

ENVIRONMENTAL IMPACT ASSESSMENT REPORT

NON-TECHNICAL SUMMARY

Hacketstown Strategic Housing Development



In Association with:

OMP Architects, Altamar Ltd., BlueRock Environmental, DBFL Consulting Engineers, Modelworks., Redkite Environmental.

April 2022

NON-TECHNICAL SUMMARY

1.0 INTRODUCTION

John Spain Associates, Planning & Development Consultants, have been commissioned by the applicant, the Land Development Agency (LDA), to prepare an Environmental Impact Assessment Report (EIAR) in respect of a Strategic Housing Development at Hacketstown, Co. Dublin. The site has a total area of 6.7 with a net development area of c. 6.6 hectares and is located to the south of Skerries town centre, on lands at Hacketstown, in the townland of Milverton, Hacketstown and Townparks, Co. Dublin. The lands are bound to the north by lands in the ownership of Noonan Construction including recently completed residential development 'Ballygossan Phase 1', to the west by the Dublin – Belfast railway line, to the east by Golf Links Road and to the south by agricultural lands and a number of rural dwellings.

The proposed development entails a Strategic Housing Development comprising 345 no. residential units, childcare facility, vehicular access, pedestrian and cycle infrastructure, and all associated site development and infrastructural works, on a total site of 6.7 ha. zoned for residential use the Fingal County Development Plan 2017-2023. This is the 'project' to be assessed in the EIAR.

The project, which is the subject of assessment in this EIAR and the accompanying Appropriate Assessment Report and Natura Impact Statement, will be facilitated by advance infrastructural works. These works were the subject of a Section 34 application to Fingal County Council (FCC F21A/0287) and are currently on appeal to An Bord Pleanála (ABP Reg. Ref. 312189). They consist of a connecting road to the north, drainage infrastructure, cycle and pedestrian facilities, and associated landscaping (the "AI Works"). The Project, is assessed to ensure that cumulative and in combination effects of the Project with other plans and projects within the zone of influence, including the Advance Infrastructure Works (Ref. ABP-312189-21), the prior application for off-site road improvements serving the wider area (ABP Reg. Ref. 309409; FCC Reg. Ref. F20A/0324), and the proposals by Noonan Construction for Ballygossan Park Phase 2 have been assessed in order to enable the competent authority to undertake a lawful environmental impact assessment ("EIA"), appropriate assessment screening ("AA Screening") and appropriate assessment ("AA").

Project Description

The development entails 345 no. residential units comprising of 84 no. 1-bed units, 104 no. 2-bed units (68 no. 2-bed apartments and 36 no. 2-bed duplexes), 157 no. 3-bed units (118 no. 3-bed duplexes and 39 no. 3 - bed houses) ranging in height from 2 no. – 4 no. storeys on a site of 6.7 ha. located at Hacketstown in the townlands of Milverton, Townparks and Hacketstown, Skerries, Co. Dublin. The subject lands are accessed via Golf Links Road to the south and Ballygossan Park Phase 1 to the north.

The proposed development comprises 345 no. residential units comprising of 84 no. 1-bed units, 104 no. 2-bed units (68 no. 2-bed apartments and 36 no. 2-bed duplexes), 157 no. 3-bed units (118 no. 3-bed duplexes and 39 no. 3 - bed houses) ranging in height from 2 no. – 4 no. storeys.

The proposed development is set out in 8 blocks which comprise the following:

- Block A1 comprises 39 No. units at 4 storeys in height (Comprising a mix of 26 No. apartments & 13 No. Duplexes)
- Block A2 comprises 33 No. units at 4 storeys in height (Comprising a mix of 22 No. apartments & 11 No. Duplexes)
- Block B1 comprises 16 No. units at 3 storeys in height (Comprising all 3 bed Duplexes)
- Block B2 comprises 16 No. units at 3 storeys in height (Comprising all 3 bed Duplexes)
- Block C comprises 42 No. units at 2-3 storeys in height (Comprising 15 No. apartments & 27 No. Duplexes)

- Block D comprises 32 No. units at 2-3 storeys in height (Comprising 12 No. apartments and 20 No. houses)
- Block E comprises 62 No. units at 2-3 storeys in height (Comprising 38 No. apartments & 24 No. Duplexes)
- Block F comprises 66 No. units at 2-3 storeys in height (Comprising 39 No. apartments & 27 No. Duplexes)
- Block G comprises 25 No units at 2-3 storeys in height. (Comprising 20 No. Duplexes and 5 No. houses)
- Block H comprises 14 No units at 2-3 storeys in height. (Comprising 14 No. houses)
- Public Open Space of c.16,670 sqm (25% of net developable area) is proposed including the parkland and main public square, in addition to the linear park of c.2,427 sqm;
- c.2,272 sqm communal open space is proposed to serve the apartments;
- 414 car parking spaces in total are proposed including 40 visitor spaces, 3 for creche set down and 2 for creche staff parking within undercroft and at surface level.
- 802 No. bicycle parking spaces comprising including 128 No. visitor spaces and 10 No. to serve the creche;
- Childcare and community facility of c.377 sqm. located in Block C;
- Upgrades to the Golf Links Road including new pedestrian and cycle infrastructure with frontage on Golf Links Road;
- Vehicular access off the Golf Links Road is to be provided to the south east of the subject site;
- In addition the proposal will provide a new internal link road. This internal link road will connect to the adjacent lands to the north, for which a separate planning application has been made to Fingal County Council under Reg. Ref. F21A/0287 (ABP Reg. Ref. 312189-21);

The proposed apartments include the provision of private open space in the form of balconies to elevations of the proposed buildings. The development also includes vehicular, pedestrian, and cycle accesses, bicycle stores, lighting, landscaping, amenity spaces, drop off areas, boundary treatments, refuse facilities, services, utilities, substations, internal roads, footpaths and shared surfaces and all associated ancillary and site development works.

Purpose of the EIAR

The objective of this EIAR is to identify and predict the likely environmental impacts of the proposed development; to describe the means and extent by which they can be reduced or ameliorated; to interpret and communicate information about the likely impacts; and to provide an input into the decision making and planning process.

The EIAR is the primary element of the Environmental Impact Assessment (EIA) process and is recognised as a key mechanism in promoting sustainable development, identifying environmental issues, and in ensuring that such issues are properly addressed within the capacity of the planning system.

The Requirement for an EIAR

Projects needing environmental impact assessment are listed in Schedule 5 of the Planning and Development Regulations 2001, as amended (Regulations).

Schedule 5 (Part 1) of the Regulations transposes Annex 1 of the EIA Directive directly into Irish land use planning legislation. The EIA Directive prescribes mandatory thresholds in respect to Annex 1 projects.

Annex II of the EIA Directive provides EU Member States discretion in determining the need for an EIA on a case-by-case basis for certain classes of project having regard to the overriding consideration that projects likely to have significant effects on the environment should be subject to EIA.

Schedule 5 (Part 2) of the Planning Regulations sets mandatory thresholds for each project class. Sub-section 10(b) (i) to (iv) addresses ‘Infrastructure Projects’ and requires that the following relevant class of project be subject to EIA:

- Category 10(b)(i) Construction of more than 500 dwelling units.
- Category 10(b)(iv) Urban development which would involve an area greater than 2 hectares in the case of business district, 10 hectares in the case of other parts of a built-up area and 20 hectares elsewhere.

This SHD application comprises residential development of 345 No. units and, as noted above, is preceded by the application for AI Works (FCC Reg. Ref. F21A/0287; ABP Reg. Ref. 312189) in order to facilitate future residential development on lands of the subject site. This application was also preceded by an application for off-site road improvements (ABP Reg. Ref. 309409; FCC Reg. Ref. F20A/0324) to facilitate developments on the residentially zoned lands in the Hacketstown area which was .7 ha in size.

We also note a residential scheme of 144 residential units and creche on a site 2.75 ha at Ballygossan Road, Golf Links Road, Skerries, Co. Dublin (i.e. Ballygossan Phase 2) is anticipated in the near future. This application was previously subject of an SHD Pre-Application Consultation Request under ABP (ABP-308583-20).

The potential cumulative impacts of these proposed off-site road improvements, advance infrastructure works and Ballygossan Park Phase 2, are assessed as part of this EIAR.

Notwithstanding the fact that the subject site area and unit numbers for the SHD Project are below the respective EIAR thresholds, having regard to the level of inter-connectivity with the adjoining AI Works application site, and having regard to the precautionary principle, an EIAR has been prepared to accompany the subject application, having regard to the overall combined size of the site and to category 10(b)(i) of Part 2 of Schedule 5 of the Planning Regulations this EIAR has been prepared to accompany the planning application.

The following components are addressed in the EIAR:

Ch.	Title	Content
1	Introduction and Methodology	Sets out the purpose, methodology and scope of the document.
2	Project Description and Alternatives	Sets out the description of the site, design and scale of development, considers all relevant phases from construction through to existence and operation together with a description of the reasonable alternatives studied by the developer, which are relevant to the project and its specific characteristics, and an indication of the main reasons for the option chosen, taking into account the effects of the project on the environment. .
3	Population and Human Health	Describes the demographic and socio-economic profile of the receiving environment and potential impact of the proposed development on population, i.e. human beings, and human health.
4	Archaeology and Cultural Heritage	Provides an assessment of the site and considers the potential impact of the proposed development on the local archaeology and cultural heritage; and recommends mitigation measures.
5	Biodiversity	Describes the existing ecology on site and in the surrounding catchment, and assesses the potential impact of the proposed development and mitigation measures incorporated into the design of the scheme.
6	Landscape and Visual Impact	Provides an overview of the baseline position, the potential impact of the proposed development on the landscape appearance and character and visual environment and recommends mitigation measures.

TABLE 1.2: STRUCTURE OF THIS EIAR – VOLUME 1

Ch.	Title	Content
7	Land and Soils	Provides an overview of the baseline position, the potential impact of the proposed development on the site's soil and geology and impacts in relation to land take and recommends mitigation measures.
8	Hydrogeology and Hydrology	Provides an overview of the baseline position, the potential impact of the proposed development on water quality and quantity and recommends mitigation measures.
9	Air Quality and Climate	Provides an overview of the baseline air quality and climatic environment, the potential impact of the proposed development, the vulnerability of the project to climate change, and recommends mitigation measures.
10	Noise and Vibration	Provides an overview of the baseline noise environment, the potential impact of the proposed development and recommends mitigation measures.
11	Material Assets – Road Network & Traffic	Assesses and evaluates the likely impact of the proposed development on the existing transportation system in the vicinity of the site, as well as identifying proposed mitigation measures to minimise any identified impacts arising.
12	Material Assets – Waste	Describes the existing services and infrastructural service requirements of the proposed development and considers the potential waste management impacts associated with the proposed development.
13	Material Assets – Utilities	Describes the likely impact of the proposed development on existing surface water, water supply, foul drainage and utility services in the vicinity of the site and assesses the impact of the proposed development on these aspects of the existing environment.
14	Risk Management	Assess vulnerability of project to Risk of Major Accidents and/or Disasters.
15	Interactions of the Foregoing	Describes the potential interactions and interrelationships between the various environmental factors.
16	Principal Mitigation and Monitoring Measures	Sets out the key mitigation and monitoring measures included in the above chapters of the EIAR Document for ease of reference.

2.0 PROJECT DESCRIPTION AND ALTERNATIVES EXAMINED

2.1 Introduction

This chapter provides a detailed description of the proposed development and outlines the reasonable alternatives considered as required under the 2014 EIA Directive and the Regulations. The chapter explains that the consideration of alternative locations was not considered reasonable or appropriate having regard to the nature and location of the subject site, the consideration of patterns of development in the SEA for the County Development Plan, and the land use and planning policy context. Likewise, it was not considered relevant to set out alternative uses on the subject site, as no reasonable alternative uses were identified having regard to the planning policy context. However, details have been provided of considerations of alternative designs. The reasons for the choice of the preferred design proposed have been set out, with mitigation measures provided relating to the selected development proposal.

2.2 Methodology

Article 5 of the EIA Directive (as amended by Directive 2014/52/EU) states that the information provided in an EIAR should include a description of the reasonable alternatives studied by the developer, which are relevant to the project and its specific characteristics, and an indication of the main reasons for the final choice, taking into account the environmental effects.

This chapter also includes a summary of reasonable alternatives which were considered for the proposed development of the subject lands. These options were considered as the scheme progressed and the key considerations and amendments to the design having regard to the key environmental issues pertaining to the lands are summarised in this section of the EIAR.

This section provides an overview as to how the proposed development has evolved to date by way of consideration of alternative designs and the iterative nature of the proposal now before the Planning Authority. Various options were considered as the scheme progressed and key considerations were incorporated into the evolving project design, having regard to the key environmental issues pertaining to the lands.

In summary, the design of the proposed development takes into account all environmental issues raised in respect to previous design alternatives and provides for a development that has been optimised to amplify positive environmental effects whilst reducing negative environmental impacts wherever possible. The proposed scheme is part of the wider development strategy for the lands but responds to the characteristics and constraints of the subject site vis a vis the previous iterations of the scheme and the alternative layouts considered.

2.3 Potential Impacts

There are a number of impacts that may arise during the construction phase and which are subject to assessment in the relevant chapters of the EIAR and related application documentation. This list is non-exhaustive but covers the major issues to be considered in the assessment of potential impacts of the development:

Section 2.4 outlines the principal element of the project. The purpose of this section is to provide a description of the principal elements of the proposed development during construction and operation. These include the following:

- Construction Stage (Land Use Requirements, Construction Activity & Significant Effects).
- Operation Stage (Processes, Activities, Materials Used).
- Secondary and Off-Site Developments.

2.4. Mitigation Measures

Having regard to the details of the construction stage of development, as described above, the following mitigation measures are considered relevant to Chapter 2 - Project Description and Alternatives. Each individual chapter deals with specific aspects of the proposed development and includes mitigation and monitoring measures where considered appropriate.

The Construction and Environmental Management Plan, which the building contractor will be contractually obliged to implement, will be implemented during construction of the development. It will remain a live document and may be updated as required. This Plan will reduce the impacts of the construction phase on local residents and ensure the local road network is not adversely affected during the course of the construction project, while methods such as those outlined in the pollution control section shall be implemented to mitigate any potential pollution events.

A Construction Waste Management Plan and Operational Waste Management Plan have been prepared in respect of the proposed development by DBFL and these will be implemented throughout construction and operation of the development. These Waste Management Plans meet the requirements of the Best Practice Guidelines for the Preparation of Waste Management Plans for Construction Projects.

2.5. Residual Impacts

Each Chapter of the EIAR includes a cumulative impact assessment of the proposed development with other existing, permitted, and planning projects in the immediate area. The potential cumulative impacts primarily relate to traffic, dust, noise and other nuisances from the construction of the development, with other planned or existing projects, and each of the following EIAR chapters has regard to these in the assessment and mitigation measures proposed.

3.0 POPULATION AND HUMAN HEALTH

3.1 INTRODUCTION

Population and Human Health comprise an important aspect of the environmental impact assessment to be undertaken by the competent authority. Any significant impact on the status of human health, which may be potentially caused by a development proposal, must therefore be comprehensively addressed.

Population and Human Health is a broad ranging topic and addresses the existence, activities and wellbeing of people as groups or 'populations'. While most developments by people will affect other people, this EIAR concentrates on those topics which are manifested in the environment, such as the construction of the development, new land uses, more buildings or greater emissions

The 2014 EIA Directive (2014/52/EU) has updated the list of topics to be addressed in an EIAR and has replaced 'Human Beings' with 'Population and Human Health'.

Population and Human Health is a broad ranging topic and addresses the existence, activities and wellbeing of people as groups or 'populations'. While most developments by people will affect other people, this EIAR document concentrates on those topics which are manifested in the environment, such as new land uses, more buildings or greater emissions.

3.2 Methodology

The European Commission's *Guidance on the preparation of the Environmental Impact Assessment Report* (2017) references the requirement to describe and, where appropriate, quantify the primary and secondary effects on human health and welfare.

This chapter addresses human health in the context of other factors addressed elsewhere in further detail within the EIAR where relevant. Relevant factors identified include inter alia water, air quality, noise, and the risk of major accidents and disasters.

The 2018 EIA Guidelines published by the DHPLG state that there is a close interrelationship between the SEA Directive and the 2014 EIA Directive. The Guidelines state that the term 'Human Health' is contained within both of these directives, and that a common interpretation of this term should therefore be applied.

To establish the existing receiving environment / baseline, site visits were undertaken to appraise the location and likely and significant potential impact upon human receptors of this proposed development. A desk-based study of published reference documents such as Central Statistics Office Census data, the ESRI Quarterly Economic Commentary, the *Regional Spatial and Economic Strategy for the Eastern and Midlands Regional Assembly, 2019*, the *Fingal County Development Plan 2017-2022* has also been undertaken. The Strategic Environmental Assessments (SEA) for the County Development Plan has also been reviewed, as it provides a consideration of Population and Human Health.

This chapter of the EIAR document focuses primarily on the potential likely and significant impact on population, which includes human, and human health in relation to health effects/issues and environmental hazards arising from the other environmental factors. Where there are identified associated and inter-related potential likely and significant impacts which are more comprehensively addressed elsewhere in this EIAR document, these are referred to. The reader is directed to the relevant environmental chapter of this EIAR document for a more detailed assessment.

3.3 Potential Impacts

This section provides a description of the specific, direct and indirect, impacts that the project may have on human health and population during both the construction and operational phases of the project. As stated, guidance documents from the EPA, the European Commission, and the Department of Housing, Planning and

Local Government outline that the assessment of impacts on population and human health should focus on the health issues and environmental hazards arising from the project. Additionally, this section addresses the population and socio-economic impacts of the project.

3.4 Mitigation Measures

Avoidance, remedial and mitigation measures describe any corrective or mitigative measures that are either practicable or reasonable, having regard to the potential likely and significant environmental impacts.

Construction Phase

A range of construction related remedial and mitigation measures are proposed throughout this EIAR document with reference to the various environmental topics examined and the inter-relationships between each topic. Readers are directed to Chapter 16 of this EIAR document which summarises all of the remedial and mitigation measures proposed as a result of this EIAR. In particular we note the mitigation measures set out in Chapter 7 Air Quality and Climate, Chapter 10 Noise and Vibration which primarily relate to the Construction and Environmental Management Plan. Further, the design of the construction programme and the location and layout of the construction compound and the storage of materials will be carefully planned to ensure that air quality impacts are minimised

For population and human health the following Mitigation Measure is proposed:

The Construction and Environmental Management Plan, which the building contractor will be contractually obliged to implement, will be implemented during construction of the development. It will remain a live document and may be updated as required. This Plan will reduce the impacts of the construction phase on local residents and ensure the local road network is not adversely affected during the course of the construction project, while methods such as those outlined in the pollution control section shall be implemented to mitigate any potential pollution events.

The Construction and Environment Management Plan has been prepared as part of the planning application which incorporates a range of integrated control measures and associated management activities with the objective of minimising the construction activities associated with the development.

Operational Phase

A package of integrated mitigation measures has been identified to off-set the additional local demand that the project at the subject site could potentially generate as a result of the forecast increase in vehicle movements by residents of the scheme.

A Mobility Management Plan (MMP) is to be compiled with the aim of guiding the delivery and management of coordinated initiatives by each of the two schemes' promoters. The MMP's ultimately seeks to encourage sustainable travel practices for all journeys, by residents and visitors travelling to and from the project.

The operation phase is considered to have likely positive impacts on human beings in relation to the provision of high quality housing including specifically open space, footpaths and cycle paths will improve the area. No further specific mitigation is required having regard to the mitigation included within the other chapters of this EIAR.

3.5 Residual Impacts

This section allows for a qualitative description of the resultant specific direct, indirect, secondary, cumulative, short, medium and long-term permanent, temporary, positive and negative effects as well as impact interactions which the proposed development may have, assuming all mitigation measures are fully and successfully applied. It should be noted that in addition to remedial and mitigation measures, impact avoidance measures have also been built into the project design processes through the assessment of alternatives described in Chapter 2 of this EIAR.

Construction

It is acknowledged that the construction phase of the project may have some short-term negative impacts on local residents. Such impacts are likely to be associated with construction traffic and possible nuisances associated with construction access requirements. In regard to economic activity, the phase may result in a marginally increased population in the wider area due to increased construction employment in the area; however, this would be temporary in nature and the impact would be imperceptible. The project could have a slight negative economic impact on the surrounding area during the construction phase due to traffic and associated nuisance, dust and noise.

Such impacts will be short term and any disturbance is predicted to be commensurate with the normal disturbance associated with the construction activity where a site is efficiently, sensitively, and properly managed having regard to neighbouring activities. The construction methods employed and the hours of work proposed will be designed to mitigate potential impacts to nearby residents. A Construction and Environmental Management Plan has been prepared by DBFL and is submitted with this planning application and reflects the mitigation measures set out within. Therefore it is considered that no negative impacts are predicted.

In terms of human health, based on the above considerations, it is anticipated that subject to the careful implementation of the remedial and mitigation measures proposed throughout this EIAR document, and as controlled through the Construction and Environmental Management Plan (CEMP), prepared by DBFL, any adverse likely and significant environmental impacts will be avoided. The overall predicted likely and significant impact of the construction phase will be short-term, temporary and likely to be neutral.

Operation

The project will result in a permanent positive impact on the population through additional housing at a suitable density on appropriately located and zoned site. It also includes, public and communal open space, completion, creche, lighting, landscaping, water services, pedestrian and bicycle paths.

Once complete the addition of new residents and an additional element employment to the area will improve the vibrancy and vitality of the area and will help to support existing community and social infrastructure. The delivery of well-designed residential units at an appropriate location which will be facilitated by the proposed infrastructural development will have a direct, positive, and significant impact on the future residents of the project will support the population growth targeted for the Skerries area

The project will result in a significant permanent change to the lands. The adequate provision of high-quality housing to serve the existing and future population of the county and the wider Dublin area is an important prerequisite and contributor to the establishment and maintenance of good human / public health there will positively impact the population. High quality open space, footpaths, bicycle paths, childcare facilities are also provided with new linkages provided through the site improving connectivity.

Future residents will spend a portion of their income locally which would not happen without the project. The SHD also provides for a childcare facility. The project will provide some long term job opportunities for people living in the area, in addition to those construction and development jobs provided during the construction phase.

Having regard to the fact that the area within which the development is situated benefits from a good level of social and community infrastructure, and noting the elements of the project which will improve and strengthen this infrastructure, it is concluded that the project will precipitate a moderate, positive, long term impact on social patterns in the operational phase.

As such the project will result in a positive impact on housing and is not likely to result in any significant adverse effects on human health, and will result in some other positive impacts, including settlement patterns of a sustainable density at an appropriate location.

4.0 ARCHAEOLOGY AND CULTURAL HERITAGE

4.1 INTRODUCTION

This chapter has been compiled by Faith Bailey and Jacqui Anderson of IAC Archaeology, to ascertain the potential impact of the proposed development on the archaeological and cultural heritage resource that may exist within the project and study area.

The proposed development area is located in the townland of Milverton within the parish of Holmpatrick and barony of Balrothery East. The site comprises five open fields bounded by the townland boundary between Milverton and Townparks to the northeast; the townland boundaries between Milverton and Hacketstown and Milverton and Holmpatrick to the southeast and a railway line to the west. There are three archaeological sites within a 500m radius of the proposed development area, the closest of which comprises a cist (DU005-032), c. 200m to the west.

4.2 METHODOLOGY

A review of the Excavations Bulletin (1970–2021) has revealed that the proposed development area has been subject to a geophysical survey and test-trenching that identified the remains of disused field systems dating from the 19th/20th centuries (Licence 06R0133, 06E0889, 10E0111). Evidence of a Bronze Age domestic site and a central burial site was uncovered during monitoring to the north of the proposed development area. Analysis of historic maps has shown that the proposed development area remained as open fields throughout the post-medieval period, bordered by the demesne of Hacketstown House to the southeast and later by the route of the Dublin and Drogheda Railway to the west.

An inspection of the aerial photography failed to identify any previously unknown archaeological features within the site; however, it did note that the northern half of Field 4 was disturbed in 2016 by the development to the immediate north.

A field inspection has been carried out as part of this assessment, during which no previously unrecorded sites or areas of archaeological or cultural heritage potential were noted.

4.3 PREDICTED IMPACTS

Geophysical survey and archaeological testing have previously been carried out within the proposed development area. No features of archaeological potential were identified during the course of these works, although prehistoric features were identified during works to the immediate north. It remains possible that ground disturbances associated with the proposed development area may have a direct and negative effect on isolated archaeological features that may exist outside of the footprint of the excavated test trenches. Effects may range from moderate to significant in significance, dependant on the nature, extent and significance of any identified remains. No impacts are predicted upon the three recorded archaeological sites located within the study area. This is due to the fact that DU005-032 (cist) has been quarried away and is no longer extant. The remaining sites are located over 390m away from the proposed development and the distances means that the setting of these monuments will not be affected.

4.4 MITIGATION

Topsoil stripping associated with the proposed development will be monitored by a suitably qualified archaeologist, which will ensure the identification of any small archaeological features that may survive within the site. If any features of archaeological potential are discovered during the course of the works further archaeological mitigation will be required, such as preservation in-situ or by record. Any further mitigation will require approval from the National Monuments Service of the Department of Housing, Local Government and Heritage (DoHLGH).

4.5 RESIDUAL IMPACTS

Following the completion of the above mitigation measures, there will be no significant residual impacts upon the archaeological or cultural heritage resource.

The surrounding proposed and permitted developments have been assessed in relation to the archaeological and cultural heritage resource and the proposed development. Following the application of mitigation measures,

there will be no cumulative impact upon the archaeological resource as any archaeological remains that are present within the proposed development area will be preserved by record.

5.0 BIODIVERSITY

5.1 Introduction

The Biodiversity assessment has been undertaken by Altemar Limited. It assesses the biodiversity value of the proposed development area and the potential impacts of the development on the ecology of the surrounding area and within the potential zone of influence (ZOI).

5.2 Study Methodology

A pre-survey biodiversity data search was carried out. This included examining records and data from the National Parks and Wildlife Service (NPWS), National Biological Data Centre (NBDC) and the Environmental Protection Agency (EPA), in addition to aerial, 6 inch maps and satellite imagery. A habitat survey of the site was undertaken within the appropriate seasonal timeframe for terrestrial fieldwork. Field surveys were carried out as outlined in Table 5.1. All surveys were carried out in the appropriate seasons.

Table 1. Field Surveys

Area	Surveyors	Survey Dates
<i>Terrestrial Ecology/ Aquatic Ecology</i>	Bryan Deegan (MCIEEM) of Altemar	28 th May 2020 12 th September 2020 12 th August 2021
<i>Bat Survey</i>	Bryan Deegan (MCIEEM) of Altemar	28 th September 2019/ 12 th September 2020
<i>Mammal /Wintering Bird/ Amphibian Survey</i>	Bryan Deegan (MCIEEM) of Altemar	17 th March 2020/ 3 rd March 2021

The assessment also extends beyond the immediate development area to include those species and habitats that are likely to be impacted upon by the project. There is a drainage ditch within the proposed development site and there are proposed works that will impact upon this drainage ditch. The potential zone of influence (ZOI) was set at a radius of 2km from the proposed Project. Where there was a potential for the ZOI to be influenced by natural biodiversity corridors e.g. rivers or woodland these were also taken into account and the assessment was extended.

5.3 The Existing Receiving Environment

Designated sites

There are three European sites (Rockabill to Dalkey Island SAC – 2.8km, Skerries Islands SPA – 1.0km, Rockabill SPA – 3.4km) within 5km and one National conservation site within one kilometre of the proposed development site (Skerries Islands NHA). It is important to note that the nearest site with a direct hydrological pathway downstream is a minimum of 1.0 Km. Significant settlement, dilution and mixing would occur within the marine environment prior to reaching the designated sites. However, at low tide there is potential pathway to Skerries Island SPA from the water entering the intertidal from Mill Stream and the drainage ditch on site.

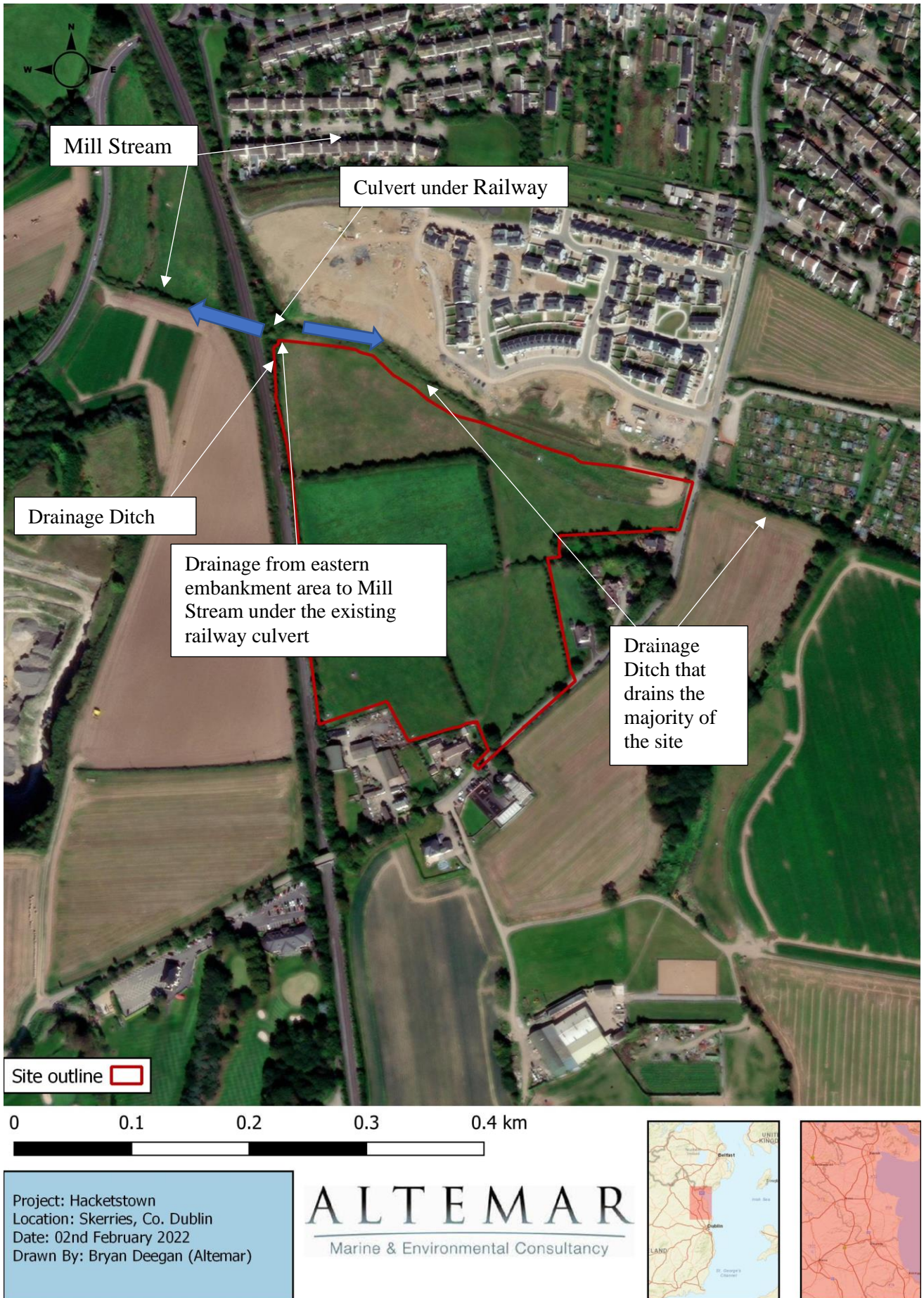


Figure 5.1 – Watercourses (drainage ditch on site entering the Mill Stream and Irish Sea directly).

Species data.

It should be noted that no species of conservation importance were noted on site, based on NPWS and NBDC records as fine resolution.

Site Survey

Site assessments were carried out on the 28th September 2019, 17th March 2020, 28th May 2020, 12th September 2020 and the 12th August 2021. Habitats within the proposed development site were classified according to Fossitt (2000) based on the 12th August 2021 assessment and the species noted within each habitat are described. Bat surveys, that included a bat emergent/detector survey were also carried out on the 28th September 2019 and the 12th September 2020.

Evaluation of Habitats

The proposed development site is primarily a series of agricultural grassland surrounded by hedgerows in addition to grassland areas that have undergone recent construction activity and reprofiling. The drainage ditch (acting as a biodiversity corridor) and hedgerows would be seen as the most important habitats on site, not because of the species noted but, by the linear nature of the elements providing biodiversity corridors and bat foraging routes to the surrounding areas. No other habitats of conservation significance were noted within the site outline.

Plant Species

The plant species encountered at the various locations on site are detailed above. No rare or plant species of conservation value were noted during the field assessment. Records of rare and threatened species from NBDC and NPWS were examined. No rare or threatened plant species were recorded in the vicinity of the proposed site. No invasive plant species that could hinder removal of soil from the site during groundworks, such as Japanese knotweed, giant rhubarb, Himalayan balsam or giant hogweed were noted on site.

Terrestrial Mammals

Badgers have been noted within the 10km² grid by the NPWS. No badgers or badger activity was noted on site. Otters (*Lutra lutra*) activity or holts were not noted on site. No evidence of deer was noted on site. Hedgehogs (*Erinaceus erinaceus*) have been recorded by NPWS within the 10km square. No hedgehogs were seen during the site visit, but may be present on site. No protected terrestrial mammals including those covered under Annex IV of the Habitats Directive, (with the exception of the soprano pipistrelle activity) were noted on site or in the immediate vicinity of the site. Evidence of rabbit and fox activity was noted on site.

Bats

There were no seasonal or climatic constraints as surveys were undertaken within the active bat season in good weather conditions with temperatures of 13°C and 16°C after dark. Winds were very light and there was no rainfall. No evidence of a bat roosts was found in any of the onsite trees. Emergent and detector surveys were carried out. No bats were noted emerging from onsite trees. Foraging activity of soprano pipistrelle (*Pipistrellus pygmaeus*) was noted along the hedgerows of the site. Mitigation measures are proposed to compensate for the loss of foraging area on site.

Amphibians/Reptiles

The common frog (*Rana temporaria*) was not observed on site. However, frogspawn was noted beside the drainage ditch. There are features within the site boundary that could be important to frogs including the wet grassland and drainage ditch. The common lizard (*Zootoca vivipara*) or smooth newt (*Lissotriton vulgaris*) were not recorded on site.

Birds

No rare or bird species of conservation value were noted during the field assessment. As outlined in Wintering Bird Survey Report "*Curlew, Brent geese and lapwing were observed travelling over the proposed development towards improved grassland to the northwest and southwest. These fields comprise short grasses such as those on the Skerries golf course, which are favourable to this species. No target species were observed foraging on the grassland of this proposed development area, which comprises semi-natural grassland with grass sward heights that are longer than that preferable by most target species.*"

5.4 Potential Impact of the Proposed Development

In the absence of mitigation, the construction of the proposed development, would impact on the existing ecology of the site and the surrounding area. These construction impacts include impacts that may arise during the site

clearance, re-profiling of the site and the building phases of the proposed development including the works proximate to and within the drainage ditch.

In the absence of mitigation measures, there is potential for silt laden and contaminated runoff. In addition, a drainage ditch is on site running from west to east. Furthermore, there is a watershed at the eastern edge of the rail embankment into which a culvert runs from east to west under the rail line and potentially carries run-off from the embankment area towards the Mill Stream (Skerries_010). There is potential for silt laden runoff and contamination to enter both the onsite watercourse and Mill Stream (Skerries_10) with potential for downstream impacts.

Construction phase mitigation measures are required on site particularly as there is a drainage ditch proximate to the proposed development and as significant reprofiling of the site is proposed which will remove all existing terrestrial habitats and can lead to silt laden and contaminated runoff.

Designated Conservation sites

The proposed development is not within a designated conservation site. It should be noted that there is a direct hydrological pathway to the Skerries Islands SPA, located downstream of the proposed development site. There are no features of interest of this conservation site that would be expected to be or have been seen on the proposed development site. Noise from the site during construction and operation would be localised and would not be expected to extend to designated sites. As outlined in Appendix II “*Of the SCI species listed for the SPAs within the ZOI, only brent goose, herring gull and lesser blackbacked gull were observed within 500m of the proposed development. The proposed development is not within an SPA, however given the proximity of a number of SPAs, there may be potential for impacts to result during construction and operational phases of the proposed development on birds which are associated with these SPA. Potential impacts could include:*

Disturbance/displacement during the construction and operational phases of the proposed development to Special Conservation Interest of the SPA including through movement of machinery, personnel, noise, vibration and/or noise associated with domestic dwellings. Water pollution

The maximum likely distance at which disturbance will impact SCIs from an SPA is 300m (Cutts et al.,2013) from the proposed development boundary. Given the separation distance from the SPAs, disturbance impacts within an SPA are not anticipated. However, given the proximity of the proposed development to areas of suitable feeding/roosting habitat (e.g. Skerries golf club), disturbance/displacement impacts during the construction phase on these areas cannot be ruled out. The proposed housing scheme may result in disturbance of SCI's of the adjacent SPA, which utilize the areas surrounding the proposed development for feeding and roosting. However, it is likely that habituation will occur to this new source of disturbance given that the SCIs of the SPA are already accustomed to the disturbance associated with Skerries town and existing surrounding housing developments.”

Runoff during site demolition, re-profiling, the construction and operation of project elements could impact the onsite drainage ditch and Mill Stream (Skerries_10), with water quality or downstream impacts on Skerries Islands SPA, at low tide, 1.0 km from the proposed development site. Impacts on the onsite watercourse and Mill Stream (Skerries_10) would be seen as the primary vector for impacts on conservation sites.

Biodiversity

The impact of the development during construction phase will be a loss of existing habitats and species on site. It would be expected that the flora and fauna associated with these habitats would also be displaced.

Terrestrial mammalian species

No protected terrestrial mammals were noted on site. Loss of habitat and habitat fragmentation may affect some common mammalian species.

Potential Impacts: Low adverse / site / Negative Impact / Not significant / short term. Mitigation is needed in the form of a standard pre-construction site inspection prior to construction commencing on site.

Flora

No protected flora was noted on site. Site clearance will remove the flora species on site including hedgerows.

Potential Impacts: Medium adverse / site / Negative Impact / Not Significant / Short term

Bat Fauna

As bats are not roosting on site, no specific mitigation measures are required in relation to confirmed roosts and a derogation licence is also not required for the felling of trees. An ash tree (18) is deemed to be of bat roosting potential and is to be felled. As a precaution a pre construction inspection of this tree should be carried out. Light spill during construction has the potential to impact on foraging.

Potential Impacts: Low adverse / site / Negative Impact / Not significant / short term. Mitigation is needed in the form of a pre-construction inspection of tree 18 and control of light spill during construction.

Amphibians-Frogs

Frog activity was noted just outside the site outline in the wet grassland. The drainage ditch on site which is ideal frog habitat, would be susceptible to silt and petrochemicals from works on site..

Potential Impacts: Low adverse / site / Negative Impact / Not significant / short term. Mitigation is needed in the form of a pre-construction inspection and control of light spill during construction.

Aquatic Biodiversity

Construction is likely to result in the silt and petrochemicals entering drain on site with downstream impacts on aquatic biodiversity. As outlined in consultation with IFI (Appendix II) “, the drain “has little or no significant fisheries value.”

Potential Impacts: Moderate adverse / local / Negative Impact / short term. Mitigation is needed in the form of control of silt and petrochemical and dust during construction.

Bird Fauna

Clearance, reprofiling and construction of the site will result in the loss of nesting and foraging habitat for birds of conservation importance. As outlined in Appendix III “No target species were observed foraging on the grassland of this proposed development area, which comprises semi-natural grassland with grass sward heights that are longer than that preferable by most target species” In addition, “*Of the SCI species listed for the SPAs within the ZOI, only brent goose, herring gull and lesser blackbacked gull were observed within 500m of the proposed development. The proposed development is not within an SPA, however given the proximity of a number of SPAs, there may be potential for impacts to result during construction and operational phases of the proposed development on birds which are associated with these SPA. Potential impacts could include:*

Disturbance/displacement during the construction and operational phases of the proposed development to Special Conservation Interest of the SPA including through movement of machinery, personnel, noise, vibration and/or noise associated with domestic dwellings.

Water pollution

The maximum likely distance at which disturbance will impact SCIs from an SPA is 300m (Cutts et al.,2013) from the proposed development boundary. Given the separation distance from the SPAs, disturbance impacts within an SPA are not anticipated. However, given the proximity of the proposed development to areas of suitable feeding/roosting habitat (e.g. Skerries golf club), disturbance/displacement impacts during the construction phase on these areas cannot be ruled out. The proposed housing scheme may result in disturbance of SCI's of the adjacent SPA, which utilize the areas surrounding the proposed development for feeding and roosting. However, it is likely that habituation will occur to this new source of disturbance given that the SCIs of the SPA are already accustomed to the disturbance associated with Skerries town and existing surrounding housing developments.”

Potential Impacts: Slight Adverse not significant/National -International/Negative/Moderate effects/Long term/likely. Mitigation is needed in relation to the ensuring the removal of woody vegetation only outside of bird nesting season.

Operational Impacts

Once constructed all onsite drainage will be connected to separate foul and surface water systems. Surface water runoff will comply with SUDS. The biodiversity value of the site would be expected to improve as the landscaping matures, particularly in the drainage ditch buffer zone. It would be expected that the ecological impacts in the long term would be positive once landscaping has established.

Designated Conservation sites within 15km

The development has the potential to cause pollution via surface water and downstream impacts. No significant impacts on designated sites are likely during operation. There will be increased activity on site which will cause localised disturbance within the site. As outlined in Appendix II “*The proposed housing scheme may result in disturbance of SCI's of the adjacent SPA, which utilize the areas surrounding the proposed development for feeding and roosting. However, it is likely that habituation will occur to this new source of disturbance given that the SCIs of the SPA are already accustomed to the disturbance associated with Skerries town and existing surrounding housing developments.*” In addition, it should be noted that the Skerries Golf Club is located on the far side of the railway embankment which is vegetated and would reduce the impact of noise and lighting from the proposed development. No mitigation in relation to noise or disturbance is required during operation.

Potential Impacts: Low Adverse / International / Not significant / long-term. Standard operational measures are required in relation to silt and petrochemical interception.

Biodiversity

Biodiversity value of the site will improve as landscaping matures.

Terrestrial mammalian species

No protected terrestrial mammals were noted on site.

Potential Impacts: Low adverse / site / Negative Impact / Not significant / long term.

Flora

No protected flora was noted on site. Landscaping will increase flora diversity on site. A 10m wide riparian buffer will be landscaped as per landscape plan

Potential Impacts: Low Adverse/Site/Negative/Not Significant/Long term/permanent. Positive impacts would be seen in the vicinity of the riparian corridor.

Bat Fauna

The proposed development will change the local environment as new structures are to be erected and the existing vegetation will be removed. No bat roosts will be lost due to this development and the species expected to occur onsite should persist. Some foraging areas may be lost. As landscaping matures in the riparian corridor foraging activity would also be expected to increase. Lighting has been discussed and modified during design to limit the potential impact on bat foraging.

Potential Impacts: Low adverse / International / . Negative Impact / Not significant / long term. Mitigation is required in the form of bat boxes.

Aquatic Biodiversity

Operation will have no significant effects on this habitat. Lighting of the riparian buffer will comply with bat lighting guidelines. Standard controls will be in place. Standard controls in relation to silt and petrochemicals are required.

Potential Impacts: Low adverse / local / Negative Impact / Not significant / long term

Bird Fauna

Operation will result in increased activity in the area. The maintenance of the riparian buffer and hedgerows are seen as beneficial to birds on site. Given the location of the SPA 1km from the proposed development and the location of the Skerries Golf Course on the far side of the elevated railway line

Potential Impacts: Low adverse / site / Negative Impact / Not significant / long term.

5.5 Avoidance, Remedial & Mitigation Measures

Construction and operational Mitigation Measures will be incorporated into the proposed development project to minimise the potential negative impacts on the ecology within the Zone of Influence (Zoi) including the onsite drainage ditch, Mill Stream (Skerries_10) and Skerries Islands SPA. Construction phase mitigation measures are required on site particularly as significant reprofiling of the site is proposed which will remove all existing terrestrial habitats and can lead to silt laden and contaminated runoff. In addition, there is an existing drainage ditch that runs west to east across the northern boundary of the development site which will be impacted by the development of the site. There is potential for silt laden runoff and contamination to enter the watercourse with potential for downstream impacts. Compliance with the Water Pollution Acts would be seen as the primary method of ensuring no significant impact on designated conservation sites. Mitigation measures are required to ensure compliance with the Water Pollution Acts and prevent downstream impacts. These are outlined in the EIAR.

Dust may enter the onsite drainage ditch via air or surface water with potential downstream impacts. Mitigation measures will be carried out reduce dust emissions to a level that avoids the possibility of adverse effects on the onsite watercourse .

“Relevant guidelines and legislation (Section 40 of the Wildlife Acts, 1976 to 2012) Should this not be possible, a pre-works check by a qualified ecologist should be undertaken to ensure nesting birds are absent.

In relation to bats the landscaping should provide unlit replacement foraging corridors for bat species within the drainage ditch buffer zone. Tree planting should be done in consultation with the onsite ecologist to reinstate foraging corridors. Lighting at all stages should be done sensitively on site with no direct lighting of hedgerows, treelines and drainage ditch, swale and buffer zone.

Additional protection measures on site will be required in relation to noise and if works are to be carried out during frog breeding season.

5.6 Predicted Impact of the Proposed Development

Construction and operational mitigation measures will be carried out. These will ensure that water entering the onsite drainage ditch (which flows east) and the Mill Stream (which flows to the west), is clean and uncontaminated. Given the proximity of numerous sensitive receptors and the drainage ditch leading to the Skerries Islands SPA, the early implementation of ecological supervision on site at initial mobilisation and enabling works is seen as an important element to the project, particularly in relation to the implementation of surface water runoff mitigation. Bats are foraging on site and frogspawn was noted in the vicinity of the drainage ditch (bordering the northern boundary). The landscape strategy within the drainage ditch buffer zone is important to offset the loss of hedgerows and foraging areas for bats

With the successful implementation of mitigation measures to limit, noise during construction, surface water impacts on the drainage ditch and watercourse (Mill Stream) in addition to biodiversity mitigation/supervision and the successful installation and initiation of the foul treatment system, no significant impacts are foreseen from the construction or operation of the proposed project. Residual impacts of the proposed project will be localised to the immediate vicinity of the proposed works. Positive impacts will be seen through the implementation of an improved drainage ditch buffer with greater potential for biodiversity than currently exists on site.

The construction and operational mitigation proposed for the development satisfactorily addresses the mitigation of potential impacts on biodiversity and designated conservation sites through the application the construction and operational phase controls, including ecological monitoring. In particular, these mitigation measures will satisfactorily address the potential impacts from noise and on downstream biodiversity and designated sites. No significant adverse impacts on the conservation objectives of Natura 2000 sites are likely following the implementation of the mitigation measures outlined above.

The mitigation measures will be complied with, to ensure that the proposed development does not have noise or "downstream" environmental impacts. These measures are to protect the groundwater/surface water, which are potentially the primary vectors of impacts from the site, and ensure that it is not impacted during construction and /or operational phases of the proposed development.

5.7 Residual Impacts Conclusion

The construction and operational mitigation proposed for the development satisfactorily addresses the mitigation of potential impacts on the sensitive receptors through the application of construction and operational phase controls. The overall impact on the ecology of the proposed development will result in a slight Adverse / not significant impact on the ecology of the area and locality overall. This is primarily as a result of the loss of terrestrial habitats including hedgerows on site, supported by the creation of an improved biodiversity focused riparian corridor, additional biodiversity features, standard construction and operational controls and a sensitive native landscaping strategy. The implementation of SUDS drainage on site with riparian features will be beneficial to the onsite drainage ditch. It is considered that in combination effects with other existing and proposed developments in proximity to the application area would be unlikely, neutral, not significant and localised.

6.0 LANDSCAPE AND VISUAL IMPACT

6.1 INTRODUCTION

The Landscape and Visual Impact Assessment (LVIA) was prepared by Richard Butler of Model Works Ltd. Richard has degrees in Landscape Architecture and Town Planning, is a member of the Irish Landscape Institute and the Irish Planning Institute and has 20 years' experience in development and environmental planning, specialising in LVIA.

The LVIA was prepared with reference to the Landscape Institute's *Guidelines for Landscape and Visual Impact Assessment*, 2013 (GLVIA), the EPA draft *Guidelines on the Information to be Contained in Environmental Impact Assessment Reports*, 2017 and the European Commission *Guidance on the Preparation of the Environmental Impact Assessment Report*, 2017.

6.2 THE RECEIVING ENVIRONMENT (BASELINE SITUATION)

6.2.1 The Site

The site is located in Hacketstown on the southern fringe of the Skerries urban area, approximately 1km from the town centre. It is a greenfield land parcel comprised of several grassland fields divided by hedgerows. The landform is a key characteristic of the site. The southern area is relatively high lying and flat, while the northern area falls steeply into a stream valley just outside the northern boundary of the Proposed SHD site.

The valley of the stream is the subject of a separate Section 34 application for 'Advance Infrastructure Works (AI Works) to facilitate the Proposed SHD site's development. The AI Works application (Reg. Ref. F21A/0287) was permitted by Fingal County Council (FCC) and is currently under appeal to An Bord Pleanála (Ref. ABP-312189).

The site is zoned RA (Residential Area, to "provide for new residential communities subject to the provision of the necessary social and physical infrastructure") in the Fingal Development Plan 2017-2023 (the FDP).

6.2.2 Surrounding Lands

The site of the AI Works lies immediately to the north of the SHD Project site. The AI Works comprises (a) a new road connection across the valley linking the site to the existing Ballygossan Park estate and the Golf Links Road, (b) the Regional Drainage Facility for the Hacketstown lands, comprised of two wide, shallow depressions for water attenuation, (c) the planting of the valley area as an 'ecological corridor', and (d) elements of the future network of footpaths through the valley parkland area. The AI Works would thus facilitate the development of the SHD Project site, providing key elements of the road and pedestrian circulation network, the drainage infrastructure and the public open space for the area.

To the north across the valley is another RA-zoned area of land (on the northern half of the now expired Hacketstown LAP lands). The eastern part of this area has been developed as a housing estate (Ballygossan) comprised of terraced and semi-detached houses. The western part of the area is the subject of a separate LRD planning process. The existing Ballygossan Park estate and the future LRD development are key potential receptors of landscape and visual change on the Project Site.

Golf Links Road curves around the east and south sides of the site. The site has frontage to the road along two stretches: (a) along the easternmost boundary as the road crosses the valley, and (b) for a stretch along the southern boundary. The road users are the largest cohort of potential visual receptors of change, although road users approaching/departing an urban area are generally of low-medium sensitivity. The remainder of the eastern and southern boundary is shared with four residential properties and one farm (in the south west corner). These houses can be considered key receptors of change on the site. The lands across Golf Links Road from the site are

zoned Green Belt in the FDP. The only current land use apart from agricultural use in this area is a small primary school.

The railway line linking Skerries to Dublin runs along the long west boundary of the site. The railway corridor including its densely vegetated embankments forms a barrier in the landscape, restricting movement and visibility across the line. The railway forms the western boundary of the Skerries urban area. West of the site across the railway line is an area of tillage fields and a large quarry (Roadstone Milverton). This area is zoned Rural in the FDP. There are few sensitivities in this area and the railway line forms a visual barrier in views towards the site.

6.3.3 Landscape Character

The site and environs fall into the 'Coastal Character Type' as defined in the FDP. The FDP states:

"The Coastal Character Type forms the eastern boundary of the County and contains a number of important beaches, islands and headlands that together create a landscape of high amenity and landscape value. A number of important settlements are located within this area, including Balbriggan, Skerries, Rush, Malahide, Portmarnock and Howth. The land is generally low lying, with the exception of some prominent headlands and hills in the northern part of the area, Howth and the offshore islands...

"The Coastal Character Type is categorised as having an exceptional landscape value. This value is arrived at due to the combination of visual, ecological, recreational and historical attributes. The area has magnificent views out to sea, to the islands and to the Mourne and Wicklow mountains and contains numerous beaches and harbours."

The Coastal Character Type is identified in the FDP as having a high sensitivity to development. It is important to note that the entire urban area of Skerries (as well as the other coastal towns of Balbriggan, Rush, Malahide, Portmarnock and Howth) falls into the Coastal Character. Therefore, urban development per se is not precluded from the Highly Sensitive area, as that would preclude any further development/expansion of the existing urban areas - although it is required to be sensitively located and designed.

6.4 POTENTIAL IMPACT OF PROPOSED DEVELOPMENT – LANDSCAPE

6.4.1 Zone of Influence

The areas/receptors most susceptible to change on the site (i.e. its main zone of influence) are (a) the Golf Links Road as it passes to the east and south of the site, (b) the Ballygossan Park Phase 1 estate to the north of the site, and (c) the existing houses and a farm on the west/north side of Golf Links Road. These neighbouring properties on the west/north side of the road all fall into the area zoned RA, 'contained' between Golf Links Road and the railway line to the west. Two of the houses in particular share boundaries with the site and are highly exposed to any change on the site.

6.4.2 Landscape Sensitivity

Informed by the analysis of the receiving environment and relevant policy **the landscape sensitivity of the receiving environment can be classified 'medium'** (definition: *Areas where the landscape has certain valued elements, features or characteristics but where the character is mixed or not particularly strong, or has evidence of alteration, degradation or erosion of elements and characteristics. The landscape character is such that there is some capacity for change. These areas may be recognised in landscape policy at local or county level and the principle management objective may be to consolidate landscape character or facilitate appropriate, necessary change*). The classification of medium sensitivity is based on the following:

- There are sensitivities in the area, notably (a) the stream, the vegetation and the valley topography to the north of the site (this area is the site of the AI Works application); (b) the trees along the railway line to the west; (c)

a vernacular cottage on an adjacent property to the east; and (d) the other houses and the farm that share parts of the site's eastern and southern boundaries.

- It is recognised that the site and receiving environment fall into the Coastal Landscape Character Type, which is identified as Highly Sensitive in the FDP. However, the GLVIA states as follows:

“Landscape receptors need to be assessed firstly in terms of their sensitivity, combining judgements of their susceptibility to the type of change or development proposed and the value attached to the landscape. In LVIA sensitivity is similar to the concept of landscape sensitivity used in the wider arena of landscape planning, but it is not the same as it is specific to the particular project or development that is being proposed and to the location in question.”

The above is relevant because (a) the site lies adjacent to the urban area of Skerries, which lies entirely – along with the site – in the Coastal Landscape Character Type, (b) the site is zoned for residential development in the FDP (the site is thus valued as a residential land use asset; its development for residential use has been deemed an acceptable landscape change through the process of Strategic Environmental Assessment carried out during the preparation of the FDP), and (c) the proposed development is a residential development.

Therefore, notwithstanding the site's location in the Coastal Landscape Character Type, for the purpose of this assessment – and in accordance with the GLVIA - the landscape is classified as being of medium sensitivity (to the type of development proposed).

6.4.3 Construction Phase

6.4.3.1 Magnitude of Landscape Change

During construction the site and immediate environs would be disturbed by construction activities and haulage. There would be HGV movements on the surrounding roads and on the site there would be construction equipment, materials, vehicles and activity, and the incremental growth of the buildings. Construction is an inherently unsightly phase in the development process. The effects would be largely limited to the immediate environs (principally the neighbouring residential properties along Golf Links Road, the existing Ballygossan Park Phase 1 estate, and the users of the Golf Links Road).

The magnitude of landscape change would be medium in the immediate environs. While the level of landscape disturbance would be high, the medium classification takes account of the fact that this would be temporary; the construction phase is expected to be 24 months in duration. The change would decrease with distance from the site.

6.4.3.2 Significance of Effects

Measuring the magnitude of change against the landscape sensitivity, the significance of the landscape effects during construction is predicted to be moderate negative in the immediate environs (the neighbouring residential properties along Golf Links Road, the existing Ballygossan Park estate, and the users of the Golf Links Road). The moderate significance classification takes account of the fact that the effects would be temporary. The significance of the effects would reduce with distance from the site.

6.4.4 Operation Phase

6.4.4.1 Magnitude of Landscape Change

The landscape of the large greenfield site would be permanently transformed by the construction of a new mixed density residential neighbourhood on the former agricultural fields. The internal hedgerow vegetation would be removed, the topography altered to accommodate the buildings and infrastructure, and the lands occupied by streets,

blocks, a variety of building types and public realm/landscaping of urban character. The development would change the landscape character of Hacketstown from peri-urban to urban – reinforcing the change initiated by Ballygossan Park Phase 1 – incorporating the area into the townscape of Skerries. The landscape receptors most affected by the change would be the neighbouring residential properties along Golf Links Road, the existing Ballygossan Park estate, and the users of the Golf Links Road.

Taking account of the fact that the transformation of the Hacketstown landscape has been initiated by the construction of Ballygossan Park Phase 1, and that the change is supported by the FDP, **the magnitude of landscape change can be classified medium** (definition: *Change that is moderate in extent, resulting in partial loss or alteration to key elements, features or characteristics of the landscape, and/or introduction of elements that may be prominent but not necessarily substantially uncharacteristic in the context. Such development results in change to the character of the landscape*).

6.4.4.2 Significance of Effects

Measuring the magnitude of change against the sensitivity of the receiving environment, **the significance of the landscape impacts would be moderate**. To inform the classification of the landscape effects as positive, neutral or negative, the proposal has been assessed against the relevant criteria in the Urban Design Manual – A Best Practice Guide (2009). The assessment indicates that the proposal complies with the relevant criteria of the Urban Design Manual. **The landscape effects can thus be classified positive**.

6.5 POTENTIAL IMPACT OF PROPOSED DEVELOPMENT – VISUAL AMENITY

11 no. viewpoints were selected for assessment the proposed development's visual effects. The viewpoints represent the key landscape character areas and groups of visual receptors in the receiving environment. The selection is also intended to provide visualisations from a range of angles and distance from the site.

The assessment should be read in conjunction with the verified photomontages provided under separate cover. For each viewpoint three images are provided:

- Baseline view – A photograph of the existing environment.
- Proposed view – Photomontage showing the proposed development and the proposed AI Works. (The two proposed developments are interlinked; showing the proposed development without the proposed AI Works would not be a realistic scenario.)
- Cumulative view – Photomontage showing the proposed development, the proposed AI Works, and the proposed Ballygossan Park Phase 2 development. (The proposed Ballygossan Phase 2 development is shown at its current pre-planning stage in the LRD process. It is therefore subject to change, but represents a likely future scenario.)

The potential visual effects during construction and operation are summarised in Table 6.1 below. The potential cumulative effects with the proposed AI Works and proposed Ballygossan Park Phase 2 development are also assessed.

Table 6.1: Summary of residual visual effects (construction and operational phases)

Viewpoint Location	Viewpoint Sensitivity	Proposed Development CONSTRUCTION PHASE (Temporary)		Proposed Development OPERATION (Permanent)		Cumulative Developments (with proposed AI Works & Ballygossan Park Phase 2)	
		Magnitude of Change	Significance of Effects	Magnitude of Change	Significance of Effects	Magnitude of Change	Significance of Effects
01 Golf Links Road approaching entrance to Ballygossan Park	Medium	Medium	Moderate Negative	Medium	Moderate Positive	High	Significant Positive
02 Golf Links Road east of the site	Medium	Medium	Moderate Negative	Medium	Moderate Positive	Medium	Moderate Positive
03 Golf Links Road beside house neighbouring the site	High	High	Significant Negative	High	Significant Negative	None	n/a
04 Golf Links Road at site entrance	Medium	Very High	Significant Negative	Very High	Significant Positive	None	n/a
05 Golf Links Road west of the railway line	Medium	Negligible	Not Significant Negative	Negligible	Not Significant Neutral	None	n/a
06 Golf Links Road approaching the site from the west - St Michael's school	Medium	Low-Medium	Moderate Negative	Low-Medium	Moderate Neutral	None	n/a
07 Golf Links Road at south west corner of site	Medium	High	Significant Negative	High	Significant Positive	None	n/a
08 Ballygossan Park	Medium	Medium-High	Significant Negative	Medium-High	Significant Positive	Medium-High	Significant Positive
09 Railway footpath entry into Ballygossan Park	Medium	Medium-High	Moderate Negative	Medium-High	Moderate Positive	Very High	Significant Positive
10 Tougher Hill - west of the site	Medium	Negligible	Not significant Negative	Negligible	Not significant Neutral	Medium	Moderate Positive
11 R128 Rush Road east of the site	Medium	Negligible	Not significant Negative	Negligible	Not significant Neutral	Low	Slight Neutral

The key findings of the visual effects assessment are as follows:

- A combination of the topography of the site and the wider landscape, the land use pattern and the mature vegetation along the railway corridor and Golf Links Road restricts the number of visual receptors potentially affected by the proposed development.
- The only significant visual effects would be experienced by three groups of people:
 - **Users of the Golf Links Road:** The road is due to be upgraded as part of the Southern Relief Road project. The users of the road are the largest cohort of potential receptors of change on the site, but road users entering or exiting an existing urban area have a low sensitivity to the type of development proposed (i.e. an expansion of the urban area). The assessment of Viewpoints 1, 2, 4 and 7 shows that the visual effects on this group, while significant in places (e.g. Viewpoint 4 at the new road entrance to the neighbourhood), would be positive. The layout, architecture and landscape proposals are appropriate to the site location at the interface between the rural and urban environments, and the development would be an attractive addition to the road corridor in this location.
 - **Ballygossan Park:** This estate was the first phase of development of the now expired Hacketstown LAP lands and the occupants of the houses are the 2nd largest cohort of potential visual receptors. As part of the Hacketstown area they are unavoidably exposed to development of the remainder of the area (and would benefit from the completion of the new neighbourhood). The assessment of Viewpoints 8 and 9 shows that the visual effects on this group would be moderate to significant and positive. The context of Ballygossan Park would be transformed, with the agricultural landscape across the valley replaced by the new/ expanded residential neighbourhood. However, the combination of the valley topography, diverse buildings of high design and material quality, legible circulation networks, generous open space and trees would generate a residential environment of high amenity value.
 - **Existing houses along Golf Links Road:** There are a small number of houses and a farm along Golf Links Road and adjoining the site. (One of the houses is the 'vernacular cottage' identified in the now expired LAP; the proposal would have no negative impact on this cottage.) Two of the houses – to either side of where the site has frontage to Golf Links Road (see Figure 6.10 below) - are highly exposed to the site.

The assessment of Viewpoint 3 (representing one of these houses) indicates that it would experience a high magnitude of visual change and a reduction in visual amenity as a result of the development. Currently, due to its separation from the main urban area the landscape context of the house appears rural (although the landscape context is peri-urban) and the view from this property is over rolling agricultural fields (the current site condition). The proposed development would see two duplex terraces (comprising Block B) located on the site side of the shared boundary, in direct view from the house. In considering this effect the following factors should be noted: (1) with most urban expansion/consolidation projects – particularly in peri-urban contexts where there might be a number of houses already existing in the expansion area - there are unavoidable impacts on those existing houses, due to the encroachment of new development into their immediate environment; (2) the site is zoned for residential development; (3) any development of sustainable density on the site would result in similar impacts on this highly exposed neighbouring property; (4) the design of Block B and the treatment of the shared boundary have sought to minimise the visual impact.

In conclusion, while there would be some negative impacts on two residential properties adjoining the site, the proposed development would make a significant positive contribution to the evolving landscape/ neighbourhood of Hacketstown, enhancing the urban landscape and visual amenities of the area.

6.6 DO NOTHING IMPACTS

The site would remain in agricultural use and there would be no change in landscape character (currently peri-urban) or views in the site environs. The FDP's residential land use objectives for the site would be unrealised.

6.7 AVOIDANCE, REMEDIAL AND MITIGATION MEASURES

6.7.1 Construction Phase

During construction the site and immediate environs would be heavily disturbed by construction activities and the incremental growth of the buildings on site, causing negative landscape effects of moderate significance and significant negative visual effects for some receptors (the houses nearest to the site).

Such impacts are an unavoidable consequence of development and there is limited potential for mitigation. Site hoarding would screen ground level activity, stockpiles, vehicles, etc. but once the buildings grow above ground floor level they would be visible above the hoarding, as would cranes, scaffolding and construction activity on the buildings themselves.

No landscape or visual-specific mitigation is recommended other than standard best practice construction site management, which should include the erection and maintenance of hoarding on the site boundaries.

6.7.2 Operation Phase

The potential landscape effects of the proposed development have been classified as being of moderate significance and positive (based on an analysis of the proposal against the relevant criteria in the Urban Design Manual – A Best Practice Guide (2009).

The urban design criteria place considerable emphasis on a proposed developments' responsiveness (in layout, built form, architecture and landscape design) to the landscape context and sensitivities in the receiving environment. Such responsiveness is effectively 'embedded mitigation' in design. The analysis in Table 6.7 shows that the proposed development responds appropriately and effectively to its context.

Only one negative potential visual effect has been identified. This is Viewpoint 3, which represents a house neighbouring the site. The effect on this viewpoint is discussed above. While a negative effect on this neighbouring property is acknowledged, no further mitigation (other than the embedded mitigation in the design of the proposal) is recommended.

6.8 CUMULATIVE IMPACTS

The proposed development would deliver a large part of the residential neighbourhood envisioned for the Hacketstown area (as indicated by the RA zoning of the lands). A Planning application for the AI Works was permitted by the local authority and is currently the subject of a 3rd party appeal. An LRD application is in the process of preparation for the Ballygossan Park Phase 2 site.

6.8.1 Landscape Effects

The cumulative landscape change (resulting from the proposed development, the proposed AI Works and proposed Ballygossan Park Phase 2) would be high. The sensitivity of the receiving environment is medium. Therefore, the cumulative effects of the three proposed developments on the landscape would be significant and positive.

6.8.2 Visual Effects

The photomontages prepared for this assessment include a 'cumulative view' for each viewpoint, showing the three proposed developments in combination. The potential cumulative effects were assessed for each viewpoint in Tables 6.8 and 6.9. For five out of the six viewpoints which would experience a cumulative impact the effects were classified positive. For the one other view the effects would be neutral.

6.9 INTERACTIONS

- **Population and Human Health.** The proposed development would deliver a high quality mixed density residential neighbourhood well served by public and communal open space and within 1km of the town centre and Skerries train station. The related change to the landscape character, i.e. the planned expansion of the urban area (as indicated by the site's RA zoning) into a previously peri-urban landscape, would have significant positive population and human health benefits (by providing homes offering a high level of residential amenities).
- **Biodiversity.** The proposed Landscape Masterplan includes a range of open spaces of varying character, which, in addition to providing recreation amenities and contributing to the area's place-identity, would deliver a range of ecosystem services. These include habitat provision and water management (through SUDs measures). The parkland area in the northern part of the site includes (1) wet meadow areas (the swales), (2) wildflower meadow areas, and (3) stands of trees in line with National Pollinators Guide – all habitats of high biodiversity value. A total of 209 no. trees and 3,668 sqm of meadow planting are proposed across the site.
- **Water.** The proposed SUDs measures include (1) part of a large swale which is a key element of the proposed AI Works in the valley to the north of the site; (2) rain gardens along the main street; (3) permeable paving for all parking spaces.

7.0 AIR QUALITY AND CLIMATE

7.1 INTRODUCTION

The potential air quality and climate impacts on the surrounding environment that requires consideration for a proposed development of this type includes two distinct stages, the short-term construction phase and the long-term operational phase.

The dominant influences on air quality in the area are emissions from commercial energy and heating sources, domestic heating and traffic. The main substances which are of interest in terms of existing air quality are sulphur dioxide, nitrogen oxides (nitric oxide, NO and nitrogen dioxide NO₂, collectively referred to as NO_x), fine particulate matter including PM₁₀ and PM_{2.5} which could originate from combustion sources, traffic and the existing commercial activities in the area. Carbon monoxide is also potentially of interest, and benzene may also be of interest from traffic sources.

7.2 CONSTRUCTION PHASE IMPACTS

This assessment shows that the most significant potential impacts are those associated with excavation work which is very dependent on weather conditions. Damp weather and low wind speeds will reduce the level of impact experienced at the receptor locations. There will be a short-term, slight impact on the closest receptors during the excavation programme and a short-term, not significant impact on the closest receptors during the construction works. Construction traffic impacts will be not significant and experienced in the short-term. In the absence of mitigation measures, the overall impact of dust arising during the construction phase is considered to be short term in duration and its significance will vary from not significant to slight.

Potential emissions from construction traffic using the local road network have been assessed to contribute less than 1% change to the existing air quality emission levels. It can therefore be concluded that the additional traffic will not generate significant emissions in terms of local air quality and no material change in air quality relative to the existing situation is predicted.

In the absence of mitigation measures the construction phase activities will range from an imperceptible to slight impact on local air quality depending on the activities occurring and in all cases will be short-term in duration.

7.3 OPERATION PHASE IMPACTS

The only predicted air quality impacts associated with operation of the development are emissions to atmosphere from traffic associated with the development.

The traffic flow data presented in the TIA Report has been used to assess the likely change in emissions to air as a result of changes in traffic numbers. The TIA Report presents figures for the Traffic Volume - Peak Hour for the key road junctions in the vicinity of the subject site. Traffic volumes for the Opening Year and Design Year were considered for key junctions for two scenarios, namely; the With Development and Without Development scenarios. The largest change in traffic volume at the key junctions for the opening year was +38 (15% increase) for the With Development scenario and the largest change in traffic volume for the design year was +151 (72% increase). The potential impact on air quality associated with a traffic volume change of this magnitude is considered not significant in a local context and imperceptible in an overall context particularly considering the advanced developments made in cleaner and more efficient vehicle engines.

The design and construction of all buildings in the proposed development shall be in accordance with National Building Regulations (The Irish Building Regulations Technical Guidance Document L 2021 – Conservation of Fuel & Energy – Dwellings) and shall ensure that modern building materials are used and that they are designed to be thermally efficient resulting in eliminating the onsite fossil fuel requirement to heat the buildings. The Guidance Document L requires the setting of minimum energy performance requirements for new buildings to achieve Nearly

Zero Energy Buildings. Therefore it is predicted that there will be no combustion gas emissions from the site associated with heating and consequently heating will not have an adverse impact on the existing ambient air quality in the vicinity of the proposed development site.

The operational phase activities will have a not significant impact on local air quality and will be long-term in duration.

7.4 CLIMATE IMPACTS

The operation of the proposed development will result in indirect emissions of GHGs including carbon dioxide (CO₂) and methane (CH₄) resulting from energy generation required for space heating and road traffic.

The CO₂ released due to energy usage is directly reduced by enhancing the energy efficiency of the proposed development. In this respect, the selection of electrical heat pumps as the heating source is the optimum strategy. The proposed design considers these factors and contributes to the overall objective of minimising GHG emissions.

A Building Energy Rating (BER) certificate will be provided for each dwelling in the proposed development which will provide detail of the energy performance of the dwellings. A BER is calculated through energy use for space and hot water heating, ventilation, and lighting and occupancy. It is proposed to target a BER of A2 or A3 for the residential units which equates to the following energy performance of each dwelling:

- BER A2 – 25-50 kWh/m²/year with approximate CO₂ emissions of 10kgCO₂/m² year
- BER A3 – 51-75 kWh/m²/year with approximate CO₂ emissions of 12kgCO₂/m² /year

The scheme has been designed to provide thermally efficient buildings which will eliminate the consumption of fossil fuels within each individual unit. This will reduce the impact the operational phase of the development will have on the micro and macro climate. There will be no passive air vents in the residential units which are thermally inefficient and Mechanical Ventilation and Heat Recovery (MVHR) systems shall be incorporated into the design of the apartments. The MVHR systems together with thermally enhanced glazing and window frames will reduce the energy requirements of the residential units. These design features will ensure the residential units are thermally efficient leading to a zero fossil fuel requirement which will result in a reduction of the impact on climate. Due to the size, nature and design of the development, greenhouse gas emissions resulting from the development will be imperceptible in the national context. There will therefore be no adverse impacts on climate and no significant contribution to Ireland's greenhouse gas

The construction phase activities will have a not significant impact on climate and will be short-term in duration while the operational phase activities will have an imperceptible impact on climate and will be long-term in duration.

7.5 MITIGATION MEASURES

A Dust Management Plan will be formulated for the construction phase of the project, as construction activities will generate some dust emissions. The principal objective of the Plan is to ensure that dust emissions do not cause significant nuisance at receptors in the vicinity of the site.

The design of the construction programme and the location and layout of the construction compound and the storage of materials will be carefully planned to ensure that air quality impacts are minimised. All contractors working on the subject site will be contractually obliged to ensure that all mitigation features set out in the main EIAR document will be employed in order to minimise emissions from the activity and the associated impacts of such emissions.

7. 6 RESIDUAL IMPACTS

During the construction phase of the proposed development there will be some dust impacts experienced at the nearest receptors to the subject site. It is predicted that the mitigation measures proposed will ensure that the air quality impacts are kept to a minimum. The predicted air quality impacts on the receiving environment during the construction phase are considered to be slight and short term and only affecting a small number of properties.

The only predicted air quality impacts associated with operation of the development are emissions to atmosphere from traffic associated with the development. The change in traffic movements will have no quantifiable impact on air quality. The predicted air quality impacts on the receiving environment during the operational phase are considered to be not significant and long-term.

Due to the size and nature of the development and the nature and volume of the potential emissions, the construction phase activities will have a not significant impact on climate and will be short-term in duration while the operational phase activities will have an imperceptible impact on climate and will be long-term in duration.

8.0 LANDS AND SOILS

8.1 INTRODUCTION

This Chapter of the EIAR comprised of an assessment of the likely impact of the proposed development on the land, soils and geology as well as identifying proposed mitigation measures to minimise any likely significant effects identified.

8.2 STUDY METHODOLOGY

Assessment of the likely impact of the proposed development on land, soils and geology included in the following activities:

- Preliminary Ground Investigation Study.
- Review of information available on the Geological Survey of Ireland (GSI) online mapping service.
- Geological Survey of Ireland – Geological and Groundwater Databases (www.gsi.ie).
- Bedrock Geology 1:100,000 Scale Map Series, Sheet 7 (Geology of Sligo - Leitrim). Geological Survey of Ireland (GSI, 1996).
- Geological Survey of Ireland – 1:25,000 Field Mapping Sheets.
- Review of information available on the Environmental Protection Agency (EPA) online mapping service.
- General Soil Map of Ireland 2nd edition (www.epa.ie).

Preliminary Ground Investigations for the proposed development were carried out by Ground Investigations Ireland (GII) and concluded in July 2020 and included the following scope of work:

- Visit to the project site to observe existing conditions.
- 13 No. Trial Pits to a maximum depth of 4.0m below ground level (BGL).
- 5 No. Soakaways to determine a soil infiltration value to BRE Digest 365.
- 25 No. Dynamic Probes to determine soil strength/density characteristics.
- 8 No. Cable Percussion boreholes to a maximum depth of 7.10m BGL.
- 5 No. Rotary boreholes to a maximum of 17.20m BGL.
- Geotechnical & Environmental Laboratory testing.
- Report with recommendations.

Refer to the Ground Investigation Report (GII, Issue Date July 2020, report no. 9225-11-19) and Waste Classification & Groundwater Assessment Report (GII, Issue Date June 2020, report no. 9225-11-19), both included as part of this application under separate cover.

8.3 POTENTIAL LIKELY SIGNIFICANT EFFECTS OF THE PROPOSED DEVELOPMENT

Construction Phase

8.3.1 Stripping of Topsoil

Removal of the existing topsoil layer will be required. It is expected that all stripped topsoil will be reused on site.

Stripping of topsoil will result in exposure of the underlying subsoil layers to the effects of weather and construction traffic and may result in subsoil erosion and generation of sediment laden runoff.

Table 8.1 Preliminary Estimated Topsoil Volumes (+/- 10%)

	Volume (m ³)
Topsoil Strip (150mm thick layer)	10,702
Topsoil Reuse (over same)	10,702

8.3.2 Excavation of Subsoil Layers

Excavation of existing subsoil layers will be required in order to allow road construction, drainage and utility installation and provision of attenuation of surface water.

Underlying subsoil layers are brown sandy gravelly Clay or silty Clay with occasional cobbles and boulders and are expected to be generally suitable for reuse as non-structural fill (e.g. build-up of back gardens areas or build-up of open spaces).

Table 8.2 Excavation of Subsoil / Reuse of Excavated Material (+/- 10%)

	Volume (m ³)
Cut (excavation of subsoil layers as described in 8.3.2 above)	20,386
Reuse of Excavated Material as Non Structural Fill	10, 523

8.3.3 Imported Fill

In the context of materials imported to site, these will be natural stones sourced from locally available quarries, greenfield / inert soil imported as materials that have been determined as by-products in accordance with the EPA's criteria for determining a material is a by-product or not a waste, per the provisions of articles 27(1) or 28 of the European Communities (Waste Directive) Regulations, 2011-21, or under a Waste Permit issued by the local authority, where required.

Imported materials will be granular in nature and used in the construction of road pavement foundations, drainage and utility bedding and surrounds. Imported fill will also be required for the raising of the site levels for the construction of the Link Road to underside of formation level.

Materials will be brought to site and placed in their final position in the shortest possible time. Any imported material will be kept separate from the indigenous arisings from the site. All excavation to accommodate imported material will be precisely co-ordinated to ensure no surplus material is brought to site beyond the engineering requirement.

This EIAR considers the works associated with this development. The cumulative effects of the proposed Advanced Infrastructure works, and adjacent site development will be considered as integrated. The volume/material requirements to construct the Regional Drainage Facility is considered also. It is envisaged that a minimal volume of material will be imported to make up the volume of fill required, but instead fill required will be taken from the bulk digs and excavations on the adjacent sites. By employing as many by-products from these adjacent sites as possible the carbon footprint will be minimised and Circular Economy requirements complied with.

Table 8.3 Imported Fill (+/- 10%)

	Volume (m ³)
Fill (Total)	25,706
Reuse of Excavated Material (Non Structural Fill)	10,523
Topsoil Reuse (landscaping of open spaces etc.)	10,702
Imported Fill	4,481

8.3.4 Construction Traffic

Earthwork's plant (e.g. dump trucks) and vehicles delivering construction materials to site (e.g. road aggregates, deliveries etc.) have potential to cause rutting and deterioration of the topsoil layer and any exposed subsoil layers, resulting in erosion and generation of sediment laden runoff. This issue can be particularly noticeable at site access points (resulting in deposition of mud and soil on the surrounding road network). Dust generation can also occur during extended dry weather periods as a result of construction traffic.

8.3.5 Accidental Spills and Leaks

During the construction phase there is a risk of accidental pollution from the sources noted below. Accidental spills and leaks may result in contamination of the soils underlying the site.

- Storage of oils and fuels on site.
- Oils and fuels leaking from construction machinery.
- Spillage during refuelling and maintenance of construction machinery.
- Use of cement and concrete during construction works.

8.3.6 Geological Environment

Any excavations associated with development of the site are expected to be relatively shallow and are not expected to impact on the underlying geology.

At present it is envisaged that precast driven piles will be used in the construction of a number of the dwellings which will result in displacement of soil in-situ as opposed to generating any spoil. This will have a negligible effect on the geological environment. For the larger structures, continuous flight auger (CFA) or bored displacement piles are likely to be used. These will generate spoil.

It is not expected that piling will be required for all structures across the site, due to the varying geotechnical profile of the underlying soils. Traditional strip foundations will be employed where piling is not necessary.

8.4 REMEDIAL AND MITIGATION MEASURES

Construction Phase

Construction will result in land take of approximately 4.8 hectares of agricultural land and the design levels will tie in with the surround topology.

8.4.1 Stripping of Topsoil

Stripping of topsoil will be carried out in a controlled and carefully managed way and coordinated with the proposed staging for the development. At any given time, the extent of topsoil strip (and consequent exposure of subsoil) will be limited to the immediate vicinity of active work areas.

Topsoil stockpiles will be protected for the duration of the works and not located in areas where sediment laden runoff may enter existing surface water drains.

Topsoil stockpiles will also be located so as not to necessitate double handling.

Surface water runoff from areas stripped of topsoil will be directed to on-site settlement ponds where measures will be implemented to capture and treat sediment laden runoff prior to discharge of surface water at a controlled rate.

On-site settlement ponds will be installed and will include geotextile liners and riprapped inlets and outlets to prevent scour and erosion.

8.4.2 Excavation of Subsoil Layers

Excavation of existing subsoil layers has been minimised by designing the proposed road and finished floor levels as close to the original topography as possible. Cut type earthworks operations will not be required to achieve designed site levels.

Disturbed subsoil layers will be stabilized as soon as practicable (e.g. backfill of service trenches, construction of road capping layers, construction of building foundations and completion of landscaping). The duration that subsoil layers are exposed is to be minimised in order to mitigate against weather effects.

Similar to comments regarding stripped topsoil, stockpiles of excavated subsoil material will be protected for the duration of the works. Stockpiles of subsoil material will be located separately from topsoil stockpiles.

Measures will be implemented to capture and treat sediment laden surface water runoff (e.g. sediment retention ponds, surface water inlet protection and earth bunding adjacent to open drainage ditches).

8.4.3 Imported Fill

As noted in section 8.3.3 above, importation of fill to site will be required.

No large or long-term stockpiles of fill material will be held on the site. At any time, the extent of fill material held on site will be limited to that needed in the immediate vicinity of the active work area.

Smaller stockpiles of fill, where required, will be suitably protected to ensure no sediment laden runoff enters existing surface water drains. Such stockpiles are to be located in order to avoid double handling.

8.4.4 Construction Traffic

Plant and vehicles delivering construction materials to site will be confined to predetermined haul routes around the site.

Vehicle wheel wash facilities will be installed in the vicinity of any site entrances and road sweeping implemented as necessary in order to maintain the road network in the immediate vicinity of the site.

Dust suppression measures (e.g. dampening down) will be implemented as necessary during dry periods.

8.4.5 Accidental Spills and Leaks

In order to mitigate against spillages contaminating underlying soils, all oils, fuels, paints and other chemicals will be stored in a secure bunded hardstanding area.

Refuelling and servicing of construction machinery will take place in a designated hardstanding area which is also remote from any surface water inlets (when not possible to carry out such activities off site).

Oil, fuel etc. storage areas are to be decommissioned on completion of the construction phase. Any remaining liquids will be removed from site by an appropriately authorised collector and disposed of at an appropriate authorised facility.

8.4.6 Geological Environment

No mitigation measures are proposed in relation to the geological environment as they are not necessary. There are no geological heritage or designated sites within the proposed development boundary.

8.5 RESIDUAL IMPACTS

With the noted mitigation measures implemented during the construction phase, the potential impact on land, soils and geology during construction is considered to have a **short term, imperceptible significance**.

There are no likely significant impacts on the lands, soil or geology associated with the proposed operational development of the site. As such, the impact is considered to have a **long term, imperceptible significance** with a **neutral impact on quality**.

9.0 WATER

9.1 Introduction

This chapter of the EIAR was prepared by Niall Mitchell BE, MSc, CEng, MIEI, PGeo. Niall is a Chartered Engineer and Professional Hydrogeologist with Bluerock Environmental Limited with over 22 years experience in the field of hydrogeology, contaminated land, environmental impact for a range of medium to large-scale infrastructural projects across the island of Ireland. He has extensive experience in the assessment impacts on the water environment from landfills, residential and commercial developments, quarries, and proposed groundwater abstractions. The chapter includes an impact assessment on the hydrogeological and hydrological environments as a result of current/proposed site activities and the proposed development.

The following sources of information were used in the compilation of this assessment:

- Ordnance Survey of Ireland (OSI), Discovery Series, Sheet 43;
- Ordnance Survey of Ireland online historical maps and aerial photographs;
- Geology of Meath, Geological Survey of Ireland (GSI) (1:100,000), Sheet 13;
- GSI - On-line Geology Database. Aquifer Classification, Aquifer Vulnerability;
- GSI - Lusk-Bog of the Ring Groundwater Body (GWB);
- GSI - Groundwater Source Protection Zones - Bog of the Ring;
- Soil Map of Ireland (Second Edition, 1980), National Soil Survey of Ireland, An Foras Talúntais.
- National Parks and Wildlife Service (NPWS) on-line database (www.npws.ie);
- Environmental Protection Agency (EPA) online water quality mapping; (<https://gis.epa.ie/EPAMaps/>);
- Water Framework Directive (WFD)
- OPW hydro-data (<http://www.opw.ie/hydro-data>);
- Met Eireann monthly climatological data (<https://www.met.ie/>);
- Appropriate Assessment Screening & Natura Impact Statement - Information for a Stage 1 (AA Screening) and Stage 2 (Natura Impact Statement) AA for a strategic housing development at a site located at Hacketstown in the townland of Milverton, Skerries, Co. Dublin (Altemar Marine and Environmental Consultancy, 2020).
- Environmental Report for pre-application consultation with An Bord Pleanála, John Spain Associates (JSA, 2020); DBFL Consulting Engineers Construction Drawings (DBFL, 2020);
- Ground Investigations Ireland Waste Classification & Groundwater Assessment Report (GII, 2020);
- Ground Investigations Ireland Ground Investigation Report Southern Greenfield Site (GII, 2020a).

9.2 Methodology

The assessment was undertaken to evaluate potential environmental impacts on the hydrological and hydrogeological environments by undertaking the following:

- A desk-based study of all available hydrological and hydrogeological information in relation to the site and its general environs;
- A review of the spatial layout and characteristics of the proposed development; and,
- A review of construction and operational phase activities associated with the proposed development.

This chapter was undertaken in accordance with the following:

- Guidelines on the information to be contained in Environmental Impact Statements (EPA, 2002), Geology in Environmental Impact Statements, A Guide, (IGI, 2002),
- Guidelines on Procedures for Assessment and Treatment of Geology, Hydrology and Hydrogeology for National Road Schemes, NRA Document.
- Guidelines for the preparation of Soils, Geology and Hydrogeology Chapters of Environmental Impact Statements (IGI, 2013),
- Draft EPA revised Guidelines on information to be contained in Environmental Impact Statements; and Advice Notes for preparing EIS, 2015.

- Draft EPA Advice Notes for Preparing Environmental Impact Statements (EPA, 2017).

9.3 Background

According to the GSI Aquifer Map the subject lands and surrounding area is underlain by a Locally Important Karstified Aquifer (Lk). The aquifer can supply 'excellent' yields but the small area limits the amount of recharge available to meet abstractions. The GSI maps also indicate that the groundwater vulnerability at the site and the surrounding area is rated as H (High) due to the high permeability of the overlying subsoil. The area to the northwest of the site has an Extreme vulnerability rating.

The Ground Investigation borehole logs (GII, 2020a) indicate that groundwater strikes occurred in the majority of the boreholes within the overburden within both clay and, when encountered, granular deposits of gravel or sand.

Groundwater monitoring wells were installed within 4 no. of wells across the site, these included wells BH03, BH05, BH07 and RC09. Manual dip water levels suggest that groundwater is flowing from south to north across the site based on one round of monitoring data. The monitoring suggests that groundwater is hydraulically connected to the northern boundary surface water drain.

The subject lands are located within the subcatchment Palmerstown_SC_010 (Code 08_2). The subject site is drained by a ditch/land drain which is located along the northern boundary of the site. All surface water runs off to this. This drain flows eastwards to an existing unnamed stream before discharging to the Irish Sea approximately 700m to the east of the subject lands. The head of the drain commences to the east of the railway embankment and flows in an easterly direction before eventually discharging to the Irish Sea at Skerries South beach. Mill Stream rises approximately 3km to the west of the site and flows eastwards discharging to the Irish Sea at Skerries South Beach. The land drain and Mill Stream are not hydraulically connected with the railway embankment acting as a high point or divide between both surface water bodies. It is noted that the land drain is not mapped as a water body on EPA maps or databases.

9.4 Potential Impacts

Construction Phase Impacts

Without mitigation, the main environmental factors associated with risks to the hydrogeological and hydrological environments relate to general construction stage activities within the footprint of the site including uncontrolled sediment runoff from exposed soils, fuel and chemical storage, vandalism resulting on fuel spillages and localised excavation of subsoils increasing the vulnerability of the aquifer to pollution events. Other potential risks considered including encountering buried waste/contaminated material in the subsurface, construction stage dewatering operations resulting in uncontrolled discharges to surface waters and the importation of fill material to the site.

Operation Stage Impacts

The main environmental risks associated with the operation stage of the development include hydrocarbon laden surface water runoff from roads, carparks and general hardstanding and reduced infiltration of rainwater to the underlying aquifer.

9.5 Mitigation Measures

Construction Stage Measures

Based on the construction stage risks identified, it is deemed that standard best practice construction practices will adequately mitigate all risks to imperceptible levels. These include:

- Limiting the depth of excavations required for the works incorporated into the development design thereby maintaining the vulnerability rating for the site.
- Construction of on-site settlement ponds to capture and treat sediment laden runoff prior to discharge of surface water at a controlled rate to the land drain.

- Storage of topsoil generated to be stored in an appropriate manner on site for the duration of the construction works and protected for re-use on completion of the main site works.
- Best practice storage and handling of fuel oils and waste oil material
- Development of an Emergency Operating Plan (EOP) for the works to be followed in the event of a contamination or fuel spillage event
- Appropriate topsoil and subsoil stockpile storage measures for the duration of the construction works and protected for re-use on completion of the main site works.
- Specialist environmental and human health contingency plans and procedures, following best-practice guidance, will be developed for the unexpected discovery of contaminated or illegally deposited waste materials. All works will be undertaken in accordance with best practice and EPA Guidance on The Management of Contaminated Land and Groundwater at EPA Licensed Sites, 2013.
- Adequate security measures shall be installed on the construction site. Security measures will include secure fencing, secure site access, securing site plant and equipment, secure storage of materials and sufficient warning signage.
- All imported fill material shall be sourced from approved sources and appropriately certified and fit for purpose.
- The temporary disposal and treatment of any water pumped from any excavations will be carefully managed.
- All waters from excavations will be passed through an on-site construction stage drainage system before being discharged to the local drain., along the northern site boundary.
- Construction phase filtering of surface water for suspended solids will be undertaken carried out. Untreated water discharges or runoff shall not be permitted from the site into the land drain.

Operational Stage Measures

A number of mitigation measures have been incorporated into the design of the development to address potential risks associated with the operational stage of the development. These include:

- An appropriately designed drainage system designed in accordance with the CIRIA SUDS Manual 2015 and Recommendations for Site Development Works for Housing Areas published by the Department of the Environment and Local Government. The objective of the sustainable urban drainage systems (SuDS) is to provide an effective system to mitigate the adverse effects of urban stormwater runoff on the environment by reducing runoff rates, volumes, and frequency, reducing pollutant concentrations in stormwater, contributing to amenity, aesthetics, and biodiversity enhancement and to allow for the maximum collection of rainwater for re-use where possible. The SuDS features designed includes swales, filter strips, filter drains, oil-water interceptor, and permeable paving.

9.6 Residual Impacts

The nature of the development dictates that the greatest potential impact on the hydrological and hydrogeological environments (including soil, subsoil, and bedrock) associated with the proposed development will be during the construction phase. It is predicted that the hydrogeological and hydrological impacts associated with the construction phase of the development that implements the proposed mitigation measures will be temporary and imperceptible and neutral. The residual impacts predicted during the operational phase relates to potential impacts to groundwater and surface water from hydrocarbon land surface water runoff from the site and reduced infiltration of rainwater to the underlying groundwater body. However, implementation of the planned mitigation measures will ensure the post mitigation impacts will be imperceptible, long-term, and neutral.

10.0 MATERIAL ASSETS – NOISE AND VIBRATION

10.1 INTRODUCTION

An assessment of the impact on the ambient sound environment and related effects on receptors, (namely human beings) arising as a result of the construction and operation of the proposed Project has been prepared. Additionally, an assessment of the noise exposure risk for future residents has been undertaken. Potential for vibration impacts on material assets including dwellings and the rail line during construction has also been considered.

10.2 METHODOLOGY

Noise monitoring was undertaken on site in December 2019 and February 2021 to characterise the receiving sound environment at three locations generally in proximity to existing Noise Sensitive Receptors (NSRs) and at a further 3 locations along the rail line to establish train noise levels for the purposes of conducting an assessment of the noise exposure risk to future residents. Attended monitoring was conducted over day, evening and night-time periods and 24 hour monitoring was conducted at 3 unattended locations in accordance with best practice as set out in ISO 1996-2:2017 Acoustics – Description, measurement and assessment of environmental noise.

In addition, a desk-based review of transportation noise mapping and monitoring data from a noise and vibration report prepared by AWN Consulting for Noonan Construction in relation to the adjoining lands to the north of the site was also conducted to inform the characterisation of the soundscape and existing vibration sources potentially affecting the area.

As part of best practice, the assessment of impacts and effects on existing NSRs largely took account of the following:

- BS5228:2009 +A1:2014: Code of Practice for Noise and Vibration Control on Construction and Open Sites: Part 1: Noise and Part 2: Vibration;
- Good Practice Guidance for the Treatment of Noise during the Planning of National Road Schemes, March 2014;
- ISO 9613.-2 – 1996 Acoustics – Attenuation of sound during propagation outdoors – Part 2: General method of calculation, and,
- UK LA111 Noise and Vibration, Standards for Highways, Highways England, Version 2, May 2020.

The assessment of environmental noise exposure risk to future residents was completed in accordance with UK Pro-PG: Planning & Noise, New Residential Development, May 2017.

10.3 POTENTIAL IMPACTS

The site of the proposed Project can be described as rural/semi-rural in nature while the immediate surrounding area to the north can be described as emerging suburban on the edge of more mature development. The site and immediate surrounds are therefore relatively quiet although anthropogenic sources such as intermittent passing trains and intermittent road traffic influence the soundscape. Trains are the predominant noise source affecting the site. The nearest NSRs to the proposed development are detached dwellings along the Golf Links Road and Phase 1 of the new development, *Ballygossan Park*, to the north.

10.3.1 Site Development and Construction Phases

In the short term, the proposed site development and construction works can potentially give rise to elevated noise levels through the use of mobile and non-mobile heavy machinery and equipment. Pre-cast driven piles are proposed throughout the site.

An assessment of site development and construction noise impact including piling has been conducted in accordance with BS5228:1:2009+A1:2014 and also takes account of the UK LA111 Noise and Vibration Standard for Highways.

Based on existing ambient sound levels, the following threshold value applies at NSRs for site development and construction works:

- 65 dB $L_{Aeq,1hr}$, Mon-Fri (07:00 – 19.00hrs) and Saturday (07.00 -13.00 hrs).

BS5228-1 notes that a potentially significant impact occurs when the applicable threshold value is exceeded. “*The assessor then needs to consider other project specific factors such as the number of receptors affected and the duration and character of the impact to determine if there is a significant effect*”.

Additionally in this regard, UK LA111 notes that where a major or moderate impact occurs due to exceedance of the applicable threshold limit value, the following duration should be considered to determine if a significant negative effect occurs:

- 10 or more days or nights in any 15 consecutive days or nights;
- A total number of days exceeding 40 in any 6 consecutive months.

Based on a conservative assessment, it is predicted that piling and earthworks will cause an exceedance of the threshold value, where such works take place close to NSRs (20m to façade of nearest NSR). However, the duration can be controlled to ensure a significant effect does not occur. Furthermore, it should be noted that works will move away from the closest NSRs relatively quickly and therefore more distance attenuation will apply. Piling is generally of short duration within the total construction programme. As part of best practice, additional mitigation measures will be implemented to ensure that the threshold value is also not exceeded.

Cumulative impacts and effects as a result of other developments proceeding at the same time have been considered. It is possible that Ballygossan Park Phase 2 (BGP2) will be developed at the same time as the proposed Project. However, based on distance, it is considered that BGP2 will predominate at NSRs closest to BGP2. Nevertheless, the threshold value and/or duration limitations will apply regardless of source, to the potentially affected NSRs in Ballygossan Park Phase 1.

With regards to vibration and, based on the data in BS5228:2, the potential exists for negative vibration impacts on human beings however the exact impact will be dependent on the soil conditions, project requirements and type of equipment used. Therefore, precautionary measures will be taken during piling such as monitoring. The maximum allowable vibrations (as measured by peak particle velocity (PPV)) along the Dublin-Belfast Railway tracks due to works will be in accordance with Irish Rail requirements and code of practice. A monitoring regime will be agreed with Irish Rail and implemented in advance of works commencing on site.

10.3.2 Operational Phase

The proposed Project will result in additional road traffic on the local road network which can give rise to increased traffic noise impact at existing NSRs in the long term. A review of the traffic impact assessment has been undertaken. This includes for other committed development in the area and therefore considers cumulative impacts. Traffic levels will increase during peak hour on the Golf Links Road. The magnitude of impact will be minor negative at most in the long term, based on peak hour flows. However, the impact is expected to be less outside of peak hour flows.

10.3.3 Future Residential Noise Exposure Risk Considerations

In accordance with the methodology set out in the UK ProPG Planning and Noise, New Residential Development, May 2017, the site is defined as negligible to low noise risk with regards to development for residential purposes. The site in general, complies with the WHO Guidelines for rail noise.

The development design incorporates a number of good acoustic design features such as provision of large areas of external amenity within desirable noise levels for future residents. This complies with the requirements of Pro-PG.

External amenity criteria as specified in Pro-PG will be achieved in the proposed private and communal amenity areas associated with apartment blocks.

The provision of planted areas in urban or suburban settings can *qualitatively* improve the soundscape for local residents and enjoyment of the proposed amenity areas. Natural features have been shown to improve perceived tranquillity and are provided in the landscape strategy.

94% of the units within the Project will achieve good internal noise conditions for resting, sleeping etc with open or partially opened windows. The remaining 6% will achieve good to reasonable internal noise conditions for resting, sleeping etc with open or partially opened windows. This represents good acoustic design.

10.3.1 Mitigation Measures

The following noise and vibration management measures shall apply to the proposed Project to ensure that the threshold value for noise and vibration are complied with:

- A Site Representative shall be appointed for matters related to noise and vibration.
- Any complaints received shall be thoroughly investigated.
- A written complaints log shall be maintained by the Site Representative. This shall, at a minimum, record complainant's details (where agreed) the date and time of the complaint, details of the complaint including where the effect was observed, corrective and preventative actions taken and any close-out communications. This will ensure that the concerns of local residents who may be affected by site activities are considered during the management of activities at the site.
- Noise monitoring with capability for real-time review both on-site and remotely by Project Management shall be conducted at nearby NSRs throughout.
- In the event of exceedance of the limits at NSRs, works shall be ceased and measures implemented immediately to ensure that the limits are complied with and/or duration in minimised.
- Noise monitoring with capability for real-time review will facilitate immediate mitigation at nearby NSRs especially when noisy activities are planned.
- Due to the proximity of separate development sites, and where works are occurring in tandem, individual Site Representatives or their appointed noise and vibration representatives will be required to liaise on management of construction noise impact through real-time review of monitoring data to ensure that the limits are met cumulatively.
- Temporary acoustic screening shall be placed along the boundaries with NSRs where works take place close to the boundary. As a general rule of thumb, it is recommended that temporary screening break the "line of sight" from the sources to the affected windows of the nearest NSRs where possible.
- The screening should be of sufficient surface density (minimum 10 kg/m²) to mitigate temporary noise impact associated with the construction phase.
- The operation of certain pieces of equipment, where substitution etc cannot be carried out shall be managed through monitoring and timing of use to ensure that the threshold values/criteria specified are complied with.
- During the construction phase all equipment shall be required to comply with noise limits set out in EC Directive 2000/14/EC as amended by Directive 2005/88/EC on the approximation of the laws of the Member States relating to the noise emission in the environment by equipment for use outdoors. The directive covers equipment such as compressors, welding generators, excavators, dozers, loaders and dump trucks.
- While piling is dictated by constraints such as ground conditions (although a worst-case scenario has been assessed) the design and final method chosen shall ensure compliance with the threshold limits for noise and vibration as set out in the EIAR and limits proposed by Irish Rail for the rail line.
- Measures such as use of an acoustic shroud, damping of the hammer impact and enclosure of the hammer shall be considered for reducing noise impact if applicable to the final piling design.
- At the time of tender, the contractor will be obliged to review all systems taking noise and vibration into account in the choice of equipment. As noted in BS5228-1, *"the construction industry is generally innovative and constantly developing, and there may be proprietary systems available at the time of tender that were not known or available at the planning stage."*
- Vibration monitoring will be conducted when sources which potentially could cause vibration impact to buildings and human beings will be in use e.g. during piling. In this regard, test monitoring will be conducted with the equipment on at low levels before increasing incrementally to operational levels if deemed necessary. Works will be ceased and mitigation measures implemented during the construction phase where monitoring detects vibration levels associated with the works above the relevant guidance values.

The CEMP submitted with this application shall include the noise and vibration management measures listed above.

Although the site is classed as negligible to low in terms of noise risk, in the long term a minimum moderate level of sound insulation is to be provided in glazing and ventilation grilles taking account of the typical spectral characteristics of rail noise.

Residual Impacts

Site development and construction noise arising from the proposed project will cause a temporary elevation of ambient sound levels in the vicinity of the existing NSRs at times when works are *close to the boundary*, but this will be controlled to comply with standard criteria or limit values for construction works. The criteria, by necessity, are higher than existing ambient levels as construction works are temporary to short term in nature. The mitigation measures as part of best practice will ensure that the limits combined with duration limits where applicable are not exceeded. As works move away from NSRs and/or as new buildings provide screening, construction noise levels will reduce to well below threshold value for the majority of the duration of the total works.

In the long term, the operational phase will not significantly impact on existing NSRs given its nature. Cumulative road traffic noise increases on the Golf Links Road will be minor negative at most in the long term during peak hour flow but is likely to be less during the remainder of the day.

The development design incorporates a number of good acoustic design features such as provision of large areas of external amenity within desirable noise levels for future residents.

External amenity criteria as specified in Pro-PG will be achieved in the proposed communal amenity areas and private amenity.

Good internal noise conditions for resting, sleeping etc with open or partially opened windows will be achieved throughout 94% of the units in the proposed Project. The remainder will achieve reasonable to good conditions internal noise conditions for resting, sleeping etc with open or partially opened windows. Nevertheless, a minimum moderate level of sound insulation for glazing will be installed to future proof the development.

11.0 MATERIAL ASSETS – ROADS, TRAFFIC AND TRANSPORT

11.1 Introduction

This section of the report assesses and evaluates the likely impact of the proposed LDA development on the existing transportation system in the vicinity of the site, as well as identifying proposed mitigation measures to minimise any identified impacts arising from the subject site.

11.2 Methodology

In summary, the assessment methodology incorporated a number of key inter-related stages, including;

- **Site Audit:** A site audit was undertaken to quantify existing road network characteristics and identify local infrastructure management arrangements, in addition to establishing the level of accessibility to the site in terms of walking, cycling and public transport. The audit also identified the level of retail, medical, service, educational, leisure and amenity provision currently available within a 15-minute travel duration to/from the subject LDA site.
- **Development Framework Review:** In addition to establishing site and land use specific development management requirements and planning policy objectives (as mobility focused infrastructure objectives including committed and planned) for the subject LDA site and its immediate catchment, additional desktop assessments have been undertaken to quantify (i) the road safety record of the local network, (ii) the presence of any third party committed development in the immediate area to ensure the accumulative impacts of all such proposals are appropriately considered in the assessment, (iii) the level of public transport services (rail and bus) catchments and associated route frequency during the peak AM and PM weekday periods, and (iv) a review of the 2016 Census data results for the local area to establish both car ownership levels and 'travel to work, school and colleague' travel characteristics.
- **Pre-planning Meeting:** A number of pre-planning meetings (and joint site visits) have been undertaken with officers of Fingal County Council including representatives of the Transport Planning Department to discuss the assessment scope and approach.
- **Traffic Counts:** A range of different data collection exercises have been undertaken including (i) classified junction turning counts (JTC's) at key nodes, (ii) Automatic Traffic Counts (ATC's) to establish vehicle types, volume and speeds, (iii) public transport surveys at local interchanges, and (iv) trip generation surveys at local residential donor sites. The analysis of the survey findings assist in establishing (i) local baseline traffic demand characteristics in the immediate area of the proposed residential development, and (ii) the potential level of trips that the proposed development could potentially generate.
- **Vehicle Trip Generation, Distribution and Assignment:** Based upon existing traffic characteristics and anticipated travel patterns generated by the proposed development, a trip distribution exercise has been undertaken to assign site generated trips across the local road network.
- **Road Safety Assessment:** Further to the assessment of the receiving environments road safety record as part of an earlier stage of the assessment, the specific design of the LDA residential scheme proposals, and its connections with Gold Links Road corridor; have been subject to an independent Road Safety Audit (RSA) as per and in accordance with TII best practice guidance. The recommendations raised within the RSA by the auditors have been incorporated into the revised scheme design now being presented for planning to ensure that all potential safety issues are addressed.
- **Network Impact & Assessment:** Considering the receiving environments characteristics, the proposed mitigation strategy and the additional scale of demand predicted to be generated by both the LDA residential scheme proposals and third party committed developments; it has been possible to undertake an assessment of the potential scale of impact significance across the local road networks key junctions and the public transport network. Accordingly, an analysis of junction capacity, including vehicle queue lengths and reserve capacity at base year, year of opening, year of opening plus 5 years and year of opening plus 15 years have been undertaken and reported.
- **Mitigation :** The assessment includes the analysis of alternative junction designs at critical off-site junctions as proposed to mitigate the additional demands being generated by the both the LDA residential scheme and local third party committed development.

The assessment of effects of the proposed development on material assets are assessed in terms of quality (positive, neutral or negative effects), significance (imperceptible, not significant, slight, moderate, significant, very significant or profound effects), extent, context, probability (likely, unlikely effects) and duration (temporary, short term, long term or permanent effects) is in line with the criteria set out in Table 3.3 Description of Effects of the

Environmental Protection Agency *Guidelines on the Information to be Contained in Environmental Impact Assessment Reports – Draft (August 2017)*.

11.3 Potential Impacts

Construction Stage

It is anticipated that the proposed LDA residential development works would be constructed over a period of approximately 24-30 months if construction takes place uninterrupted in a single stage. Based upon the experience of similar house / duplex based residential developments, it is estimated that a development of this type, scale the rate of development would at a maximum necessitate approximately 46-60 staff on site at any one time, subsequently generating no more than 32-40 two-way vehicle trips during the local road networks morning and evening peak hour periods over the duration of the phased construction works.

Following the completion of the initial site clearance works with all topsoil and subsoil being reused on-site, the generation of external HGV movements will be evenly spread throughout the day and as such will not impact significantly during the peak AM and PM traffic periods. Based upon the experience and considering the scale and phased nature of the proposed development, we do not expect HGV vehicle movements to exceed 4 one-way vehicle movements per hour in each direction on average during the busiest period of construction ‘build’ works.

Operational Stage

A trip generation exercise has been undertaken to establish the potential level of trips that the proposed residential development could potentially generate. To estimate the potential level of vehicle trips that could be generated by the proposed residential development, reference has been made to (i) the TRICS database (for apartments) as well as (ii) utilizing trip rates from an existing ‘donor site’ (Ballygossan Park Phase 1) for house units and (iii) CSO Census data to establish baseline modal split data.

An assessment of the potential scale of impact by the proposed development upon the wider road network is predicted to be minimal and below both the CIHT / TII thresholds and the daily variation in traffic volumes experienced at nodes located a greater distance from the LDA site to those considered in **Table 11.A1** below.

Junction	Junction Name	Design Year	Percentage Impact	
			AM	PM
1	Ballygossan Park Access off Golf Link Rd (North)	2024	30.16%	33.99%
		2029	65.91%	74.65%
		2039	63.14%	71.60%
2	Proposed Site Access off Golf Link Rd (South)	2024	0.00%	0.00%
		2029	82.86%	97.42%
		2039	78.11%	91.59%
3	Golf Links Rd/Miller's Ln/Shenick Rd Junction	2024	5.61%	5.45%
		2029	15.04%	15.02%
		2039	14.19%	14.18%
4	Skerries Rd / Miller's Ln / Dublin Rd Roundabout	2024	1.96%	1.22%
		2029	5.44%	3.45%
		2039	5.13%	3.25%

Table 11.A1: Proposed SHD Development Traffic Predicted Impact on Key Local Junctions

It was determined that the percentage level of impact (additional vehicle volumes above predevelopment traffic conditions) generated by the proposed development traffic on the adjoining roads exceeded 10% in all scenarios for Junctions 1, 2 and 3. The recorded impact on Junction 4 is recorded as being below the TII 10% threshold (Uncongested network) but just above the 5% threshold (congested network) detailed in the best practice documentation entitled Traffic and Transport Assessment Guidelines (2014).

Table 11.A2 below establishes that the additional rail and bus trips that the proposed development is predicted to generate amounts to only 3.6% and 3.9% of the total public transport network capacity available during the morning (0600-1000) and evening (1600-2000) peak periods respectively.

Mode of Travel	Peak Period	Existing Two-Way Capacity	Additional Proposed Development Trips	Scale of Impact (%)
Rail	AM (0600-1000)	5821	245	4.2 %
	PM (1600-2000)	6260	287	4.5 %
Bus	AM (0600-1000)	2196	47	2.1 %
	PM (1600-2000)	2356	55	2.3 %
Network Total	AM (0600-1000)	8017	292	3.6 %
	PM (1600-2000)	8616	342	3.9 %

Table 11.A2: Proposed LDA Developments Recorded Network Impact

11.4 Mitigation Measures

Construction Stage

The Construction Management Plan (as compiled by the appointed contractor) and the associated Construction Traffic Management Plan (CTMP) in addition to accompanying Construction and Waste Management Plan will incorporate a range of integrated control measures and associated management initiatives with the objective of mitigating the impact of the proposed on-site construction activities associated with the development.

Operational Stage

A package of integrated mitigation measures has been identified to off-set the additional local demand that the proposed residential development at the subject site could potentially generate as a result of the forecast increase in vehicle movements by residents of the scheme. The identified measures and associated timescale for their implementation are summarised below.

- **Management** – A Mobility Management (MMP) is compiled with the aim of guiding the delivery and management of coordinated initiatives by the scheme promotor to be implemented upon occupation of the site. The MMP will ultimately seek to encourage sustainable travel practices for all journeys to and from the proposed development.
- **Infrastructure by Applicant (2022/2023)** – Off-site junction enhancements at both Miller’s Lane junctions as recently permitted by FCC.
- **Infrastructure (By Others)** – The aspirations of the Fingal County Council Development Plan seeks the implementation of the Skerries Southern Relief Road (Local Objective No 10) which upon delivery will transform local traffic characteristics along Golf Links Road. Whilst the proposed off-site junction enhancements have been proved to fully mitigate the predicted impact from both the subject LDA development and the neighbouring Noonan plot and will provide further relief to the existing local road network.
- **Infrastructure (Bicycle Facilities)** – The development proposals seek to encourage sustainable travel habits through the provision of a network of dedicated infrastructure connections for active modes of travel. This includes the implementation of (i) segregated bicycle tracks along the eastern side of the proposed developments main north-south ‘link’ street, (ii) the provision of a dedicated shared ped / cycle connection along the entire western boundary of the subject site which links into existing and the emerging (Noonan Construction site) onwards connections subsequently providing an attractive and convenient route to/from the R127 Dublin Rd corridor, and (iii) internal traffic free pedestrian links that provide an attractive and positive advantage (e.g. shortest route) for pedestrians. The design of the LDA residential development includes the provision of a total of 802 bicycle parking opportunities including both long term (residents) and short term (visitors) bicycle parking facilities. This overall quantum complies with development management standards. Furthermore, in accordance with best practice the dedicated long term (residents) bicycle parking all benefit from the provision of secure weather protection.

- **Infrastructure (Permeability)** – The design of the scheme proposals has sought to maximise the ability to provide attractive connections to the third-party lands surrounding the subject development site. The implementation of pedestrian / cycle infrastructure extending right up to the boundary of the site enables the planning authority, in consultation with third parties as appropriate; to deliver a network of permeable linkages between the subject development lands and both existing and future developments adjoining the subject site.
- **Car Sharing** – The applicant is in negotiations with GoCar, the leading car sharing service provided in Ireland; to locate and base a GoCar vehicle on-site within the subject development. The availability of car sharing on-site provide a viable alternative to residents owning private vehicles whilst still having access to a car when required.

10.5 Residual Impacts

Construction Phase

Provided the above mitigation measures and management procedures are incorporated during the construction phase, the residual impact on the local receiving environment will be temporary in nature and neutral in terms of quality and effect. The significance of each of the projected impacts are detailed in **Table 11A.1** for the following key junctions:

- **Junction 1:** Ballygossan Park Site Access off Golf Links Road (North)
- **Junction 2:** Proposed Site Access of Golf Links Road (South)
- **Junction 3:** Golf Links Rd/Miller's Ln/Shenick Rd Junction
- **Junction 4:** Skerries Rd/Miller's Ln/Dublin Rd Roundabout

The significance of the impacts has been determined in accordance with the classifications stipulated within the Environmental Protection Agency's Guidelines on the Information to be Contained in Environmental Impact Assessment Reports - Draft (August 2017). The scale of the predicated construction impact has been considered in the specific context of the network's baseline capacity which enabled the scale and subsequent impact significance to be predicted.

<u>Junction Ref</u>	<u>Environment Character</u>	<u>Quality / Scale of Impact</u>	<u>Impact Significance</u>	<u>Duration</u>
<u>1</u>	<u>Low-Medium Sensitivity</u>	<u>Negative - Medium</u>	<u>Moderate</u>	<u>Short Term</u>
<u>2</u>	<u>Low Sensitivity</u>	<u>Negative - Low</u>	<u>Slight</u>	<u>Temporary</u>
<u>3</u>	<u>Medium Sensitivity</u>	<u>Negative - Medium</u>	<u>Moderate</u>	<u>Short Term</u>
<u>4</u>	<u>Medium Sensitivity</u>	<u>Negative - Low</u>	<u>Slight</u>	<u>Short Term</u>

Table 11A.3: Impact Significance at Local Nodes – Construction Phase

Operational Phase – Public Transport

The potential additional passenger demands predicted to be generated by both the proposed LDA development and the neighbouring committed development (Noonan Construction) have been established which has enabled an assessment of the public transport networks capacity in the post development scenario to be undertaken.

Table 11A.4 below reveals that both the bus and rail networks have the capacity to accommodate the additional demands across the peak AM and PM travel periods.

Mode of Travel	Peak Period	Direction of Travel	Existing Network Total Passenger Capacity	Existing Reserve Capacity (Adjusted Post Covid)	Additional Forecast Passenger Demands per Development Proposal			Forecast Reserve Capacity (Post Development)	
					LDA	Noon	Total	Passenger No's	%
Bus	AM	Southbound	1515	1352	47	20	67	1285	84.9%
		Northbound	681	556	0	0	0	556	81.6%
		Two-way	2196	1908	47	20	67	1841	83.8%
	PM	Southbound	720	584	0	0	0	584	81.0%
		Northbound	1636	1458	55	23	78	1380	84.3%
		Two-way	2356	2042	55	23	78	1965	83.4%
Rail	AM	Southbound	4421	1458	197	83	280	1178	26.6%
		Northbound	1400	683	48	20	68	615	43.9%
		Two-way	5821	2141	245	103	348	1793	30.8%
	PM	Southbound	2240	1459	55	23	78	1381	61.6%
		Northbound	4020	790	232	99	331	459	11.4%
		Two-way	6260	2249	287	122	409	1840	29.3%

Table 11A.4: Forecast Public Transport Capacity Based Upon Existing Service Levels

Operational Phase - Road Network

In reference to TII thresholds, the analysis for the future design years Do-Something traffic scenarios in 2024, 2029 and 2039 at the off-site Skerries Rd / Miller's Ln / Dublin Rd Roundabout demonstrates that the proposed residential development operational traffic will not generate an impact greater than 10% or 5% on normal or congested networks, respectively. As a result, the impact can be classified as sub threshold.

Junction Reference	Peak Hour Period	Future Design Year		
		2024	2029	2039
JUNCTION 1 - Ballygossan Park Site Access	AM	0.13	0.22	0.23
	PM	0.13	0.23	0.24
JUNCTION 2 - Proposed Site Access (Golf Link)	AM	0.10	0.10	0.10
	PM	0.01	0.09	0.09
JUNCTION 3 - Golf Links Rd / Miller's Lane / Shenick Rd	AM	0.38	0.46	0.48
	PM	0.53	0.63	0.67
JUNCTION 4 - Dublin Road/ Millers Lane / Skerries Rd	AM	0.37	0.42	0.45
	PM	0.54	0.61	0.66

Table 11A.5: Maximum Ratio of Flow to Capacity (RFC) at Local Key Nodes – Do Something Scenario

The implementation of the identified mitigation measures will ensure that the residual effect on the local receiving environment is both managed and minimised. The significance of each of the projected impacts (11A.3) at each of the key local nodes is detailed within the following tables for the worst case (e.g., peak hours) during the 2039 Future Design Year scenarios.

Ref	Environment Character	Quality / Scale of Impact	Impact Significance	Duration
1	Low-Medium Sensitivity	Negative – High	Moderate	Long Term
2	Low Sensitivity	Negative - Medium	Slight	Long Term
3	Medium Sensitivity	Negative - Medium	Moderate	Long Term
4	Medium Sensitivity	Negative - Negligible	Not Significant	Long Term

Table 11A.6: Road Network Impact Significance – Operational Phase

12.0 MATERIAL ASSETS – WASTE

The subject site is situated within the Fingal local authority area and consequently the proposed development must comply with the waste management requirements of Fingal County Council as well as the relevant National and Regional waste management requirements.

12.1 Construction Phase Impacts

The construction phase of the project will generate a range of waste and non-waste (by-product) materials. These wastes and by-product materials will be required to be separated, stored, managed and transported in an appropriate manner to ensure that waste materials and litter are not generated at the subject site that could cause public nuisance.

Excavation work will generate volumes of waste clay, subsoil and rock that will require appropriate management. Correct classification and segregation of the excavated material is required to ensure that any potentially contaminated materials are identified and managed in a way that will not impact negatively on the environment. The contractor will be contractually required to ensure that all waste management is carried out in accordance with the site specific Resource and Waste Management Plan. This will prevent incorrect handling of wastes that could have a negative impact on the receiving environment. Wastes arising will need to be taken to authorised waste management facilities where they will be processed for reuse, recycling, recovery, and/or disposal as appropriate. There are a number of licensed waste facilities in the Eastern Midlands region which can accept hazardous and non-hazardous waste materials with sufficient capacity for the acceptance of the likely C&D waste arisings from the proposed project. For the most part waste will be segregated into reusable, recyclable and recoverable materials.

The potential effect of construction waste generated from the proposed development is considered to be not significant and short-term.

12.2 Operational Phase Impacts

The proposed development will provide for 345 residential units which has the potential to generate significant quantities of waste materials on a daily basis. The main potential impact of the operational phase on the environment would be, should there be no waste management procedures in place for the waste generated at the site, that the majority of the waste generated would end up in landfill.

There is a significant volume of waste collection, treatment, recovery and disposal infrastructure in place in the area and wider region to effectively manage waste from this type of development. Waste which is not suitable for recycling is typically sent for energy recovery. There are also facilities in the region for segregation and management of municipal recyclables.

The potential effect of operational waste generated from the proposed development is considered to be not significant and long term.

12.3 Mitigation Measures

Prior to commencement of construction works, the contractor(s) will be required to prepare a site-specific Resource and Waste Management Plan (RWMP) The RWMP shall set out the proposed mechanisms for the proper handling, segregation, storage, recycling and/or disposal of all wastes and by-products associated with the proposed development at the subject site. The construction contractor will be required to employ a suitably qualified Resource Manager (RM) with expertise in waste and resource management to implement the requirements of the RWMP. The specific mitigation measures that will be implemented at the site shall be detailed in the RWMP and are outlined in the main EIAR document.

These mitigation measures will ensure that construction waste generation rates at the site are minimised and that all wastes generated during construction will be managed in an environmentally sound manner and in compliance with the relevant waste legislation.

An Operational Waste Management Plan (OWMP) has been prepared to demonstrate how the required infrastructure will be incorporated into the design and operational management of the development to ensure that domestic wastes will be managed and monitored with the objective of maximising the quantity of waste segregated at source and maximising the volume of clean recyclable materials generated by the residents of the development.

Each residential unit will provide sufficient internal storage space for the storage of mixed dry recyclables, mixed non-recyclables, organic waste and glass. Each unit shall include waste storage bins which will be of such a size that will allow easy manual handling of them to be brought to the private bin stores.

Each residential unit will have its own external bin stores that will house three separate bins to provide full segregation for maximum recycling. Each bin in the bin store will be clearly labelled and colour coded to avoid cross-contamination of the different waste streams. Signage will be posted above or on the bins to show exactly which waste types can be placed in each bin.

12.3 Residual Impacts

The implementation of the RWMP for the construction phase of the development will ensure minimal rates of waste generation in the first instance and maximum prevention, recycling, reuse and recovery of the wastes that are generated during the construction phase. Effective implementation of the RWMP will minimise the amounts of waste that will require to be landfilled.

The predicted impacts on the receiving environment of the wastes generated during the construction phase are considered to be not significant and short term.

The operational waste management measures that are proposed for the development and detailed in the Operational Waste Management Plan will ensure maximum waste prevention, recycling and recovery is achieved. Recycling and recovery rates are expected to be higher than the national average.

The predicted impacts on the receiving environment of the wastes generated during the operational phase are considered to be imperceptible and long-term. There is potential for a slight net-positive impact if the waste recovery rates at the development operate above the national average rates.

13.0 MATERIAL ASSETS - UTILITIES

13.1 INTRODUCTION

This chapter of the EIAR will comprise of an assessment of the likely impact of the proposed development on existing surface water, water supply, foul drainage and utility services in the immediate area surrounding the site and assesses the impact of the proposed development on these aspects of the existing environment. Where necessary, proposed mitigation measures have been identified to minimise any impacts.

The material assets considered in this chapter of the EIAR will include Surface Water Drainage, Foul Drainage, Water Supply, Electricity, Gas and Telecommunications.

13.2 METHODOLOGY

As part of assessing the likely impact of the proposed development, surface water runoff, foul drainage discharge and water usage calculations were carried out in accordance with the following guidelines:

- Greater Dublin Strategic Drainage Study (GDSDS).
- Method outlined in Irish Water's Code of Practice for Wastewater Infrastructure.
- Method outlined in Irish Water's Code of Practice for Water Infrastructure.
- Guidelines on the Information to be Contained In Environmental Impact Assessment Reports Draft 2017 published by the EPA.
- European Commission's Guidance Environmental Impact Assessment of Projects Guidance on the preparation of the Environmental Impact Assessment Report (2017).

Assessment of the potential impacts of the proposed development on existing material assets in the vicinity of the site included:

- Review of Irish Water utility plans (surface water drainage, foul drainage and water supply).
- Consultation with Irish Water and Fingal County Council.
- Submission of a Pre-Connection Enquiry Application to Irish Water.
- Review of ESB Networks Utility Plans.
- Review of Gas Networks Ireland Service Plans.
- Review of Eir E-Maps.
- Review of Virgin Media Maps.

13.3 OUTLINE IMPACTS OF THE PROPOSED DEVELOPMENT

13.3.1 Foul Sewerage

Construction

- Improper discharge of foul drainage from contractor's compound.
- Discharge from the excavated areas could potentially lead to siltation, surcharge and flooding within the sewerage system.
- Connections to existing foul line may lead to interruption to foul supply.

Operational

- Increased discharge to foul drainage network.
- Leaks in the network causing potential contamination of groundwater and surface water.

Cumulative Impacts

In terms of cumulative impacts the following developments have been assessed:

- The 'advanced infrastructure works' is subject of a Section 34 application, and that which is currently under consideration by ABP (Ref. ABP-312189-21)
- 'Ballygossan Phase 2' refers to the lands to the north in the ownership of Noonan Construction which has been the subject of an SHD pre-application to the Board (Ref. ABP 308583-20). This is included as the cumulative impacts from this project have been assessed with the Advance Infrastructure application.
- Off-site road improvements which were granted by ABP and FCC (ABP Reg. Ref. 309409; FCC Reg. Ref. F20A/0324) to provide the necessary upgrades to local road network.

The above developments (excluding the road improvements) will have similar impacts during the construction phase in relation to the foul system. Should the construction phase of any developments coincide with the development of this proposed site, potential cumulative impacts are not anticipated once mitigation measures noted are implemented.

- Additional flow to wastewater treatment plant.

13.3.2 Surface Water

Construction

- Surface water runoff during the construction phase may contain increased silt levels (e.g. runoff across areas stripped of topsoil) or become polluted by construction activities.
- Discharge of rainwater pumped from excavations may also contain increased silt levels (potential impact on existing hydrology e.g. discharge to existing open drain).
- Accidental spills and leaks associated with storage of oils and fuels, leaks from construction machinery and spillage during refuelling and maintenance.
- Concrete runoff, particularly discharge of wash water from concrete trucks.

Operational

- Increased impermeable surface area will reduce local ground water recharge and potentially increase surface water runoff (if not attenuated to greenfield runoff rate).
- Accidental hydrocarbon leaks and subsequent discharge into piped surface water drainage network (e.g. along roads and in driveway areas).
- Risk of flooding if runoff of surface water from the development site is not attenuated and managed properly.

Cumulative Impacts

In terms of cumulative impacts the following developments have been assessed:

- The 'Advanced Infrastructure works' is subject of a Section 34 application, and that which is currently under consideration by ABP (Ref. ABP-312189-21).
- 'Ballygossan Phase 2' refers to the lands to the north in the ownership of Noonan Construction which has been the subject of an SHD pre-application to the Board (Ref. ABP 308583-20). This is included as the cumulative impacts from this project have been assessed with the Advance Infrastructure application.
- Off-site road improvements which were granted by ABP and FCC (ABP Reg. Ref. 309409; FCC Reg. Ref. F20A/0324) to provide the necessary upgrades to local road network.

The above developments will have similar impacts during the construction phase in relation to the existing surface water system. Should the construction phase of any developments coincide with the development of this proposed site, potential cumulative impacts are not anticipated once mitigation measures noted below are implemented.

13.3.3 Water Supply

Construction

- Cross contamination of potable water supply to construction compound.
- The installation of water supply line will be conducted in parallel with other services using trench excavation.

Operational

- Increased potable water consumption.

Cumulative Impacts

- Increased demand on the water supply infrastructure. Irish Water have been consulted and have confirmed the increased demand can be facilitated within the existing infrastructure.

13.4 OUTLINE MITIGATION MEASURES

A detailed "Construction Management Plan" will be prepared by the Contractor and implemented during the construction phase. Site inductions will include reference to the procedures and best practice as outlined in the "Construction Management Plan".

13.4.1 Foul Sewerage

- In order to reduce the risk of defective or leaking sewers, all new sewers should be laid in accordance with the relevant standards, pressure tested, and CCTV surveyed to ascertain any possible defects.
- The construction compound will include adequate staff welfare facilities including foul drainage. Foul drainage discharge from the construction compound will be removed off site to a licensed facility until a connection to the public foul drainage network has been established.
- It is envisaged that the development would take place and be occupied over a reasonable time period, and therefore the downstream foul sewerage system (foul sewer network and wastewater treatment facility) would be gradually loaded.

13.4.2 Surface Water

- Surface water runoff from areas stripped of topsoil and surface water collected in excavations will be directed to on-site settlement ponds where measures will be implemented to capture and treat sediment laden runoff prior to discharge of surface water at a controlled rate.
- In order to mitigate against spillages contaminating the surrounding surface water and hydrogeological environments, all oils, fuels, paints and other chemicals will be stored in a secure bunded hardstanding area. Refuelling and servicing of construction machinery will take place in a designated hardstanding area which is also remote from any surface water inlets (where not possible to carry out such activities off site).
- Concrete batching will take place off site and wash down and wash out of concrete trucks will take place off site (at authorized concrete batching plant in full compliance with relevant planning and environmental consents).
- Discharge from any vehicle wheel wash areas is to be directed to on-site settlement ponds.
- In order to reduce the risk of defective or leaking sewers, all new sewers should be laid in accordance with the relevant standards, pressure tested, and CCTV surveyed to ascertain any possible defects.
- Regular maintenance of the drainage network including the petrol interceptor, flow control device and surface water storage system will ensure that they are operating correctly.
- The design of proposed site levels (roads etc.) has been carried out to ensure the proposed development is elevated and set in such a way as to avoid concentrating additional surface water flow in a particular location.
- Surface water runoff from the site will be attenuated to the greenfield runoff rate as outlined in the Greater Dublin Strategic Drainage Study (GSDSDS).
- Surface water discharge rates will be controlled by a Hydrobrake type vortex flow control device.
- A contract will be entered into with a suitably qualified contractor for maintenance of the attenuation system, Hydrobrake and fuel / oil separator noted above.

13.4.3 Water Supply

- The watermains would be tested according to the requirements of Irish Water and Fingal County Council prior to commissioning.
- Where possible backup network supply to any services will be provided should the need for relocation or diversion of existing services be required otherwise relocation or diversion works will be planned to incur minimal impact, with users notified in advance of any works.

13.4.4 Utilities

- The electrical ducting and infrastructure will be installed to the requirements of ESB Networks and the national standards.
- The comms ducting and infrastructure is to be installed as per the requirements of the provider.

13.5 RESIDUAL IMPACTS

Construction Phase – SHD

Taking account of the mitigation measures proposed during the construction of the application site, the residual impacts for the construction phase are considered to be neutral and the significance of the impact has been assessed as not significant.

Construction Phase – Cumulative Impact of Other Relevant Projects

Considering the proposed Advance Infrastructure Works there is no additional methods of construction considered than what has been proposed in this SHD, therefore cumulative residual impacts for construction are considered to be neutral and the significance of the impact has been assessed as not significant.

Operational Phase – SHD

Taking account of the mitigation measures proposed during the construction of the application site, the residual impacts for the operational phase are considered to be neutral and the significance of the impact has been assessed as not significant.

Operational Phase – Cumulative Impact of Other Relevant Projects

Considering proposed Advance Infrastructure Works and Ballygossan Phase 2 as noted above and the confirmation required from Irish Water of system capacity, the residual impacts for the operational phase are considered neutral, and the significance of the impact has been assessed as not significant.

14.0 RISK MANAGEMENT

14.1 Introduction

The purpose of this chapter is to identify and evaluate the potential risk to the project and the surrounding environment during construction and subsequent operation. The assessment identifies the risks associated with construction activities and evaluates the significance of the risk.

14.2 Methodology

Information relating to the proposed development in relation to construction issues and impact on the adjacent infrastructure was assessed using the design information prepared for the planning stage and publicly available datasets in relation to ground information, topography, safety information and compliance with statutory legislation.

14.3 Potential Impacts

The potential risks to human life were assessed based on review of proposed development, interaction with the surrounding structures, ground conditions and location and nature of existing services. The proposed works do not exhibit abnormal, significant or unusual risks that would not be unknown to a competent contractor. The impact of Seveso sites were assessed.

14.4 Mitigation Measures.

The Safety Health and Welfare at Work (Construction) Regulations 2013 (and subsequent amendments) impose duties on the Design Team and construction Team to minimise risk by designing out risk and putting in place control measures for remaining risks.

In addition, there will be specific management plans prepared for design elements of the project, such as Traffic and Environmental, which will define methodologies and requirements for the management of risk to workers and the public.

14.5 Residual Impacts

Taking into account of the requirements under the Safety Health and Welfare Legislation and the development of detailed site-specific risk assessments and method statements, the risk to site operatives and those living in the surrounding environment post construction will be minimised. Seveso Tier 1 & 2 sites are sufficiently remote not to pose a significant threat to human life. Impacts of weather can be accommodated by appropriate site management measures and appropriately designed Suds technology.

15.0 INTERACTIONS BETWEEN ENVIRONMENTAL FACTORS

The purpose of this chapter of the EIAR is to draw attention to significant interaction and interdependencies in the existing environment. John Spain Associates in preparing and co-ordinating this EIAR ensured that each of the specialist consultants liaised with each other and dealt with the likely interactions between effects predicted as a result of the proposed development during the preparation of the proposals for the subject site and this ensures that mitigation measures are incorporated into the design process. This approach is considered to meet with the requirements of Part X of the Planning and Development Act 2000, as amended, and Part 10, and schedules 5, 6 and 7 of the Planning and Development Regulations 2001-2020. The detail in relation to interactions between environmental factors is covered in each chapter of the EIAR and is reiterated within the interactions chapter.

16.0 SUMMARY OF EIA MITIGATION AND MONITORING MEASURES

This chapter provides a summary of all the mitigation and monitoring measures proposed throughout the EIAR document for ease of reference for the consent authority and all other interested parties.

One of the main purposes of EIA is to identify potentially significant adverse impacts at the pre-consent stage and to propose measures to mitigate or ameliorate such impacts. This chapter of the EIAR document sets out a summary of the range of methods described within the individual chapters of this EIAR document which are proposed as mitigation and for monitoring during the construction and operational phases of the proposed development. It is intended that this chapter of the EIAR document will provide a useful and convenient summary for the competent/consent authority of the range of mitigation and monitoring measures proposed.

EIA related conditions are normally imposed by the competent/consent authority as part of conditions of planning consent and form a key part of the Impact Anticipation and Avoidance strategy. Conditions are principally used to ensure that undertakings to mitigate are secured by explicitly stating the location, quality, character, duration and timing of the measures to be implemented.

Monitoring of the effectiveness of mitigation measures put forward in the EIAR document, both by the competent authorities and the developer, is also an integral part of the process. Monitoring of environmental media and indicators arise either from undertakings or from conditions.

In the case of mitigation and monitoring measures it is important for all parties to be aware of the administrative, technical, legal and financial burdens that can accompany the measures proposed. It is also important to ensure that, where monitoring is provided for, it is clearly related to thresholds, which if exceeded cause a clearly defined set of actions to be implemented.