closest residential dwellings, however, there are hedgerows on the intervening lands between the demolition works and the residential dwellings. It is important to recognise that the sound intensity from a point source will obey the inverse square law if there are no reflections or reverberation. If there are barriers between the source and the point of measurement, you are likely to get less than what the inverse square law predicts. Therefore, when taking account of local terrain, predicted noise levels at the closest residential NSL are expected to be lower in actuality.

All machinery and equipment used at the Proposed Development will be used and maintained in accordance with the manufacturer's instructions to ensure vibrations or wearing of parts do not cause any unnecessary noise impact. All staff will be trained in the correct use of such equipment.

No traffic routes are predicted to experience increases of more than 25% in total traffic flows during the operational phase and therefore no detailed assessment is required as per the Design Manual for Roads and Bridges (DMRB) Guidelines.

4.7 Landscape and Visual

Landscape and Visual Summary

This Landscape/Townscape and Visual impact Assessment report has been prepared in respect of a Proposed Development located on lands east of St Paul's College, Sybil Hill Road, Raheny, Dublin 5, whose applicant is Raheny 3 Limited Partnership. This report describes the landscape/townscape/visual context of the Proposed Development and assesses the likely impacts of the scheme on the receiving environment, in terms of both landscape character and visual amenity.

Landscape Impacts

Although this is largely a greenfield site of an open verdant character, it is also a manmade, modified landscape, like that of its vicinity/hinterland. Indeed, the site is not publicly accessible, nor does it provide any public open space, but is, instead, securely fenced off from the public. Crucially the site is not and was not part of St. Anne's Park, but adjacent to it behind a tall

treeline: a factor that is reflected in the site's zoning, which is consistent with that across the developed northern half of Sibyl Hill, and at stark odds to all of St. Anne's Park.

In addition, there are no conservation or scenic designation associated with the site or its surrounds. The historic core of St. Anne's Park remains almost 400m distance from the site, with the most 'iconic' features of the park mostly being more than 800m from the site, which has a lower degree of visual amenity and visual sensitivity. Consequently, the sensitivity of the receiving townscape setting was considered to be **Medium-low**.

In terms of Construction Phase impacts, the context of such activity is within a suburban, residential setting where the construction of multi-storey buildings has been long established. As it is mostly a greenfield site, there is a minimal degree of demolition associated with the proposed works; namely, with the estimated loss of approx. 36 no. mostly non-native trees. It was consequently deemed that the magnitude of Construction Phase landscape/townscape impacts to be Medium. Thus, overall significance of Construction Phase landscape/townscape impacts was considered to be **Moderate** and the quality of effect deemed to be **Negative**.

In terms of operational stage impacts, the most notable will result from the permanent 7 no. blocks that mostly range in height from 4 to 7 storeys. While this will be a distinct vertical imprint into what had been mostly a grassy, greenfield site, it also represents a broader compatibility with the townscape fabric and character along the northern end of Sibyl Hill. Indeed, there are multiple instances of higher-density apartment complexes of 3-5 storeys, from recent decades, within 200m of St. Anne's Park boundaries. In terms of the development's likely impact on the character of the adjacent St. Anne's Park, while the proposal represents a distinct change of land use (i.e., from chiefly sporting pitches, like those in adjacent areas of the park, to chiefly residential, like those adjoining the park), the presence of existing tall mature treelines to all sides of the site adjoining the park is likely to maintain the disconnect the Park has had from this cordoned off private property.

Be that as it may, the completion of construction will mark an escalation and intensification of that fabric within the study area, while being attuned to and compatible with it. Owing to the sizeable net gain of not just proposed trees but other proposed planting, upon establishment the site will bear a considerably stronger sylvan character than it does at present. Crucially, the Proposed Development will provide c. 31.15% public open space on this site of 6.7ha: a stark transition to the 0% public open space the site currently provides. Consequently, the magnitude of operational stage landscape/townscape impacts is considered to be Medium-Low, resulting in a **Moderate-slight** overall operational stage significance of townscape impact, while the quality of effect was deemed to be **Neutral-negative**.

Visual Impacts

All 21 no. receptors selected for this assessment were located between 5m and 841m of the site, with visual sensitivity varying between 'Medium-low' (for those receptors that are chiefly residential and/or educational/institutional and/or a major transport route) and 'Medium' (for all receptors that are of recreational/amenity use e.g., from within St. Anne's Park). The resulting visual impact significance varied from 'Imperceptible/Neutral' to 'Moderate-negative.' In broad brushstrokes, this relates far less to the visual change experienced from these viewpoints, rather than the detailed and nuanced nature of that change, and, more importantly, how it will likely affect each location's inherent visual amenity.

Notably, over half of the selected viewpoints (i.e., 13 out of 21 viewpoints) experienced a significance of visual impact no higher than 'Imperceptible/neutral.' While in some instances, this is primarily a result of intervening buildings, in the majority of instances it is as a result of tall, thick, mature trees either surrounding three sides of the site, or within 200m of it. A further four viewpoints experienced a significance of visual impact of Slight/negative,' despite two of these viewpoints (i.e., VP7 and VP10) being less than 55m and 20m, respectively, from the site. Thus, 17 out of the 21 viewpoints experienced a significance of visual impact no higher than 'Slight/negative.'

Three viewpoints (i.e., VP8, VP14 and VP16) experienced a significance of visual impact of 'Moderate-slight/negative', despite their distance from the site varying from 5m to over 150m. Finally, the viewpoint with the highest significance of visual impact was 'Moderate/ negative.' This was VP9, from the schoolyard to the rear of St. Paul's College, the owners of which sold the site lands for the intended purposes of development. However, it needs reiterating that of these four viewpoints (VP8, VP9, VP14 & VP16), two are from within the St. Paul's College campus (i.e., VP8 & VP9), which is a less typical LVIA/TVIA receptor, as it is not in the public sphere but within private property.

Overall, views of the Proposed Development, where possible from within the study area, are likely to be highly localised, whereby the presence of the proposal will often be difficult to detect beyond 200m from the site, and sometimes even less. In light of the multi-storey nature of the Proposed Development, such a modest likely visual impact is a pertinent reflection of how well-designed, -scaled and -positioned the Proposed Development is likely to be.

4.8 Archaeology and Cultural Heritage

An assessment of the existing (baseline) Archaeological, Architectural and Cultural Heritage environment of the Proposed Development site and its surroundings was completed in order to determine any significant impacts that might arise as a result of a positive grant of planning permission for the Proposed Development and to highlight any potential effects this might have on these resources.

The assessment commenced with a desktop study / paper survey which considered all available archaeological, architectural, historical, and cartographic sources pertaining to the site. This information was used in order to assess any potential impact on the receiving environment and to identify measures to ensure the conservation of any relevant monuments, features or structures therein. The assessment also included both an archaeological and architectural walk over survey of the receiving environment and the redline footprint of the Proposed Development. Furthermore, a geophysical survey of the part of the proposed site at the former location of Maryville House was conducted under licence ref. 15E0095.

There are no sites, monuments or places recorded by the RMP (Record of Monuments and Places) within the boundary of the Proposed Development site and only two RMP sites are marked as being located within a 1km radius of the Proposed Development by the online RMP mapping. The nearest accurately listed RMP site is the Church and graveyard (DU019-010001, -010002) which is located 0.83km west of the Proposed Development, whilst the mapped location of the Casino Marino (DU019-037) 0.81km west of the Proposed Development is actually erroneous on the online Heritage Mapping and RMP databases, as the Casino Marino is actually DU018-144, which is in reality located 1km to the west of the Proposed Development. The archaeological walkover survey identified three sites/areas of

archaeological potential (AAP1, AAP2 and AAP3) as being present within the red line boundary of the Proposed Development site's footprint and those will therefore be subject to a direct impact during the construction phase of the Proposed Development. As a mitigation of those impacts it is recommended that a programme of linear archaeological test trenching take place. This will include the targeted investigation of the geophysical anomalies which have pinpointed the site of Maryville House (AAP2) and it will assess the archaeological potential of the Proposed Development site's entire footprint (AAP3), including an examination of a section of the civil parish boundary between Clontarf and Raheny (AAP1), which would be directly impacted. Any identified sub-surface archaeological features will remain in situ while the National Monuments Service (Department of Housing, Local Government and Heritage) and the Planning Authority (Dublin City Council) are consulted to determine appropriate further mitigation strategies, which may entail preservation by avoidance or preservation by record through full archaeological excavation.

There are no protected structures within the application site and no part of the site lies within or adjacent to an architectural conservation area. The only site of architectural heritage in close proximity to the Proposed Development, which is listed by the Record of Protected Structures (RPS), is Sybil Hill House (RPS Ref. No. 7910). Sybil Hill House is also the only site in close [proximity to the Proposed Development listed by the National Inventory of Architectural Heritage (NIAH Reg. No. 50030086). Three elements of relevance to the Architectural heritage of the Proposed Development site were identified as a result of this assessment, but there will be no direct impact to any of these during the construction phase of the Proposed Development and only slight to moderate indirect impacts on their setting.

4.9 Material Assets: Traffic

This section of the Environmental Impact Assessment Report has been prepared by Waterman Moylan Consulting Engineers and provides a Non-Technical Summary of the assessment of the impact of the Proposed Development on the surrounding traffic and transport and presents an assessment of the receiving environment for the Construction and Operational Phases of the Proposed Development.

Access to the Proposed Development is planned to be on R808 beside St. Paul's College at Junction 2. R808 is a single carriageway road approximately 1.85 km long with footpaths either side and travels in a North to South direction from R105 Howth Road to the coastline with R807 Clontraf Road. R808 can be split into two roads, Sybil Hill Road and Vernon Avenue. Sybil Hill Road is approximately 700m long from R105 Howth Road to the junction with Vernon Avenue. Vernon Avenue starts west of the Proposed Development and connects with the R808 via a junction with Sybil Hill Road. Vernon Avenue is approximately 1.7km long and finishes at R807 Clontraf Road.

R105 Howth Road is north of the Proposed Development and connected with R808 Sybil Hill Road. The R105 runs in a southwest / northeast direction from Howth to Dublin City Centre.

Sea field Road is south of the Proposed Development and runs in an east / west direction. Sea field Road is a single carriageway junction with residential housing on both sides of the road. There are pedestrian pathways either side also.

Further south from the Proposed Development along the coastline is R807 Clontraf Road. R807 Clontraf Road is a single carriageway running southeast / northwest and connects to R808 Sybil Hill Road directly south of the Proposed Development approximately 1.5km away

4.9.1 Pedestrian and Cycling Facilities

The site is well located to provide non-car access for residents and visitors of the Proposed Development with good local walk-in access from the local catchment. There are pathways along Sybil Hill Road separated by the road with a grass verge.

Surrounding the Proposed Development are several areas of cycle lanes. These cycle lanes are along Howth Road to the North of the development. It is a combination of Bus Lane and Cycle Lane (within Bus Lane). This cycle lane continues into the city centre and north towards Howth. Proposals for the Greater Dublin Area Cycle Network Plan were published by the National Transport Authority in December 2013. The plan sets out a vision and a strategy for the construction and/or designation of a comprehensive network of cycling routes throughout the Greater Dublin Area (Counties Dublin, Meath, Kildare and Wicklow). Directly North of the Proposed Development is a primary road which continues towards the city centre. There will be new secondary routes to the west and south of the development that connect to two Greenways, these are the Santry River Greenway which leads to the North and the East Coast Trail which travels south towards the city centre.

4.9.2 Public Transport Facilities

4.9.2.1 Train Services

The Proposed Development is also served by the Harmonstown Dart Station and Killester Dart Station. This provides access to several areas in North and South Dublin. It is approximately 800m (c. 10-minutes walking) from the Proposed Development to Harmonstown Dart Station and 950m (c. 12-minutes walking or c. 4-minutes cycling) to Killester Dart Station.

4.9.2.2 Bus Services

The Proposed Development is served by four bus stops with the local area. The nearest bus stops are to the north of the development on R105 Howth Road. Bus Stop 709 serves buses traveling away from the City Centre and serves the bus routes 6, H1, H2, H3 while Bus Stop 606 serves buses travelling towards the City Centre and serves the bus routes 6, H1, H2, H3. Bus Stop 709 is approximately 400m (c. 5-minute walk) away from the Proposed Development entrance and Bus Stop 606 is 450m (c. 6-minute walk) away.

There two bus stops near the Proposed Development on Vernon Avenue these are the Bus Stop 7607 and Bus Stop 1651, and both stops serve the 104 Bus route in opposite directions. Bus Stop 709 is approximately 400m (c. 5-minute walk) away from the Proposed Development entrance and Bus Stop 606 is 450m (c. 6-minute walk) away.

Table 4-3: Existing Bus Network

Bus No.	Route	Weekday Frequency	Saturday Frequency	Sunday Frequency
6	Howth Station towards Abbey Street Lower	30 - 60 mins	60 mins	60 mins
	Abbey Street Lower toward Howth Station	30 - 60 mins	60 mins	60 mins

Bus No.	Route	Weekday Frequency	Saturday Frequency	Sunday Frequency
H1	Baldoyle towards Abbey Street Lower	15 mins	20 mins	15 – 30 mins
	Abbey Street Lower towards Baldoyle	15 mins	20 mins	15 – 30 mins
H2	Malahide towards Abbey Street Lower	30 mins	40 mins	60 mins
	Abbey Street Lower towards Malahide	30 mins	40 mins	60 mins
H3	Howth Summit towards Abbey Street Lower	30 mins	40 mins	60 mins
	Abbey Street Lower towards Howth Summit	30 mins	40 mins	60 mins
104	Contraf Station towards DCU	60 mins	-	-
	DCU towards Clontraf Station	60 mins	-	-

4.9.2.3 Bleeper Bikes

Bleeper Bikes is a new service where users can rent bikes for short term use throughout the city. The bleeper bikes operate in a 100 km² zone where bikes must be parked after use using the designated parking spots and the app., bleeper bikes provide the Proposed Development access to several areas in the city including Malahide, Howth, City Centre, Blanchardstown, Dun Laoghaire and Rathmines.

A Bleeper Bike can be locked at any Sheffield Bike Rack provided it is on public property and it is located within our Operating Zone. Public cycle parking is available within St. Anne's Park.

4.9.2.4 Go Car

GoCar is a service for quickly renting cars for short term use. There are GoCar stations all over Ireland available for use. The nearest Go Car is approximately 1km away (c. 12-minute walk) from the Proposed Development. At the time of writing this, there is one car available at this station.

Waterman Moylan have engaged with GoCar about the possibility of introducing car share vehicles within the development. GoCar have provided a letter of intent for the development.

4.9.3 Potential Impact of the Proposed Development

There is potential for construction traffic to impact from a traffic and transport perspective in relation to the surrounding road network. There is potential for traffic congestion, due to increased heavy good vehicles on the road network which may also perform turning movements, unloading, etc., in areas that impact on traffic. The potential for inappropriate parking whilst waiting for access to the site, may also impact local road users. There is potential for an increase in noise and dust due to the additional construction traffic.

The Operational Phase of the Proposed Development will generate a number of trips by various modes of travel including vehicular, pedestrian, cycle and public transport. These trips

may have an impact on the surrounding road network and could contribute to increased congestion.

The traffic during the Operational Phase may also be affected by special events such as summer concerts in St. Anne's Park. During the concerts no car parking will be available for the concert and Sybil Hill Road from Vernon Ave to Howth Road will be closed each evening from 15:00hrs - 23:30hrs (access will be maintained for the Proposed Development and other residents/services along the road). Temporary closures / diversions will occur post event depending on pedestrian numbers. These will be monitored and managed by An Garda Síochána and Security personnel and will not impinge on local access, wherever possible. Both Gardaí and Stewards will be posted along Sybil Hill Road and the junction with Howth Road.

4.9.4 Avoidance, Remedial & Mitigation Measures

A Construction Traffic Management Plan (CTMP) will be implemented in order to minimise the potential impact of the Construction Phase of the Proposed Development on the safety and amenity of other users of the public road.

The Proposed Development is situated adjacent to suitable infrastructure and transport services for travel by sustainable modes. A key barrier to modal shift towards sustainable modes of travel is often a lack of information about potential alternatives to the car. As such, it is proposed that residents will be made aware of potential alternatives including information on walking, cycle routes and public transport.

Residents will be encouraged to avail of these facilities for travel to and from work. Provision of this information would be made during the sales process and will be included in the new homeowner's pack upon the sale of each unit, as this represents the best opportunity to make residents aware and to secure travel behaviour change. It is anticipated that this measure may help to reduce the level of traffic at the Proposed Development, thus providing mitigation against any traffic and transport effects of the development.

4.9.5 Residual Impacts

Provided the above mitigation measures and management procedures outlined in the CTMP and the Construction Environmental Management Plan (CEMP) are incorporated during the Construction Phase, the residual impact upon the local receiving environment is predicted to be short-term (i.e., one to seven years) in the nature and slight in terms of effect.

Through the implementation of preliminary mitigation measures it is anticipated that the effect of traffic during the construction phase will have a slight effect on the surrounding road network for short-term period. These are preliminary measures and a detailed CTMP will be provided by the Contractor before construction proceeds.

4.9.6 Monitoring

During the Construction Phase the following monitoring is advised. The specific compliance exercises to be undertaken in relation to the range of measures detailed in the final construction management plan will be agreed with the planning authority.

- Construction vehicles routes and parking
- Internal and external road conditions
- Construction activities hours of work

The Travel Plan for the Proposed Development will be monitored and updated at regular intervals. This will enable tracking in terms of a reduction in the dependence on private car journeys and a shift towards sustainable transport options such as walking, cycling and the use of public transport such as buses.

4.10 Material Assets: Utilities and Waste

This chapter of the EIAR provides an assessment of the potential impacts of the Proposed Development on 'Materials Assets' or the physical resources in the environment, including built services and infrastructure comprising electricity, gas supply, information and communications technology (ICT), surface water/stormwater drainage, water supply, the foul water network and waste management infrastructure.

Construction related activities will require temporary connection to the local electrical supply network for lighting and construction activities. Connecting a new multi-unit housing development to the electricity distribution system must be carried out in accordance with ESB Networks' specifications. A temporary suspension of the network locally to facilitate the connection works may be required during the construction Phase, and an additional temporary suspension will also occur when power is provided to the site of the Proposed Development. These temporary suspensions will be controlled by ESB Networks as the statutory undertaker and in accordance with standard protocols. The potential impact from the Construction Phase of the Proposed Development on the local electrical supply network is likely to be negative, slight, and short-term. The impact of the Operational Phase of the Proposed Development on the electricity supply network is likely to be to increase demand to the existing supply. The impact from the Operational Phase on the electricity supply network is likely to be neutral, long term and not significant.

The residential dwellings will avail of a centralised plant room consisting of modular gas fired condensing boilers, gas fired condensing combined heat and power plant and air source heat pump plant. Connecting a new multi-unit housing development to the gas network system must be carried out in accordance with Gas Networks Ireland's specifications. The developer must employ the services of a registered mechanical installer or plumber and select and register with a natural gas supplier. The potential impact from the Construction Phase of the Proposed Development on the local gas supply network is likely to be negative, slight, and short-term. During the Operational Phase there will be an increase in the gas demand on existing resources. The natural gas supply to support the Proposed Development has been discussed with utility provider, Gas Networks Ireland (GNI). GNI have confirmed that there is adequate pressure in the gas network and have raised no concerns about providing natural gas to the Proposed Development. The impact of the Operational Phase on the gas supply network is likely to be neutral, long term and not significant.

In terms of mobile telecommunication for transmission and reception, the closest mobile/ICT communications mast (Vodafone, Three and Meteor) is located in Saint Anne's Park near the Health Centre on Vernon Avenue, Clontarf, Dublin 3, approximately 400m southwest of the Site of the Proposed Development. Additionally, high-speed broadband is available at St. Pauls College, St. Annes Park and Sybil Hill Road. Some local diversions may be required in the upgrade works of the controlled pedestrian crossing and new proposed ducting works. This is envisaged to be a negative, not significant and temporary impact which will only exist

during the Construction Phase. The increased demand on existing telecommunications infrastructure as a result of the Proposed Development is likely to have a neutral and not significant effect in the long term.

Commencement of construction activities will result in a net increase in the water demand for the site. It is proposed to provide a new 180mm diameter connection to the existing 250mm diameter water supply main in Sybil Hill Road. Some local diversions may be required to water supplies to accommodate the construction works which may require temporary outages. Additionally, new connection works may cause water supply disruptions during the Construction Phase. These disruptions will be controlled by Irish Water (IW) and Dublin City Council (DCC) in accordance with standard protocols. All watermains will be laid strictly in accordance with IW's standard protocols, and valves, hydrants, scour and sluice valves and bulk water meters will be provided in accordance with the requirements of IW. Due to the nature of the works during the Construction Phase, the likely impacts on the local mains water supply will be negative, not significant and temporary. During the Operational Phase of the Proposed Development there will be a demand for water from the public water supply. The likely impact of the increase in mains water demand will be neutral and not significant on mains water supply in the long-term.

Surface water runoff from the catchment will be restricted via a Hydro-brake or similar approved flow control device and will be limited to the calculated greenfield equivalent runoff rate of 17 litres per second (l/s) before discharging to the public network. The net runoff volume from the site will therefore remain unchanged. The runoff from the roads and hardstanding areas will discharge contaminants, including oils and silts, to the surface water system which could result in pollution to the surface water network. At-source treatment sustainable drainage techniques will be employed to address this issue, including roadside tree pits and the installation of a petrol interceptor to remove hydrocarbons before the surface water outfall to the Nanekin River. With the proper application of proposed mitigation measures, the overall likely effect of the surface water drainage strategy for the Proposed Development will result in a neutral, imperceptible impact on receiving surface water quality in the long-term.

A temporary connection to the existing foul water network is required to facilitate on-site works for all housing developments. It will be the Main Contractor's responsibility to apply to Irish Water for connections to the network, and all connections to the foul water network will be constructed strictly in accordance with IW's requirements. Specific measures will be taken to prevent the release of effluent from the foul water network to the Naniken River and Dublin Bay during the Construction Phase. These measures include, but are not limited to, the use of silt traps, silt fences, silt curtains, settlement ponds and filter materials. The adherence and full implementation of the appropriate mitigation measures will ensure there is no potential for pollution of watercourses to arise. The new connection works may cause disruptions to the foul water network during the Construction Phase. These disruptions will be controlled by IW and DCC in accordance with standard protocols. Due to the nature of the works during the Construction Phase, the likely effect will be negative, non-significant and temporary. It is proposed to drain wastewater from the site of the Proposed Development by gravity to the existing 1,350mm wastewater sewer at the south-eastern corner of the site. The Operational Phase of the Proposed Development will result in a net increase in flows to the network and there will be a net peak foul water flow of 10.207 l/s discharging to the existing sewer, which is ultimately discharged to Ringsend Wastewater Treatment Plant (WwTP). The increase in

foul water the at the Ringsend WwTP as a result of the Proposed Development is considered to be insignificant in terms of the overall scale of the facility. Therefore, the impact on the foul water network as a result of the Operational Phase of the Proposed Development is considered to be neutral, not significant and long term.

Most of the waste arising during the Construction Phase will comprise soil and stone materials associated with the excavation works required for the basement, foundations and connections to utilities and services. There will be some demolition waste associated with the demolition of an existing prefabricated building, which has been found to contain Asbestos Containing Materials (ACM). A Construction and Demolition Waste Management Plan (CDWMP) has been prepared for the Construction Phase of the Proposed Development (Waterman Moylan, 2022), and all wastes generated on site during the Construction Phase will be dealt with as per the CDWMP. A member of the construction team will be appointed as the Waste Manager to ensure commitment, operational efficiency and accountability during the Construction Phase of the Proposed Development. After in-situ reuse and recycling options have been fully considered, all residual waste streams will be collected by appropriately authorised waste collection contractors and will be managed using suitably permitted/licensed waste disposal or materials recovery facilities. Due to the use of permitted/licensed waste collection/waste management facilities, it is not predicted that the production of waste will cause any likely significant effects on the environment. It is the responsibility of the Main Contractor to ensure that waste collection contractors are legally permitted to carry the waste, and that the facility they bring the waste to is licensed to handle that type of waste as outlined in the Waste Management Acts 1996 (as amended). Any surplus soils that cannot be reused on site will be removed offsite and may be reused elsewhere. The removal of any surplus soil offsite will be undertaken in accordance with applicable statutory requirements. This may include, wherever suitable, removal as by-products that meet the legislative requirements of Article 27 of the European Communities (Waste Directive) Regulations, 2011 (S.I. No 126 of 2011). Material will only be moved under an Article 27 By-product notification when it can be robustly demonstrated that all tests for Article 27 By-product are met.

An Operational Waste Management Plan (OWMP) has been prepared for the Proposed Development by Awn Consulting (2022). The OWMP contains full details of the types and quantities of waste that may arise at the Proposed Development. The wastes that will be generated during the Operational Phase of the Proposed Development will typically include municipal household-type wastes. There will be some additional hazardous and non-hazardous waste types generated in small quantities which will need to be managed separately including batteries, waste electrical and electronic equipment (WEEE), printer cartridges / toners, chemicals (paints, adhesives, resins, detergents, etc.) and light bulbs. Green / garden waste will also be generated from internal plants or external landscaping and furniture and other bulky wastes may also arise from time-to-time.

In addition to the typical waste materials that will be generated at the Proposed Development daily, healthcare waste will also be generated at the Nursing Home. Healthcare waste is defined as "solid or liquid waste arising from healthcare". Waste materials generated will fall into two main categories, namely healthcare non-risk waste (i.e., non-clinical healthcare waste) and healthcare risk waste (hazardous). In the absence of mitigation, the potential impact from the Construction and Operational Phases on waste disposal has the potential to be negative and moderate in the long term.

Provided that the mitigation measures detailed in the CEMP (Enviroguide Consulting, 2022), the CDWMP (Waterman Moylan, 2022) and the OWMP (AWN Consulting, 2022) are implemented, and a high rate of reuse, recycling and recovery is achieved, the likely effect of the Construction and Operational Phases on the environment will be neutral and imperceptible in the long term. Additionally, the project design of the Proposed Development has facilitated the improvements required to service the site without negatively impacting the local existing utilities.

The cumulative effects of Proposed Development on Material Assets will be fully assessed taking other planned, existing, and permitted developments in the surrounding area into account. All planning permission applications that have been granted and developed will be incorporated into the baseline assessment.

4.11 Risk Management

Risk is one of the most important elements to be considered as part of a development. It is critical that any project is screened against potential risks which it might encounter and/or impose on the nearby environment during its Construction and Operational Phase. An assessment of the vulnerability of the Site of the Proposed Development to risks of major accidents and/or disasters was completed.

The assessment reviewed:

- The vulnerability of the project to major accidents or disasters.
- The potential for the project to cause risks to human health, cultural heritage, and/or the environment, resulting from that identified vulnerability.

A methodology was used including the following phases:

- Phase 1 – assessing the hazards
- Phase 2 – screening the hazards
- Phase 3 – mitigating the hazards and evaluating the residual hazards

The risk assessment conducted for the Proposed Development on lands to the east of St Paul's College, Sybil Hill Road, Raheny, Dublin 5, concludes that the vulnerability of the Proposed Development to major accidents and/or disasters is not considered significant; and the potential for the project to cause risks to human health, cultural heritage, and the environment, is not considered significant.

4.12 Interactions

Interrelationships between various environmental aspects must be considered when assessing the impact of the Proposed Development, as well as individual significant impacts. The significant impacts of the Proposed Development and the proposed mitigation measures have been detailed in the relevant chapters of this report. However, as with all developments that poses potential environmental impacts, there also exists potential for interactions/interrelationships between the impacts of different environmental aspects. The results may exacerbate or ameliorate the magnitude of impacts. This chapter of the EIAR

addresses the interactions between the various environmental factors of the Proposed Development.

When considering interactions, the assessor has been vigilant in assessing pathways – direct and indirect – that can magnify effects through the interaction. In practice many impacts have slight or subtle interactions with other disciplines. However, the EIAR concludes that most inter-relationships are neutral in impact when the mitigation measures proposed are incorporated into the operation of the Proposed Development in line with the Waste Facility Permit for the site.

4.13 Mitigation and Monitoring Measures

This EIAR has assessed the impacts and effects likely to occur as a result of the Proposed Development on the various aspects of the receiving environment.

The Proposed Development will be operated in a manner that will ensure that the potential impacts on the receiving environment are avoided where possible. In cases where impacts or potential impacts have been identified, mitigation measures have been proposed to reduce the significance of specific impacts. These mitigation recommendations are contained within each chapter exploring specific environmental aspects.

The mitigation and monitoring chapter of the EIAR collates and summarises the mitigation commitments made in Chapter 4 to Chapter 12.