

ENVIRONMENTAL IMPACT ASSESSMENT REPORT

VOLUME I NON-TECHNICAL SUMMARY



**PROPOSED RESIDENTIAL DEVELOPMENT
AT
Farrankelly, Greystones, Co. Wicklow
On behalf of
Cairn Homes Properties Ltd
Prepared by**



September 2019

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LIST OF ABBREVIATIONS

AA	Appropriate Assessment	GDP	Gross Domestic Product
ABP	An Bord Pleanála	GSI	Geology Survey Ireland
CDP	County Development Plan	IAA	Irish Aviation Association
CMP	Construction Management Plan	IEEM	Institute of Ecology and Environmental Management
CSO	Central Statistics Office	IFI	Inland Fisheries Ireland
DAHG	Department of Arts, Heritage and the Gealtacht	NHA/pNHA	Natural Heritage Area / proposed Natural Heritage Area
DCENR	Department of Communications, Energy and Natural Resources	NIAH	National Archive of Architectural Heritage
DEHLG	Department of Housing, Planning and Local Government	NPWS	National Parks and Wildlife Service
EIA	Environmental Impact Assessment	NRA	National Roads Authority
EIAR	Environmental Impact Assessment Report	NPF	National Planning Framework
EMP	Environmental Management Plan	OPW	Office of Public Works
EPA	Environmental Protection Agency	PBSA	Purpose-Built Student Accommodation
ESRI	Economic and Social Research Institute	RMP	Record of Monuments and Places
FMP	Forest Management Plan	RPG	Regional Planning Guidelines
		RPS	Record of Protected Structures

SAC Special Area of Conservation

SMR Sites and Monuments Record

SPA Special Protection Area

SHD Strategic Housing Development

SUDS Sustainable Drainage System

TMP Traffic Management Plan

WFD Water Framework Directive

WCC Wicklow County Council

1.0 INTRODUCTION & METHODOLOGY

1.1 INTRODUCTION

This 'Non-Technical Summary' (NTS) relates to a strategic housing application to An Bord Pleanála for a proposed residential development of 426 no. dwellings, a creche and open space.

The central purpose of the Environmental Impact Assessment Report (EIAR) is to undertake an appraisal of the likely and significant impacts on the environment of the proposed development in parallel with the project design process, and to document this process in the EIAR. This is then submitted to the competent/ consent authority to enable it assess the likely significant effects of the project on the environment. This assessment will then inform the decision as to whether the development should be permitted to proceed.

The subject lands are located within the built-up area of Greystones - Delgany and are bounded by Glenbrook Park and Eden Gate to the south and Glenheron to the east. Further to the north, on the opposite side of the Three Trouts stream, is Delgany Park. A full description of the proposed development lands together with a description of the proposed development is provided in Chapter 2 Volume 2 of the EIAR document. The subject lands of 21.2 hectares are located in the townlands of Farrankelly and Killincarraig, Delgany, Greystones, Co. Wicklow bounded by the "Three Trouts" stream to the north, existing residential development (Eden Gate & Glenbrook Park) to the south, the Kilcoole Road (R761), to the east, and Priory Road to the west.

The development will consist of the construction of a residential development of 426 no. dwellings, a creche (c. 599 sq. m), residential amenity building (c. 325 sq. m), active open space of 4.5 hectares, greenway of c. 2.4 hectares as follows:

- A) 245 no. houses comprising; 148 no. 3 bedroom houses, 93 no. 4 bedroom houses, and 4 no. 5 bedroom houses [houses are provided with two car parking spaces and solar panels] – House Type E, 3 storey to front – 2 storey to rear; House Types G1,G2,G3, and H dormer house types, all other house types 2 storey;
- B) 93 no. apartments with balconies in 3 no. 4 storey apartment buildings (Blocks 1 and 2 over part basement/podium) comprising 36 no. 1 bedroom apartments, 53 no. 2 bedroom apartments and 4 no. 3 bedroom apartments;
- C) 44 no. 2 bedroom duplex apartments and 44 no. 3 bedroom duplex apartments in 11 no. 3 storey duplex buildings;
- D) Provision of a 2 storey split level residential amenity building of c. 325 sq. m (3 no. car parking spaces and 12 no. bicycle spaces). Temporary use of the residential amenity building as a marketing suite for a period of 3 years.
- E) Provision of a 2 storey creche of c. 599 sq. m (10 no. car parking & 12 no. cycle spaces), 1 no. ESB substation (beside creche) and ESB kiosks, associated single storey bicycle storage and refuse storage buildings.
- F) Active Open Space of c. 4.5 hectares comprising: 1 no. playing pitch, 1 no. multi-purpose pitch (with all weather surface), tennis courts, children's play area, trim trail and parking (30 no. car parking spaces & 20 no. bicycle spaces),
- G) Approximately 4.2 hectares of open space comprising; a pedestrian and cycle route or 'greenway' (and associated paths, stream crossing and lighting) at the "Three Trouts" stream (c. 2.4 hectares); c. 1.8 hectares of open space within the development (including playground areas); all ancillary landscape works with public lighting, planting and boundary treatments including regrading/re-profiling of site where required as well as provision of cycle paths.
- H) Access to the subject site will be from a new priority junction (including upgraded frontage), located on the Kilcoole Road (R761). The proposal includes for the construction of a vehicular/pedestrian access from Priory Road as well as 3 no. independent vehicular access points from Priory Road to serve 9 no. dwellings, construction of cyclist and pedestrian link to boundary of Eden Gate development located to the south, 762 no. car parking spaces and 225 no. cycle spaces.
- I) Surface water and underground attenuation systems as well as all ancillary site development works (reprofiling of site as required) as well as to drainage services (including underground pumping station), all on a site of c. 21.2 hectares.
- J) Temporary marketing signage for a period of 3 years (located beside Priory Road and Kilcoole Road).
- K) All associated site development and landscape works.

1.2 REQUIREMENT FOR EIA (SCREENING)

Screening is the term used to describe the process for determining whether a proposed development requires an EIA by reference to mandatory legislative threshold requirements or by reference to the type and scale of the proposed development and the significance or the environmental sensitivity of the receiving baseline environment. Annex I of the EIA Directive 85/337/EC requires as mandatory the preparation of an EIA for all development projects listed therein.

Schedule 5 (Part 1) of the Planning & Development Regulations 2001 (as amended) transposes Annex 1 of the EIA Directive directly into Irish land use planning legislation. The 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.

The proposed development falls within the type of development under 10(b)(i) and 10(b)(iv) of Part 2 of Schedule 5 of the Planning and Development Regulations 2001-2015. Category 10(b)(i) refers to 'Construction of more than 500 dwellings'. The proposal is for 426 no. dwellings and is therefore below the 500 dwelling threshold and a mandatory EIA is not required.

Category 10(b)(iv) refers to '*Urban development which would involve an area greater than 2 hectares in the case of a business district, 10 hectares in the case of other parts of a built up area and 20 hectares elsewhere.*'

The overall SHD application site is 21.2 hectares which includes the Active Open Space of 4.5 hectares, a Greenway of 2.4 hectares along with the residential areas and open space. Having regard to the overall size of the site and to category 10(b)(iv) of Part 2 of Schedule 5 of the Planning and Development Regulations 2001, as amended, mandatory EIAR is required.

1.3 PURPOSE OF THIS 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.

1.4 INFORMATION TO BE CONTAINED IN A NON-TECHNICAL SUMMARY

This Non-Technical Summary (NTS) has been prepared in accordance with *inter alia* the requirements of the EU 2014 EIA Directive, Planning and Development Acts 2000-2018 as well as the Planning and Development Regulations, 2001, as amended (in particular by the European Union (Planning & Development) (Environmental Impact Assessment) Regulations 2018).

EIA Process Overview

One of the main purposes of the EIA process is to identify the likely significant impacts on the human environment, the natural environment and on cultural heritage associated with the proposed development, and to determine how to eliminate or minimise these impacts. The EIAR summarises the environmental information collected during the impact assessment of the proposed development.

A new definition of environmental impact assessment is now contained in Section 170A of the Planning and Development Act, 2000, as amended which reflects to the process as described under Article 1(2)(g) 4 of Directive 2014/52/EU and goes on to say that it includes –

(i) an examination, analysis and evaluation, carried out by the planning authority or the Board, as the case may be, in accordance with this Part and regulations made thereunder, that identifies, describes and assesses, in an

appropriate manner, in the light of each individual case, the direct and indirect significant effects of the proposed development on the following:

(I) population and human health;

(II) biodiversity, with particular attention to species and habitats protected under the Habitats Directive and the Birds Directive;

(III) land, soil, water, air and climate;

(IV) material assets, cultural heritage and the landscape;

(V) the interaction between the factors mentioned in clauses (I) to (IV), and

(ii) as regards the factors mentioned in subparagraph (i)(I) to (V), such examination, analysis and evaluation of the expected direct and indirect significant effects on the environment derived from the vulnerability of the proposed development to risks of major accidents or disasters, or both major accidents and disasters, that are relevant to that development;

Several interacting steps typify are involve in the various stages of the EIA process, which may be referred to in outline as including:

- Screening;
- Scoping;
- Preparation of EIA Report;
- The examination by the Competent Authority (CA) of the information presented in the environmental impact assessment report;

Screening: Screening is the term used to describe the process for determining whether a proposed development requires an EIA.

Scoping: This stage firstly identifies the extent of the proposed development and associated site, which will be assessed as part of the EIA process, and secondly, it identifies the environmental issues likely to be important during the course of completing the EIA process through consultation with statutory and non-statutory stakeholders. Where relevant, scoping requests were issued and the responses received have been considered as part of the compilation of the EIAR. The content of the EIAR has been informed by national guidelines, guidelines issued by the European Commission and other policy documents which are set out at Section 1.4 of the EIAR. In addition, pre-planning meetings with the various departments of Wicklow County Council and also with An Bord Pleanála (at SDH pre-application stage) all informed the EIAR.

Preparation of EIAR Report: The main elements in the preparation of an EIA Report relate to the consideration of alternatives, project description, description of the receiving environment, identification and assessment of impacts, monitoring and mitigation proposals.

The examination by the CA of the information presented in the environmental impact assessment report. The planning authority and An Bord Pleanála must consider each application for development consent on its own merits, taking into account all material considerations, including the reasoned conclusion in respect of EIA, before making its decision to grant, with or without conditions, or to refuse consent.

1.5 FORMAT AND STRUCTURE OF THE EIAR

1.5.1 EIAR Structure

The structure of the EIAR is laid out in the preface of each volume for clarity. It consists of three volumes as follows:

- Volume I: Non-Technical Summary (this document).
- Volume II: Environmental Impact Assessment Report.
- Volume III: Appendices.

This is the main volume of the EIAR. It provides information on the location and scale of the proposed development, details on design and impacts on the environment (both positive and negative) as a result of the proposed development. Each of the environmental aspects as listed below are examined in terms of the existing or baseline environment, identification of potential construction and operational stage impacts and where necessary proposed mitigation measures are identified. Volume III: Technical Appendices (Volume III contains specialists' technical data and other related reports).

1.5.2 EIAR Volume II Structure

The preparation of an EIAR requires the assimilation, co-ordination and presentation of a wide range of relevant information in order to allow for the overall assessment of a proposed development. For clarity and to allow for ease of presentation and consistency when considering the various elements of the proposed development, a systematic structure is used for the main body of this EIAR document. The structure used in this EIAR document is a “*Grouped Format structure*”. This structure examines each environmental topic in a separate chapter of this EIAR document. The structure of the EIAR Volume II document is set out in Table 1.1 below.

Table 1.1 – Structure of this EIAR

Chapter	Title
1	Introduction and Methodology
2	Project Description and Alternatives Examined
3	Population and Human Health
4	Biodiversity
5	Land and Soils
6	Water
7	Air Quality and Climate
8	Noise and Vibration
9	Landscape & Visual Impact
10	Material Assets - Traffic
11	Material Assets – Waste Management
12	Material Assets – Utilities
13	Archaeology and Architectural and Cultural Heritage
14	Risk Management for Major Accidents and / Or disasters
15	Interactions of the Foregoing
16	Summary of Mitigation and Monitoring Measures
17	Reference List

1.6 AVAILABILITY OF EIAR DOC

A copy of this EIAR document and Non-Technical Summary of the EIAR document is available for purchase at the offices of An Bord Pleanála and Wicklow County Council (Planning Authority) at a fee not exceeding the reasonable cost of reproducing the document. It can also be viewed on the SHD website - www.farrankellyshdplanning.com set up by the applicant.

1.7 STATEMENT OF DIFFICULTIES ENCOUNTERED

No particular difficulties, such as technical deficiencies or lack of knowledge, were encountered in compiling any of the specified information contained in this statement, such that the prediction of impacts has not been possible. Where any specific difficulties were encountered these are outlined in the relevant chapter of the EIAR.

1.8 ERRORS

While every effort has been made to ensure that the content of this EIAR document is error free and consistent there may be instances in this document where typographical errors and/or minor inconsistencies do occur. These typographical errors and/or minor inconsistencies are unlikely to have any material impact on the overall findings and assessment contained in this EIAR.

1.9 EIAR STUDY TEAM

The EIAR was prepared by a study team led by John Spain Associates, who were responsible for the overall management and co-ordination of the document. The EIAR team is set out in Chapter 1 of Volume II of the EIAR.

Figure 1.1 – Site Layout



Source: Metropolitan Workshop Architects

2.0 PROJECT DESCRIPTION AND ALTERNATIVES EXAMINED

2.1 INFORMATION ON THE SITE, DESIGN AND SIZE OF THE PROPOSED DEVELOPMENT

2.2 SITE CONTEXT

The site area of the SHD application is approximately 21.2 hectares. The Site Layout Plan prepared by Metropolitan Workshop Architects shows the overall layout in Figure 1.1.

2.2.1 Demolition

There is no demolition of habitable or any other structures relating to the proposed development.

In summary, the proposed development comprises the construction of 426 no. dwellings consisting of 245 no. houses, 93 no. apartments and 88 no. duplex units. A wide variety of dwelling typologies are included in the proposal, comprising 93 no. apartments in 1, 2 and 3 no. bedroom apartments in 3 no. apartment buildings along with 88 no. duplex units, in a series of buildings located centrally within the proposed development, which comprise c. 42% of the overall mix of units. In addition, it is proposed to provide 245 no. 3, 4 and 5 bedroom dwellings in a range of typologies comprising terraces, semi-detached and detached configurations.

The design intent is to provide a range of housing typologies of different heights, which include dormer dwellings (on the Priory Road, 2 storey dwellings (in a back to back arrangement) with Eden Gate located to the south, along with duplex dwelling buildings of 3 storeys and 3 no. apartment buildings of 4-storeys located centrally with the scheme layout. In addition, variety is provided with the inclusion of 3 storey dwellings along the Kilcoole Road.

Table 2.1 – Overall Residential Development Mix

	1 bedroom	2 bedroom	3 bedroom	4 bedroom	5 bedroom	Overall	% Breakdown
Houses			148	93	4	245	57.3%
Apartments	36	53	4			93	21.8%
Duplex Units		44	44			88	20.7%
	36	97	196	93	4	426	
Overall Mix	8.5%	22.8%	45.9%	21.8%	0.9%		

Source: Metropolitan Workshop Schedule of Areas

2.2.2 Houses

The houses are designed as dormer, two and three storey family dwellings, in detached, semi-detached or terraced configurations. Individual plot layouts provide good separation to ensure privacy and minimise overlooking. The end-row and end terrace house types have been used to turn corners, with front doors and windows giving activity and passive supervision to the sides and avoiding large blank gables.

The variety of house types provides for a wide choice to suit all potential occupiers and many household types, as well as permitting a very efficient site layout. The mix of house type in any one row creates visual interest and contribute to the specific character of the development, both overall and in each street.

Figure 2.1 – House Elevation CGI

2.2.3 Apartments

The apartments will be located in 3 no. 4 storey apartment buildings located centrally within the scheme. Overall there will be 93 no. apartments with balconies comprising 36 no. 1 bedroom apartments, 53 no. 2 bedroom apartments and 4 no. 3 bedroom apartments. Apartment Building nos. 1 and 2 will overlook the area of open space located to the east, while apartment building no. 1 will overlook the communal open space (of. C. 0.2 hectares) located within the apartment buildings.

Figure 2.2 – Apartment Block Elevation

Source: CSC

2.2.4 Duplex Units

It is proposed to provide 88 no. duplex units (44 no. 2-bed units and 44 no. 3 bed units) contained in 11 no. 3 storey duplex buildings located centrally within the scheme, to the south, west and north of the apartments.

Figure 2.3 – Duplex Block Elevation



Source: CSC

2.2.5 Creche

It is proposed to provide a two-storey creche of c. 599 sq. m along with an external play area of c. 253 sq. m. The creche is located to the south of Apartment Buildings 2 and 3 and to the west of Apartment Building 1. The creche will provide drop-off spaces along with bicycle parking of 12 no. spaces and 10 no. car parking spaces. A single storey bicycle store and bin store will be located on the western side of the external play area associated with the creche.

Figure 2.4 – Proposed Creche



Source: Metropolitan Workshop Architects

2.2.6 Residential Amenity Building

The proposed development includes a two storey split level residential amenity building, which will include floorspace for a gym and will be located on the eastern side of open space no. 1. The building will be accessed from the internal link road, with a reception area and multi-purpose space at upper ground floor level, with the Gym as well as a management office for the overall development located at lower ground floor level. The building will provide an important amenity asset for the new residential community and will also provide passive surveillance to the open space area. Bicycle parking (12 no. spaces) and car parking (3 no. spaces) will be provided.

Figure 2.5 – Residential Amenity Building



Source: CSC

2.2.7 Active Open Space

The subject lands include Active Open Space of c. 4.5 hectares, which is currently under the ownership of the Evans’ family. As part of the SHD application, it is proposed to deliver Active Open Space early in the build out of the overall lands (to commence in phase 1) in tandem with the general earthworks relating to the housing element of the scheme.

Figure 2.6 – Active Open Space (4.5 hectares)



Source: KFLA Architects

The Active Open Space will include a football pitch as well as a tennis court and multi-use pitch. In addition, it is proposed to provide a play area and an informal kickabout area to the front of the proposal. Some parking is also provided (c. 30 car parking spaces and 00 no. cycle spaces), with an additional overspill (grassed) area provided to cater for c. 25 spaces, if required.

The northern portion of the proposal includes for running/training areas, which will use the contours of the land where possible.

2.2.8 Three Trouts Riverwalk (Greenway)

The 'Three Trouts Stream' and associated woodland is also of high priority. Similar to the treatment of the existing hedgerows, this linear space will become an integral linking feature in the wider green route strategy, while the dense belt of woodland would remain as part of a greenbelt buffer zone. In terms of amenity use, the proposed walkway through the space would become a recreational asset to the wider local community, as well as future residents.

The green route proposed meanders through the existing woodland, utilizing existing tracks and topographical features, and provides an alternative circulation route for users, which connects to footpaths and existing tracks located outside of the site boundary. The proposed green route will function as a recreational route and will be defined

by a change in surface material. The route will begin at the south-west corner of the site and work its way around the site boundary up to the north-east corner. A small footbridge will cross the Three Trouts stream.

Figure 2.7 – Three Trouts “Greenway”



Source: KFLA Architects

A pedestrian/cycle link will join on to the green route from the main part of the site, through open space no. 1 and past the apartments to the north. Additional woodland planting will be planted at certain sections along the site boundary to create the atmosphere of a continuous woodland walk.

2.2.9 Parking

It is proposed to provide 757 no. car parking spaces and 235 no. cycle spaces within the scheme. The houses will be provided with 2 no. spaces per unit, 132 spaces will be provided for duplex units along with 88 cycle spaces, while the apartments will be provided with 97 no. car parking spaces (with a mixture of basement and surface spaces) and 93 no. cycle spaces.

Table 2.2 – Car Parking

	Car Parking	Bicycle Parking
Houses	490	
Apartments	97	93
Duplex Units	132	88
Creche	10	12
Active Open Space	30	20
Residential Amenity Building	3	12
Overall	762	225

Source: Metropolitan Workshop Architects – AOS excludes overspill car parking of c. 20 spaces

2.3 LANDSCAPING

2.3.1 Introduction

The overall landscape strategy is to provide a series of three main open space areas, connected by further linear green links (3 no. areas comprising c. 1.22 hectares) which are based on existing landscape features, to provide an overall integrated green infrastructure strategy, which is linked to the additional Active Open Space area of 4.5 hectares and the Greenway area (2.4 hectares). These existing features form part of the existing green infrastructure links within the site and surrounding area. The three primary open spaces are located centrally within the overall site and each space is easily accessible from the surrounding properties.

Central to the landscape strategy is the proposed walking and cycling route along the existing '*Three Trouts Stream*', which is located just inside of the northern site boundary. Both the stream itself and the dense woodland planting are prominent landscape features within the site.

The main method used to enhance green infrastructure links is the retention and strengthening of existing hedgerows and woodland areas. Existing hedgerows provide the opportunity to create green routes through the site, which serve both a recreational and ecological function.

Particular attention was given to the retention of Scots Pine trees which was identified as per the Greystones/Delgany Local Area Plan (Protection Objective T06).

2.3.2 Landscape Layout and Design

In all of the open spaces the levels have been carefully considered to accommodate a large flat area for passive recreation, formal play and ball games. Overlooking each of the lawn and play spaces, a seating space is located including benches, ornamental planting, flowering trees and feature paving.

2.3.3 Open Space Area no. 1

Open space area no. 1 is located in the eastern portion of the overall subject site and comprises c. 0.72 hectares and includes the Residential Amenity Building, located on the eastern portion of the open space.

A central landscape element within the space is the existing native hedgerow which runs on a north-south axis through the space, this hedgerow will be enhanced and strengthened, and the old lane way associated with the hedgerow will be reinstated as a gravel path. This hedgerow also defines the two main parts of the overall space. The eastern portion has more accommodating levels and will provide for a range of active uses. Within this area, there is a central lawn area provided for passive recreation and active play, which is defined by formal clipped hedges and shrub planting.

To the west of the central hedgerow is the western area. The levels have also been reprofiled to accommodate a flat lawn area. Along the western side of this space is a buffer zone which runs alongside the apartments fronting onto the open space. The buffer zone is composed of sections of native understory planting and copses of native trees strategically located to maintain a visual connection between the semi-private apartments and the open space. This zone acts as a visual screen while also providing amenity and habitat value to the proposed development. A walkway/cycle track through the buffer zone provides a secondary circulation route.

Figure 2.8 –Open Space no. 1



Source: KFLA

2.3.4 Open Space Area no. 2

Figure 2.9 – Open Space Area no. 2



Source: KFLA

The design of the space is focused around a central lawn which is overlooked by a seating area. The main seating area is defined by ornamental planting, feature paving and a central raised planter. The raised planter also provides

a seating option and it's central positioning allows movement through and around the space. Stepping stones, timber stilts and balance beams, tree copses and other features provide opportunities for natural and creative play.

2.3.5 Open Space no. 3

The spatial design of this space is focused on a formal children's playground at the northern end of the space. A seating space is provided adjacent to this which is designed to provide inward and outward orientated seating options surrounded by planting with a specific planting mix to attract insects and birds. From this seating area views are provided of the open space and of the playground. The planting design has been carefully considered to define all of the sub-spaces within the overall space. Shrub planting around the edges of the open space helps to define it, while also providing screening.

Figure 2.10 –Open Space no. 3



Source: KFLA

Communal Open Space

Within the apartment blocks there is an allowance of semi-private communal open space for use by the residents of the block comprising c. 0.2 hectares. The quantum of space for each apartment is above the DoHPLG Planning Guidelines for Design Standards for New Apartments 2018, which requires c. 0.12 hectares.

Materials and Site Furniture

A number of the play areas throughout the scheme are designed as a 'Natural Play Area', this is where a preference is given to natural play features, materials, and objects over the standard manufactured play equipment. There is a greater emphasis on building, creation, exploration and pretending as activities to extend the interest in the play area for users that visit regularly, as is common in a residential landscape space.

The surfaces will be primarily grass, gravel and sand. Level changes, grass mounds and steps will be incorporated into the scheme as a central feature of the space. Within the space created a number of activities are facilitated such as balancing, jumping, climbing and crawling.

2.3.6 Planting Strategy

The planting palette has a limited number of species chosen for their appropriateness and with a preference for native planting where possible. The existing trees that are retained within the scheme are to be enhanced and strengthened by additional planting of native and naturalised broadleaf tree planting. Throughout the public open spaces, a mix of broadleaf deciduous trees will be planted that will increase the woodland cover while facilitating safe use of the spaces.

The perimeter planting around the site will be native and naturalised broad-leaf hedgerow and tree-planting, along with dense woodland and understory planting to create visual screening and improve biodiversity. Native plants Blackthorn, Hawthorn, Hazel and Holly are all used in the hedgerow mix and tree-planting in the hedgerows consists of Common Birch, Native Oak, Horse Chestnuts and Common Alder.

2.4 SERVICES

2.4.1 Foul Sewer

It is proposed to divert the existing 300mm foul sewer traversing the site from the Eden Gate residential estate to north-east of the site to construct a new foul network that will serve the proposed development. Existing manholes will be use for the connection and discharge of the new diverted foul drainage network.

An underground pumping station will also be required to pump sewage from the northern part of the site to connect into the new layout which will then be discharged by gravity sewer. The underground pumping station will be constructed to Irish Water specifications.

2.4.2 Surface Water Drainage

It is proposed to divert the existing 600mm concrete sewer traversing the site to construct a new surface drainage system that will collect runoff from roads and roofs together with any additional runoff from landscape areas which does not percolate to ground. Existing manholes will be use for the connection and discharge of the new diverted surface water network.

The surface water drainage system will be designed to ensure adequate capacity is achieved with minimum self-cleansing velocity in the pipes of 1.0 m/s when flowing half full.

2.4.3 Attenuation

Given the size of the development, the site has been divided in eight areas for surface water collection purposes. It is proposed to provide a network of 225mm diameter pipes for each of these areas and to connect them to separate attenuation tanks.

The tanks have been sized to provide storage for 1 in 100-year rainfall event including a 10% increase for a climate change for the entire development with the discharge rate limited from 2.85 l/s/ha to 3.28 l/s/ha depending on the zone that the attenuation tank is located in. It is proposed to discharge to the existing stream to the north of the site in some cases and to the existing 600mm surface water sewer to the north east of the site in other cases.

As part of the development, a number of different Sustainable Urban Drainage Systems (SuDS) measures are proposed to minimise the impact on water quality and quantity of the runoff and maximise the amenity and biodiversity opportunities within the site.

2.4.4 Water Supply

It is proposed to provide water to the development through a new connection to the existing 150mm uPVC watermain on the Kilcoole Road. The new connection will require the extension of the existing water network by approximately 310m. These works will be undertaken under a road opening licence and do not form part of the application, but do form part of the cumulative assessment, in respect of the EIAR.

A pre-connection enquiry has been submitted to Irish Water to determine the suitability of the proposed water supply to the site.

2.4.5 ESB Supply

ESB Networks have been contacted and an existing ESB network map for the area surrounding the proposed development has been obtained. There is extensive ESB Networks infrastructure in the vicinity of the site including existing overhead cables on the site that will need to be undergrounded and/or diverted to facilitate the development of the site.

Waterman Moylan have met with the ESB Networks engineers to review the existing infrastructure and have agreed a strategy for dropping the overhead lines and for providing a power supply to the site.

2.4.6 Telecommunications

Telecommunications supply, and the requirement for any alterations to the existing telecommunications network for the proposed development, will be agreed in advance of construction with the relevant telecommunications providers. All telecommunications related works will be carried out in accordance with relevant guidelines.

2.5 ACCESS

2.5.1 Kilcoole Road

On the Kilcoole Road, the proposed development will be accessed via a simple Priority T Junction to be provided at the R761 entrance. Traffic exiting the site via the R761 will be required to give way to traffic already on the regional road. The proposed residential development will provide a boundary setback for modest improvement of the R761 Kilcoole Road along the site frontage to accommodate a cycle track on the western side.

The R761 Kilcoole Road entrance junction is located at the start on the inside of a curve and will be provided with suitable visibility splays with the setting back of the site boundary to include the provision of a footpath and a widened verge to accommodate the future Kilcoole Road upgrade.

The proposed development will provide a setback boundary to allow for the future upgrade of the R761 Kilcoole Road along the site frontage. The entrance of the proposed development has been designed to cater not only for the subject site, but also to be able to accommodate this future general road improvement. The entrance layout proposed is capable of accommodating the entire development from Kilcoole Road. It is neither dependent on the future road upgrade on the Kilcoole Road or the secondary access to the west on Priory Road or to the south to Eden Gate.

It is expected that Wicklow County Council will undertake the overall road improvements as part of a future public works scheme, which will include provision of a cycle track on the western side of the road at Glenbrook Park, and will also extend northward to avail of other boundary setbacks as provided for in other planning permissions as well as an upgrade to the Three Trouts Bridge, including a realignment of the road within the space provided.

Figure 2.11 – Frontage onto Kilcoole Road

This future upgrade is to include the localised road realignment to the west into the subject site and the provision of footpaths and cycle tracks on both side. The localised realignment of the Kilcoole Road into the subject site will make space for these upgrade works so that the properties on the opposite side of the road are not affected. It is expected that Wicklow County Council will undertake the overall road improvements as part of a future public works scheme, which will include provision of a cycle track on the western side of the road at Glenbrook Park, and will also extend northward to avail of other boundary setbacks as provided for in other planning permissions.

2.5.2 Priory Road

The proposed Priory Road entrance junction is on a slight curve in the road and will be provided with suitable visibility splays with the setting back of the property boundary and the provision of a footpath. In addition, it is proposed to provide 3 independent access points to serve the 9 no. dwellings located to the north of the entrance to the development.

A second access will be provided from Priory Road. The provision of this access will be dependent on the general upgrade of the road section of Priory Road to include a footpath along the western frontage of the site. The proposed development is capable of being served from the single access point onto the Kilcoole Road, in advance of the opening of the Priory Road entrance and is not dependent on the Priory Road entrance. The Priory Road access is not required for the proposed development.

The existing road has quite a rural character. A 2m wide footpath will be provided along full road frontage (as per the LAP Road Objective 11) which was agreed with Wicklow County Council who require a footpath along the southern boundary of Cairn Homes lands along Priory Road to connect to Eden Gate. This path is provided in the scheme layout. The provision of a footpath between the subject site and the Eden Gate roundabout, will be undertaken by Wicklow County Council, in the future. However, it is important to note that the footpath between the southern boundary of the site isn't required for the proposed development, in respect of any meaningful linking function. It is further noted that pedestrian access can be provided to the southern boundary to Eden Gate, which would allow for easy access to the amenities in the Eden Gate Neighbourhood Centre.

2.5.3 Eden Gate Pedestrian/cyclist Access

The proposed development allows for a pedestrian and cycle connection to the Eden Gate boundary to the south which would allow for easy access to the amenities in the Eden Gate Neighbourhood Centre.

Figure 2.12 –Pedestrian Link to Eden Gate



2.6 CONSTRUCTION MANAGEMENT STRATEGY

It is envisaged that the development of the lands will occur for up to approximately 2 years, but could extend, up to a standard 5 year permission period. Given the nature of the project and the need for flexibility to respond to market demand, the development phases are indicative. A Construction Management Plan which has been prepared by Cairn Homes, has been reviewed by the relevant EIAR consultants and is included in the SHD application; a refined plan will be put in place by the Contractor to implement the mitigation measures in the CMP submitted with the application.

2.7 CONSTRUCTION MANAGEMENT PLAN

The main construction access route will be from Kilcoole road as required, with smaller vehicles using the Priory Road access.

2.7.1 Construction Phase Mitigation

A Construction Management Plan has been prepared and is submitted with this SHD planning application. The EIAR chapters contain a range of mitigation measures which will reduce the potential impacts of the proposed development. These mitigation measures are summarised in Chapter 16 of the EIAR.

The Construction Management Plan outlines the procedures to be followed to ensure the minimal impact of the construction activities on the surrounding residential community and the general public. The plan considers the safety of personnel carrying out the work, visitors to site and any unauthorized persons obtaining access to site.

With reference to the construction phase of the proposed development, the objective of the Construction Waste Management Plan (CWMP), prepared by Byrne Environmental and included in the SHD application, is to ensure that waste generated during the proposed construction and operation phases will be managed and disposed of in a way that ensures the provisions of the Waste Management Acts 1996 - 2013 are complied with.

Cairn Homes appoints a specialist Pest Control Contractor to manage potential infestations around the site and around the site compounds. Good housekeeping and high hygiene standards are essential to maintaining high levels of pest control on the site.

This EIAR presents proposed mitigation measures to ensure that the planned development of the lands does not generate significant adverse impacts for residential and working communities in the vicinity of the site.

The proposed development, as described, is detailed on the planning application drawings and particulars which accompany the application.

2.7.2 Construction Traffic

The main construction access route will be from the Kilcoole Road (with some construction traffic from Priory Road). The CMP provides details of intended construction practice for the development, including:

- Location of the site and materials compound(s) including area(s) identified for the storage of construction refuse.
- Location of areas for construction site offices and staff facilities.
- Details of site security fencing and hoardings.
- Details of on-site car parking facilities for site workers during the course of construction
- Details of the timing and routing of construction traffic to and from the construction site and associated directional signage, to include proposals to facilitate the delivery of abnormal loads to the site.
- Measures to obviate queuing of construction traffic on the adjoining road network.
- Measures to prevent the spillage or deposit of clay, rubble or other debris on the public road network.
- Alternative arrangements to be put in place for pedestrians and vehicles in the case of the closure of any public road or footpath during the course of site development works.
- Details of appropriate mitigation measures for noise, dust and vibration, and monitoring of such levels.
- No parking on access routes. No unloading or blockages of access routes. Such vehicles will be immediately requested to move to avoid impeding works;
- The contractor must appoint a Traffic Management Coordinator responsible for the management of traffic management related activities;
- On site contractors must adhere to the overall traffic management measures for the internal road network from the preferred construction traffic entrance road to their site.

2.7.3 Hours of Working

Working hours will be strictly in accordance with the granted planning conditions with no works on Sundays or Bank Holidays. If work is required outside of these hours, written approval will be sought by the contractor from the Local Authority.

It is proposed that normal working hours will be between 7am to 7pm Monday to Friday and 8am to 5pm on a Saturday. However, it may be necessary to work outside of these hours at night and at weekends during certain activities and stages of the development (e.g. concrete pouring) which will be subject to agreement with the Local Authority.

Deliveries of material to site will be planned to avoid high volume periods. There may be occasions where it is necessary to have deliveries within these times and Contractor will agree with Wicklow County Council as appropriate.

2.8 CONSTRUCTION PHASING

The expected construction staging provides for 2 phases. While the pace and timing of this phasing is highly dependent on unpredictable market conditions, the overall site design and phasing strategy takes account of the infrastructure and open space provisions associated with each phase, together with the proportional provision of Part V dwellings. However, it is feasible that market conditions would require alterations to any programme which is specified at this time and it is likely that it will be reviewed in the course of construction.

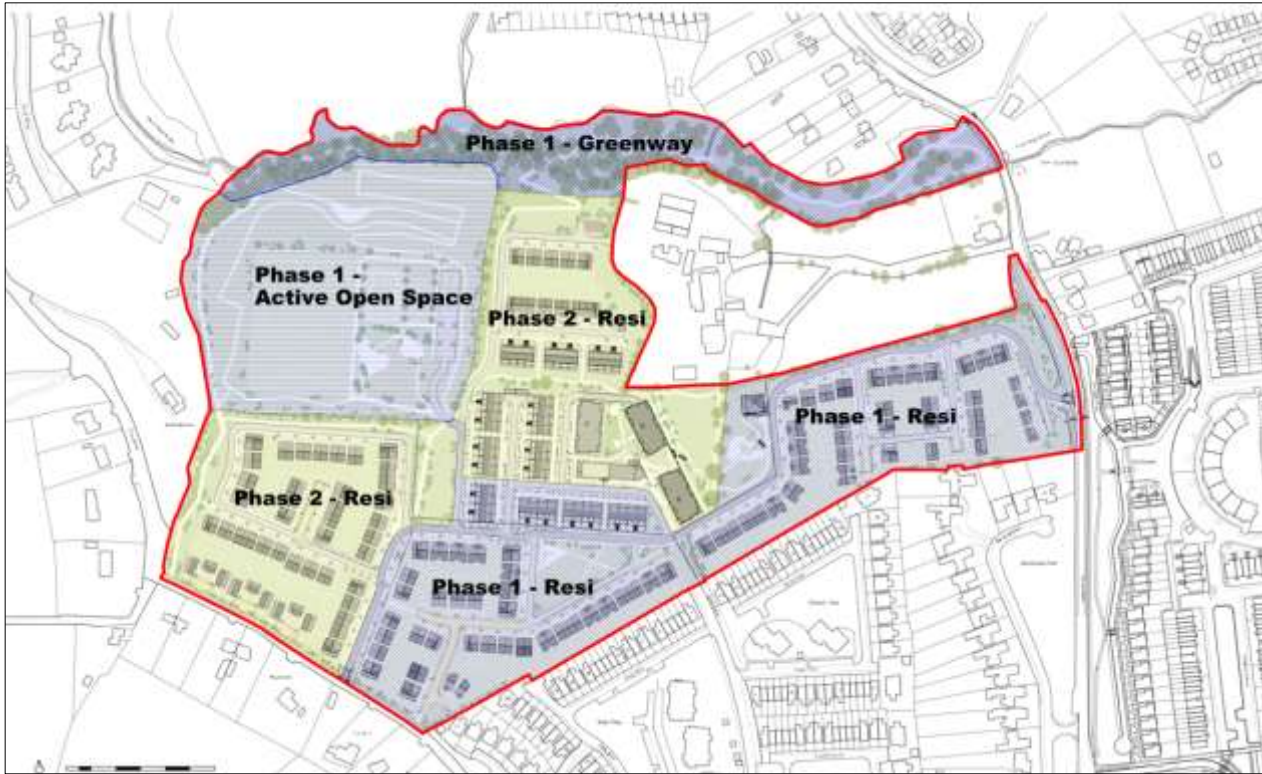
The main demolitions will be carried out by a competent demolition sub-contractor in accordance with the current code for demolition and the consultant engineers specification. It is anticipated that the vast majority of the waste generated from demolitions will be segregated wherever possible for reuse or recycling in accordance with the relevant legislation and guidelines and the project's Construction Waste Management Plan.

Archaeological monitoring of earthmoving works for site preparation will be undertaken to ensure that any features of an archaeological nature that may be revealed are identified, recorded and fully resolved.

Chapter 5, Land and Soils provides detailed information on excavation material and mineralogy. Chapter 11, Waste Management contains more detailed information on Resource and Waste Management associated with the project. Mitigation measures to minimise environmental impacts are described in the relevant sections of the EIAR.

Drawing 1609-101-121 prepared by Metropolitan Architects illustrates the indicative construction staging sequence. It is envisaged that there would be 2 no. main phases of development.

Figure 2.13 – The proposed phasing plan



Source: Metropolitan Workshop Architects

Phase 1 will comprise the construction of the Active Open Space (4.5 hectares) and the provision of the Greenway (2.4 hectares), the construction of the Road Objective R07 between the Kilcoole Road (R761) and Priory Road (with associated link to boundary of Eden Gate to the south), the residential amenity building of c. 325 sq. m (located in the eastern portion of Public Open Space no. 1) along with Public Open Space no. 2. In addition it is proposed to construct 173 no. dwellings in Phase 1 as follows:

- 11 no. detached houses;
- 110 no. semi-detached;
- 20 no terraced terrace houses;
- 32 duplex units.

It has been agreed with the Roads Department of Wicklow County Council that the R07 objective will be built in the first phase of development and will be opened subsequently, when Wicklow County Council have provided upgrades to the Priory Road. The R07 Objective has been designed to facilitate the proposed full quantum of development and the entrance onto the Kilcoole Road can accommodate the proposal. The R07 link is not required to facilitate the development and the Kilcoole (R761) entrance has been designed to accommodate the full scheme, and that the proposal can operate without the link in place. In accordance with the R07 objective, the proposed layout includes a potential link to the Eden Gate development to the south, with a minimum width of 10m, in order to facilitate the development of a possible traffic route, should the need arise in the future.

Phase 2 will provide the remainder of the dwellings (253 no.), public open spaces and the creche of c. 599 sq. m. as follows:

- 9 no. detached houses;
- 68 no. semi-detached houses;
- 27 no. terraced houses;
- 56 duplex units;
- 93 no. apartments.

It is anticipated that the proposed creche could accommodate in the region of 123 no. childcare spaces and it is intended that the creche is delivered in phase 2 of the development having regard to the existing and committed provision of creche places in the area, which is set out in the Social Infrastructure Assessment prepared by John Spain Associates.

2.9 DIRECT AND INDIRECT EFFECTS RESULTING FROM USE OF NATURAL RESOURCES

Details of significant direct and indirect effects arising from the proposed development are outlined in Chapters 3-15 which deal with '*Aspects of the Environment Considered*'. No significant adverse impact is predicted to arise from the use of natural resources.

2.10 DIRECT AND INDIRECT EFFECTS RESULTING FROM EMISSION OF POLLUTANTS, CREATION OF NUISANCES AND ELIMINATION OF WASTE

Details of emissions arising from the development together with any direct and indirect effects resulting from same have been comprehensively assessed and are outlined in the relevant in Chapters 3-16 which deal with '*Aspects of the Environment Considered*'. There will be no significant direct or indirect effects arising from these sources.

2.11 FORECASTING METHODS USED FOR ENVIRONMENTAL EFFECTS

The methods employed to forecast the effects on the various aspects of the environment are standard techniques used by each of the particular individual disciplines. The general format followed was to identify the receiving environment, to add to that a projection of the "*loading*" placed on the various aspects of the environment by the development, to put forward amelioration measures, to lessen or remove an impact and thereby arrive at net predicted impact.

2.13 ALTERNATIVES CONSIDERED

Chapter 2 of the EIAR (volume II) also includes a summary of 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.

Do-nothing Alternative

The site is zoned for residential, active open space and open space development under the Greystones-Delgany-Kilcoole Local Area Plan, and as such, consideration of alternative sites is not necessary. In effect, an alternative location in this instance i.e., a '*do-nothing*' alternative for the subject site, would mean that these residential zoned lands would not be utilised for the purposes of meeting the need for new residential accommodation within Greystones. If development does not occur sequentially from the existing development footprint, it is likely that pressures for the development of land which is either un-zoned or un-serviced and not as close to the town centre would be greater. This would lead to a dispersed and unsustainable form of development.

A "*do-nothing*" scenario was considered to represent an inappropriate, unsustainable and inefficient use of these strategically located residential zoned lands, which are located within the metropolitan area of Dublin (as confirmed in the Regional Spatial and Economic Strategy for the region.)

In addition to residential use, there are other land uses which are permitted in principle on these lands. The proposal includes for Active Open Space as well as a creche and a residential amenity building. It is not considered that an alternative comprising one of the alternative uses would result in the best use of these lands, particularly having regard to the general acknowledged need for housing. The environs of the subject site are largely residential in nature interspersed with some commercial uses. In this context, the proposal now the subject of this application comprises appropriate land uses in accordance with the proper planning and sustainable development of the area.

The key environmental and practical considerations which have influenced the design of the proposed development and the alternative layouts on the subject lands have been influenced by the following:

- The need to achieve an appropriate density in the context of the Sustainable Residential Guidelines for Planning Authorities 2009 having regard to the location of the site within the development envelope of Greystones.
- The need to ensure any residential development provides a good mix of housing typologies which meet current market demand and which are deliverable in the short to medium term.
- The need to provide an appropriate level of housing provision on the residential zoned lands.
- Alternatives in relation to permeability.
- Alternative road junction design
- The need to deliver good quality open space in appropriate locations and to link the open space to as much of the existing green network (hedgerows) and the greenway along the northern boundary of the site.
- To have regard to the site's topography and to ensure the design the residential development and associated infrastructure respects the existing features and limits the impacts on the land.
- Protection of existing trees and hedgerows where possible, in particular the Tree Protection Objective T06, relating to the line of Scots Pine trees within the subject lands.
- The provision of 10% social housing on site.

Alternative site layouts and siting progressed throughout the design process in order to minimise the impact on the receiving environment at the earliest opportunity. The initial stage involved a constraints analysis of the land within the proposed development site to identify all high-level constraints and aggregate them against the site to allow a suitable layout to be developed.

With reference to Population and Human health, the potential impacts are broadly similar – the inclusion of 4.5 hectares of Active Open Space within the subject lands and the 2.4 hectare greenway along the northern boundary of the site is considered a long term and positive impact. The relocation of the Active Open Space to the northern part of the site provides a better integration with the Open Space associated with the greenway, resulting a substantial area of open space. The re-location of the residential use away from the Three Trouts stream is considered positive and will promote a more sustainable compact form of development and reduced impact on biodiversity. It will also result in a reduced landscape and visual impact.

Air and noise impacts from the alternatives are broadly similar. Principally these impacts will occur as a result of the construction phase of the development as operational impacts would be largely restricted to traffic and these volumes are generally low. As these impacts can be largely mitigated through good construction practices, the residual impact is considered low and temporary in all cases.

The inclusion of pedestrian links through the site, facilitating access to the greenway, which will link to the existing Mill Lane, is a positive aspect of the proposal, compared to alternative no. 2, which did not provide as much permeability. The potential impacts relating to archaeology are considered to be broadly similar as the previously unrecorded features, will be preserved in situ, which is the case for all of the alternatives. With regard to Material Assets (Utilities and Waste Management), it is considered the alternatives are similar as they would require servicing and also ESB etc. While the additional quantum of houses will result in increased demand for foul and water supply, these can be accommodated, which is confirmed by Irish Water.

2.13.1 Proposed Preferred Alternative

With reference to the final layout, the iterative process outlined above, which included alternative site layouts were considered with the objective of producing a new high quality residential development, which has undergone a robust consideration of relevant alternatives having regard to the comparison of environmental effects and meets the requirements of the EIA Directive, based on the multidisciplinary review across all environmental topics.

In summary, the design of the proposed development takes into account all environmental issues raised with respect to previous design alternatives and within the Board's Opinion, and provides for a development that has been optimised to amplify positive environmental effects whilst reducing negative environmental impacts wherever possible.

3.0 SUMMARY OF THE LIKELY SIGNIFICANT IMPACTS OF THE PROPOSAL (PREDICTED IMPACTS)

3.1 POPULATION AND HUMAN HEALTH

The construction phase of the proposed development will primarily consist of site clearance, excavation and construction works, which are likely to take place over 2 main phases, which will be largely confined to the proposed development site. Notwithstanding the implementation of remedial and mitigation measures there will be some minor temporary residual impacts on population (human beings) and human health most likely with respect to nuisance caused by construction activities. It is anticipated that subject to the careful implementation of the remedial and mitigation measures proposed throughout this EIAR document any adverse likely and significant environmental impacts will be avoided. Positive impacts are likely to arise out of an increase in employment and economic activity. The overall predicted likely and significant impact of the construction phase will be short-term, temporary and neutral.

The proposed development will result in a generally positive alteration to the existing undeveloped site in terms of the provision of residential units to serve the growing residential population of the area in accordance with the objectives of the Wicklow County Development Plan and the Greystones/Delgany/Kilcoole LAP. Positive impacts on population and human health will include health benefits associated with the provision of a significant quantity of open space, pedestrian and cyclist routes, a highly permeable layout which connects to adjacent development and delivers the objectives of the Local Area Plan. The provision of creche facilities on site enhances the quality of the development and helps to create sustainable communities.

The implementation of the range of remedial and mitigation measures included throughout this EIAR document is likely to have the impact of limiting any adverse significant and likely environmental impacts of the operational phase of the proposed development on population and human health.

3.2 BIODIVERSITY

The appraisal of environmental impacts on biodiversity was carried out in accordance with the following best practice methodology: 'Guidelines for Ecological Impact Assessment in the United Kingdom and Ireland' by the Chartered Institute of Ecology and Environmental Management (IEEM, 2016).

Site visits were carried out on the 28th of November 2013, the 26th of May 2015 and the 28th of April 2017 and again on September 25th 2018 and June 28th 2019. On each occasion the site was surveyed in accordance with the Heritage Council's Best Practice Guidance for Habitat Survey and Mapping (Smith et al., 2010).

The Development Applications Unit (DAU) of the Department of the Culture, Heritage and the Gaeltacht was contacted for nature conservation observations. Details were also sent to Inland Fisheries Ireland.

The site consists of a series of agricultural fields, bounded to the north by the Three Trouts Stream. These fields are either arable crops – BC1 or improved agricultural grassland – GA1. In either case they are considered to be habitats of negligible biodiversity value as few species of plant or animal are supported. A cluster of buildings and artificial surfaces – BL3 (outside the site boundary) are of little biodiversity value however old buildings can be used as roosting locations for bats. Boundary features consist of either treelines – WL2 or hedgerows – WL1. These are frequently associated with earth banks and can be of some antiquity. While the species can be similar in both habitats treelines are dominated by trees over 5m in height.

A dedicated bat survey was carried out by Dr Tina Aughney and included surveys on September 2nd and 4th 2017. Additional surveys were carried out in September 2018 and again over a number of days/nights in late June 2019. No bat roosts were identified within the development red line boundary. Suitable roosting is provided in mature trees and 53 trees were identified as potential 'medium value' bat roosts. Although outside the site boundary, adjacent buildings were considered likely roosting locations for bats. There was no evidence of Badger activity from the treeline or woodland habitats and no other distinctive signs of these animals, e.g. hair, scat the Three Trouts Stream was surveyed for signs of Otter activity during all survey visits. No direct evidence of their presence was found on any occasion. Nevertheless, the habitat is suitable for them and their presence must be assumed.

There will be some temporary residual impacts to flora and fauna arising from this project and cumulatively with adjoining lands.

The application site is not within, or adjacent to, any area that has been designated for nature conservation at a national or international level. There are no examples of habitats listed on Annex I of the Habitats Directive or records of rare or protected plants.

The Appropriate Assessment Screening Report accompanying the application carried out by Openfield concluded:

“It is concluded that the possibility of any significant effect on any European Sites arising from the proposed development, whether considered alone or in combination with the effects of other plans or projects, can be excluded beyond a reasonable scientific doubt.”

There is one species listed as alien invasive under S.I. 477 of 2011, Giant Rhubarb, but is very limited in extent. There are features however that are of biodiversity significance at a local or county level.

Significance criteria are available from guidance published by the National Roads Authority (NRA, 2009). From this an evaluation of the various habitats and ecological features on the site has been made and this is shown in table 3.1 below.

Enhancement measures

A bat box scheme is to be implemented which will increase the availability of roosting locations for bats.

The landscaping scheme includes native wildlife-friendly planting. The landscaping proposals for the development (including the planting of trees and shrubs) were developed in conjunction with the project ecologist and include the use of native and local plant species such as hawthorn, blackthorn, spindle, Wych elm, holly, hazel, mountain ash, alder, willows, oak, ash, elder and gorse. The species used will be native and of local origin, certified stock is available from nurseries who supply stock for the Native Woodland Scheme. Additional planting was recommended to strengthen areas within the site for wildlife and biodiversity and to reinstate green infrastructure across the site where feasible. Further details are provided in the accompanying landscaping drawings prepared by Kevin Fitzpatrick Landscape Architects.

Table 3.1 – Evaluation of the importance of habitats and species on the Farrankelly site

Habitat	Significance
Eroding stream – FW1 and associated wet grassland – GS4 and scrub – WS1 Broadleaved woodland – WD1	County Importance – listed by Wicklow County Council as a 'local biodiversity area'
Treelines – WL2 Hedgerows (higher significance) – WL1	Local Importance (Higher Value). Semi-natural habitats types with high biodiversity in a local context with likely or potential breeding populations of protected species (Bats, Irish Stoat, Pygmy Shrew, Hedgehog.)
Scrub – WS1 Hedgerow (lower significance) – WL1 Drainage Ditch – FW4 Gorse and bramble scrub not associated with the stream – WS1	Local Importance (lower value) Available breeding habitat for birds and small mammals
Arable Crops – BC1 Improved agricultural grassland – GA1 Recolonising bare ground – ED3	Negligible ecological value

Predicted Impacts (following mitigation)

There will be some temporary residual impacts to flora and fauna arising from this project and cumulatively with adjoining lands.

The removal of hedgerow and treeline habitats will result in some mortality to species and habitat loss. These are predicted to be minor and negative.

As landscaping matures it is likely that negative effects from habitat loss will be offset.

The Bat Report prepared by Dr. Tina Aughney (included with the SHD application) concludes that:

“The proposed development area will result in the loss of a small number of commuting hedgerows/treelines. However the Landscape Plan will retain the majority of the important bat commuting linear habitat features and new planting and enhancement planting will ensure connectivity of same to the woodland area of the Three Trouts Stream. Additional open spaces will create potentially further foraging areas for bats which will also be connected as part of the green infrastructure.

The proposed development will increase the degree of lighting. However, the lighting plan is designed to reduce lighting spillage onto external hedgerows/treelines which will allow their continued usage by commuting and foraging bats. A sensor lighting plan is proposed for the greenway to reduce potential impact on local bat populations.

The proposed development will result in the felling of mature trees but this will be undertaken in a manner to ensure that no bats are harmed and alternative roosting will be provided in the form of bat boxes.”

With mitigation, there are expected to be no residual negative effects to flora and fauna which can be considered to be significant.

3.3 LAND AND SOILS

The proposed development will alter the current land use from agricultural to a residential development and associated public open space and landscape areas. The impact on land, soil, geology and hydrogeology from accidental spillages of fuel and lubricants used during the construction phase of the development is predicted to be minimal when stored and used in a responsible manner. After implementation of the mitigation measures recommended above for the construction phase, the proposed development will not give rise to any significant long-term adverse impact. Moderate negative impacts during the construction phase will be short term only in duration. Implementation of the measures outlined in Section 5.6 of Volume 2 of the EIAR will ensure that the potential impacts of the development on soils and the geological environment are minimised during the construction phase and that any residual impacts will be short term.

The principal residual impact from the construction phase is the removal of soil and minor rock volumes from the proposed development site and along the route of the foul water pipeline. This impact is unavoidable given the nature, requirement and design of the proposed development.

There are no predicted significant impacts for soils and geology arising from the proposed operation of the new development.

3.4 WATER

In order to reduce the impacts on the water environment a number of mitigation measures will be adopted as part of the construction works on site. The Construction Management Plan includes measures to address the main potential impacts on surface water and groundwater.

During construction works, all excavated materials will be visually assessed for signs of contamination. Should material appear to be contaminated, soil samples will be analysed by an appropriate testing laboratory. All potentially contaminated material will be either left *in situ* and characterised through laboratory testing; or segregated and stockpiled in a contained manner and characterised through laboratory testing. Any contaminated material will be appropriately disposed of or treated using a licensed waste contractor and in accordance with the Waste Management Regulations, 1998.

A wide range of mitigation measures have been specified for the construction and operational phases of the project and are set out at Section 6.6 of the main EIAR and Chapter 16. These mitigation methods seek to ensure that construction and operational discharges are controlled to prevent potential pollution impacts to all receiving surface water systems and their downstream catchment areas. Consequently, the mitigation measures detailed will also prevent potential impacts to the downstream ecosystems.

The Construction Management Plan manual for the Proposed Project site has been formulated in consideration of the standard best practice. This Construction Management Plan encompasses a range of site-specific measures which include:

- Existing topsoil will be retained on site to be used for the proposed development. Topsoil will 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. Stockpiles of topsoil/soils will be covered/dampened during dry weather to prevent spreading of sediment/dust;
- The Greenway along the stream will be constructed using a no dig method to prevent entry of sediment laden run-off to the Three Trout stream;
- Excavations would be backfilled as soon as is possible to reduce any infiltration of potentially polluting compounds to the subsurface and the aquifer;
- Top-soiling and landscaping of the works will take place as soon as finished levels are achieved, in order to reduce weathering and soil erosion and limit the generation of sediment laden run-off;
- A temporary site drainage system will be established for the duration of the construction works. All run-off from the site will be directed to settlement ponds and oil interceptors prior to discharge to existing site drain. This temporary system will throttle run-off and allowed suspended solids to settle out prior to entry to the site drain. The discharge to the site drain will be designed to prevent erosion and scour in the vicinity of the discharge. The discharge will be visually inspected regularly for any signs of contamination. Where any suspected contamination is observed, the discharge will cease immediately and will be treated and disposed of appropriately.
- Any minor volumes of groundwater required to be pumped during excavations will be passed through the temporary drainage system settlement prior to discharge to the existing site drain.
- Handling, transport and storage of fuel and chemicals will be controlled e.g. oil and fuel stored on site will be stored in designated areas. These areas will be bunded and located away from any surface water drainage.
- Refuelling of construction machinery will be undertaken in designated areas located away from surface water drainage.
- All machinery will be inspected at the start of each work shift for signs of leaking hydrocarbons. Parking areas will be inspected on a daily basis for evidence of hydrocarbons leaking from machinery.
- All potentially polluting materials will be stored in bunded areas, the capacity of which will be 110% the volume of the largest volume of material or 25% of the total volume of liquid to be stored, whichever is greater. The site manager will be responsible for ensuring that a copy of all relevant material safety data sheet for each product is available at storage locations as well as the site office.
- The washing of any plant equipment will be carried out in designated areas constructed to prevent potentially polluting material from entering surface or groundwater.
- Spill kits shall be kept in the machinery refuelling areas and any chemical/fuel storage areas in the event of spillages. The spill-kits will comprise suitable absorbent material, refuse bags etc. to allow for the appropriate clean-up and storage of contaminated material in the event of a spillage or leak occurring.
- Wheel wash facilities to prevent soil and mud being tracked onto the adjoining roads. In addition to this road washing machinery will be employed where possible;
- There will be no discharge of effluent to groundwater during the construction phase. All wastewater from the construction facilities will be stored for removal off site for disposal and treatment;
- If concrete mixing is carried out on site, the mixing plant will be sited in a designate area with impervious surface. Washwaters from cement mixing equipment will not be disposed of the surface
- The Contractor will be obliged to ensure no deleterious discharges are released from the site to surrounding watercourses during the construction stage. Throughout the works the Contractor will also take account of relevant legislation and best practice guidance including but not limited to the following:
 - C532 Control of water pollution from construction sites: guidance for consultants and contractors.
 - C648 Control of water pollution from linear construction projects
 - SP156 Control of water pollution from construction sites – guide to good practice

Mitigation during the construction phase will include implementing best practice during excavation works to avoid sediment running into the drainage system which discharges to the Three Trout stream.

The provision of flow control and storm-water attenuation will ensure the rate of discharge of surface water is limited to 'greenfield' run-off rates. The 1 in 100 year storm event will be stored in the green areas on site.

As surface water drainage design has been carried out in accordance with the GSDSDS, and SUDS methodologies are being implemented as part of a treatment train approach, there are no predicted impacts on the water and hydrogeological environment arising from the operational phase. Implementation of the measures outlined in Section 6.6 of Volume II of the EIAR will ensure that the potential impacts of the proposed development on water and the hydrogeological environment do not occur during the operational phase and that any residual impacts will be short term and imperceptible.

3.5 AIR QUALITY AND CLIMATE

Byrne Environmental Consulting Ltd have assessed the potential air quality and climatic impacts that the Farrankelly development may have on the receiving environment during the construction and operational phases of the project. The assessment includes a comprehensive description of the existing air quality in the vicinity of the subject site, a description and assessment of how construction activities and the operation of the development may impact existing air quality, the mitigation measures that will be implemented to control and minimise the impact that the development may have on local ambient air quality and finally to demonstrate how the development shall be constructed and operated in an environmentally sustainable manner.

The construction phase of the development has the potential to generate short term intermittent fugitive dust emissions during ground preparation and enabling works, however these emissions will be controlled by appropriate mitigation techniques and through the implementation of a construction phase air quality management and monitoring plan throughout the duration of the construction phase.

In order to ensure that adverse air quality impacts are minimised during the construction phase and that the potential for soiling of property and amenity and local public roads is minimised, the following mitigation measures shall be implemented during the course of all construction activities:

- Avoid unnecessary vehicle movements and manoeuvring, and limit speeds on site so as to minimise the generation of airborne dust.
- Use of rubble chutes and receptor skips during construction activities.
- During dry periods, dust emissions from heavily trafficked locations (on and off site) will be controlled by spraying surfaces with water and wetting agents.
- Hard surface roads will be swept to remove mud and aggregate materials from their surface while any un-surfaced roads will be restricted to essential site traffic only.
- Re-suspension in the air of spillages material from trucks entering or leaving the site will be prevented by limiting the speed of vehicles within the site to 10kmh and by use of a mechanical road sweeper.
- The overloading of tipper trucks exiting the site shall not be permitted.
- Aggregates will be transported to and from the site in covered trucks.
- Where the likelihood of windblown fugitive dust emissions is high and during dry weather conditions, dusty site surfaces will be sprayed by a mobile tanker bowser.
- Wetting agents shall be utilised to provide a more effective surface wetting procedure.
- Exhaust emissions from vehicles operating within the construction site, including trucks, excavators, diesel generators or other plant equipment, will be controlled by the contractor by ensuring that emissions from vehicles are minimised by routine servicing of vehicles and plant, rather than just following breakdowns; the positioning of exhausts at a height to ensure adequate local dispersal of emissions, the avoidance of engines running unnecessarily and the use of low emission fuels.
- All plant not in operation shall be turned off and idling engines shall not be permitted for excessive periods.
- Material handling systems and site stockpiling of materials will be designed and laid out to minimise exposure to wind. Water misting or sprays will be used as required if particularly dusty activities are necessary during dry or windy periods.
- Material stockpiles containing fine or dusty elements including top soils shall be covered with tarpaulins.

- Where drilling or pavement cutting, grinding or similar types of stone finishing operations are taking place, measures to control dust emissions will be used to prevent unnecessary dust emissions by the erection of wind breaks or barriers. All concrete cutting equipment shall be fitted with a water dampening system.
- A programme of air quality monitoring shall be implemented at the site boundaries for the duration of construction phase activities to ensure that the air quality standards relating to dust deposition and PM₁₀ are not exceeded. Where levels exceed specified air quality limit values, dust generating activities shall immediately cease and alternative working methods shall be implemented.
- A complaints log shall be maintained by the construction site manager and in the event of a complaint relating to dust nuisance, an investigation shall be initiated.
- Dust netting and site hoarding shall be installed along the north, south, east and western site boundaries to minimise fugitive windblown dust emissions falling on third party lands and existing residential areas.

The operational phase the development will see the operation of modern, well insulated thermally efficient buildings in which energy efficiency shall be achieved by implementing sustainable features into the design of the buildings. National air quality standards shall not be adversely affected as a result of the short-term construction phase or the operational phase, thus ensuring that the potential for adverse impacts on human health is negligible.

The proposed development does not include the construction of any large structures which may impact on the local micro climate by means of shadowing effects or wind shear effects, therefore the proposed development will not to have an adverse impact on shading or temperature profiles at the nearest existing residential properties or on the local receiving environment in the vicinity of the site boundaries.

In terms of the existing air quality environment, site specific baseline data and data available from similar environments indicates that levels of nitrogen dioxide (NO₂), carbon monoxide (CO), sulphur dioxide (SO₂) particulate matter less than 10 microns (PM₁₀) and less than 2.5 microns (PM_{2.5}) and benzene are well below the National and European Union (EU) ambient air quality standards and that the existing quality of ambient air in the vicinity of the site may be classified as being very good. It is therefore critical that the construction and operational phases of the development are managed and designed respectively to ensure that there is no reduction in the existing quality of ambient air.

Various elements associated with the construction phase of the proposed development have the potential to impact local ambient air quality, human health and climate. However, the potential construction phase impacts shall be mitigated as detailed above to ensure there is no adverse impact on ambient air quality for the duration of all construction phase works. It is predicted that the operational phase of the development will not generate air emissions that would have an adverse impact on local ambient air quality or local human health or local livestock welfare.

The sustainable features that are incorporated into the design of all residential units will ensure that the operational phase of the development at Farrankelly will not have an adverse impact on local air quality or on local or global climate patterns. The residential units will be designed to ensure that they can withstand the potential changes in climate which may generate more extreme and prolonged meteorological events in the future.

3.6 NOISE AND VIBRATION

Byrne Environmental Consulting Ltd have assessed the potential noise and vibrational impacts that the proposed Farrankelly development may have on the receiving environment during the construction and operational phases of the proposed development. The assessment includes a comprehensive description of the existing ambient baseline noise climate in the vicinity of the subject site, a description of how construction activities may impact the ambient noise climate and finally, the mitigation measures that shall be implemented to control and minimise the impact that the development may have on existing ambient noise levels.

The existing baseline noise climate has been assessed at the site over the course of typical daytime and night time periods. The principal sources of existing noise at existing residential receptors located in the vicinity of the site boundaries is generated by local road traffic noise. The local noise environment may be classified as being typical of a semi-rural / sub-urban environment that is not influenced or dominated by large scale transport infrastructure, commercial or industrial developments.

Ambient noise levels in the vicinity of the site shall temporarily increase during the construction phase and with regard to the existing low noise baseline climate, it will be a fundamental aspect of the Construction phase that noise levels shall be controlled and minimised through the implementation of the Construction Phase Noise & Vibration Management Plan. The relatively low existing noise environment at existing residential receptors will require a

comprehensive construction phase noise monitoring and management programme to be implemented. The mitigation measures to be implemented are set out in detail in the Construction Management Plan and Chapter 7 and include the following:

- An independent acoustic consultant shall be engaged by the contractor prior to the commencement of site activities to ensure that all noise mitigation measures as specified in this Section of the EIAR are implemented and to prepare a site-specific *Construction Phase Noise Management Plan*. The Plan shall include all relevant noise and vibration control measures as specified in this Chapter of the EIAR. The Plan shall be submitted to Meath County Council for approval as required.
- The nominated contractor shall appoint a designated person to manage all environmental complaints including noise and vibration.
- A noise complaint procedure shall be implemented in which the details of any noise related complaint are logged, investigated and where required, measures are taken to ameliorate the source of the noise complaint.
- Appropriate signage shall be erected on all access roads in the vicinity of the site to inform HGV drivers that engines shall not be left idling for prolonged periods and that the use of horns shall be banned at all times.
- HGV's queuing on any local or public road shall not be permitted and it shall be the responsibility of site management to ensure this policy is enforced.
- The hours of operation for the site shall be limited to the following hours (or where otherwise agreed with the Planning Authority):

07:00hrs – 19:00hrs Monday to Friday

08:00hrs – 14:00hrs Saturday

Closed on Sundays and Bank/Public Holidays

- All onsite generator units (if required) used to supply electricity to the site shall be silenced models or enclosed and located away from any receptor.
- The site compound shall be located at a point on site furthest away from any residential development.
- Mains power shall be used to supply electricity to all site offices and site lighting at the earliest instance.
- The use of generators during the night-time shall be avoided.
- The following shall be implemented to mitigate construction noise impacts in order to ensure that the construction phase of the development does not have an unacceptable impact on sensitive receptors:
- A strictly enforced noise management programme shall be implemented at the site from the outset of construction activities.
- The Developer shall appoint an acoustic consultant independent of the Contractor to conduct routine noise audit surveys which shall be conducted at the baseline noise monitoring locations throughout the construction phase of the development to assess compliance with the construction noise limit criteria and to assess the effectiveness and implementation of the specific Construction Phase noise mitigation measures detailed in this document.
- The principal of controlling noise at source shall be implemented at the site. Best practice mitigation techniques as specified in BS 5228:2009+A1 2014 – Noise and Vibration Control on Construction and Open Sites shall be implemented during the construction phase and are detailed in this Section.
- Noisy stationary equipment shall be sited away from sensitive site boundaries as far as practicable.
- Where reasonable practicable, noisy plant or activities shall be replaced by less noisy alternatives if noise breaches and/or complaints occur.
- Proper use of plant with respect to minimising noise emissions and regular maintenance will be required.
- All vehicles and mechanical plant will be fitted with effective exhaust silencers and will be maintained in good efficient order
- Where noisy plant is required to operate in works areas next to residential houses low noise plant options will be used wherever practicable.
- Dumpers and any plant used for moving materials around the site will have high performance exhaust silencers.
- Selected use of rubber-tyred equipment over steel track equipment where practicable.
- The use of inherently quiet plant is required where appropriate – all compressors and generators will be “sound reduced” or “super silent” models fitted with properly lined and sealed acoustic covers, which will be kept closed whenever the machines are in use, and all ancillary pneumatic percussive tools will be fitted with mufflers or silencers of the type recommended by the manufacturers.
- All compressors, generators and pumps shall be silenced models fitted with properly lined and sealed acoustic covers or enclosures, which will be kept closed whenever the machines are in use.
- All pneumatic percussive tools such as pneumatic hammers shall be fitted with dampers, mufflers or silencers of the type recommended by the manufacturer.
- Fixed items of plant shall be electrically powered in preference to being diesel or petrol driven.

- Vehicles and mechanical plant utilised on site for any activity associated with the works shall be fitted with effective exhaust silencers and shall be maintained in good working order and operated in a manner such that noise emissions are controlled and limited as far as reasonably practicable.
- Any plant, equipment or items fitted with noise control equipment found to be defective in shall not be operated until repaired / replaced.
- Machines in intermittent use shall be shut down in the intervening periods between works or throttled down to a minimum during periods when not in use.
- Static noise emitting equipment operating continuously shall be housed within suitable acoustic enclosure, where appropriate.
- All excavator mounted pneumatic breakers used for demolition and ground breaking activities shall be fitted with effective dampeners and /or enclosed within a noise adsorbing blanket structure to minimise noise emissions.
- Site activities shall be staggered when working in proximity to any receptor, that is concrete cutting and rock breaking should where possible. This proposed method of working will provide effective noise management of site activities to ensure that any receptor is not exposed to unacceptably high levels of noise over extended periods.
- Excessive revving of all vehicles shall be avoided.
- Unnecessary dropping of heavy items onto ground surfaces shall be banned.
- The use of an excavator bucket to break up slabs of concrete or tarmac shall not be permitted.
- The dragging of materials such as steel covers, plant or excavated materials along ground surfaces shall not be permitted.
- The use of acoustic screens to attenuate noise at source shall be implemented as deemed necessary.
- Plant Reversing Alarms: Where reasonably practicable and deemed safe by risk assessment, taking into account onsite hazards and working environment, the tonal reversing alarms of mobile plant shall be replaced with broadband alarms.
- A nominated person from the Project Management team will be appointed to liaise with local residents and businesses regarding noise nuisance events.
- In the event of the requirement for out of hours work to occur which will involve the generation of noise levels that are predicted to exceed out of hours noise limit criteria, Wicklow County Council shall be immediately notified prior to the works commencing.
- A nominated person from the Project Management team will be appointed to liaise with and inform local residents and Wicklow County Council regarding out of hours works.
- An independent acoustic consultant shall review the implementation of the recommended mitigation measures on a monthly basis.
- It is recommended that high performing acoustic barriers are utilised such as Echo Barrier products or Ventac products.
-

The operational phase of the development will not have an adverse or unacceptable impact on the noise climate or any adverse vibrational impact at any receptor located in the vicinity of the site.

The noise impact assessment has considered the potential outward impacts associated with the construction and operational phases of the proposed development on its surrounding environment. The assessment has also assessed the inward impact of the surrounding environment on the proposed development in order to ensure a suitable internal noise levels can be achieved across the site within the residential dwellings.

During the operational phase, the outward noise impact to the surrounding environment will be principally limited to any additional traffic on surrounding road network and from recreational noise associated with the proposed playing pitches, however it is predicted that noise from the pitches will not cause an adverse noise impact at any existing residential property in the vicinity of the site. The noise impact assessment has similarly concluded that additional traffic from the proposed development will have a minor impact but not an adverse impact on the surrounding noise environment.

Internal noise levels within the residential dwellings across the site have been assessed with regard to the existing noise levels measured during the baseline noise surveys. Sound insulation performance values for glazing, walls, roof and ventilation systems are specified as part of the assessment in order to ensure acceptable internal noise levels are achieved over day and night-time periods across the development site.

During the construction phase there is the potential for some minor impact on nearby noise sensitive properties due to noise generated by construction site activities. The implementation of the construction phase noise and vibration

mitigation and monitoring programme will minimise the potential noise and vibration impact on the receiving environment.

It is predicted that the construction phases shall result in a short-term increase in noise levels in the area as well as introducing tonal and impulsive noise as a result of construction activities such as pneumatic breaking, cutting, excavating, vehicle movements and general manual construction activities.

Due to the phased nature of the development, there will be slight to moderate impacts on existing residents in properties constructed in the early phases of the development. However, the proposed construction phase noise mitigation measures as detailed in Chapter 8 - Noise shall ensure that all construction activities are controlled and managed and audited by an independent acoustic consultant to confirm that the mitigation measures are implemented throughout the construction phase. Further details of these measures are outlined in the Construction Management Plan.

The operational phase of the proposed development would have no significant additional impact upon the existing noise environment of the area. In order to improve the amenity of the site for future residents.

3.7 LANDSCAPE AND VISUAL

The construction stage will be programmed over a period of approximately 2 years resulting in ongoing infrastructure, building and related works for some period of time. These are generally temporary, destructive and visually adverse in nature.

The landscape sensitivity, magnitude of change are described below (see 9.7.2) and the change is Significant – Very Significant. Qualitatively this change would be Adverse ... *Would degrade, diminish or destroy the integrity of valued features, elements or their setting or cause the quality of the landscape(townscape)/view to be diminished.* - in the Construction Stage or Short Term.

The sites Enhancement Values reflect a significant body of policy that is supportive of major landscape change at this location to form a new residential community. Despite its attractive rural qualities, the site is currently surrounded by landscape change and the rapid urbanisation of its setting – it is becoming an anomaly in this context. Nonetheless it offers attractive characteristics to contribute to this new environment.

The sites Conservation Values predominantly reflect its character of trees, fields and hedgerows and as a rural or agricultural landscape with patterns of tree lines and hedgerows.

The impact of the development is the change of the site from open agricultural landscape to a new residential area. Locally some trees and hedgerows will be affected, however the new development has been laid out to incorporate many of these existing landscape 'green infrastructure' features within its landscape structure of open spaces and networks. The proposed development has been prepared in accordance with best practice national guidelines local guidance in the Wicklow County Development Plan, the Delgany and Kilcoole Local Area Plan and National Guidance – Urban Design Guide 2009 by the Department of Environment, Heritage and Local Government and the Design Manual for Urban Roads and Streets by the Department of Transport, Tourism and Sport. The site layout has been sensitive to the landscape elements of value on the site, incorporating them into the development, adding value to them and enhancing their role.

The construction phase is expected to be phased over a number of years, which will limit the extent of impact at any given time which is associated with construction.

There will be moderate negative impacts associated with the construction works over a phased basis for this development. This will be due to the substantial site clearance and building processes required to construct the proposed development. Impacts to visual receptors are described in the representative viewpoints below, but by their nature are predominantly adverse in nature, varying in magnitude and significance.

Despite the extensive footprint and relatively elevated location of the proposed development its visibility is constrained by topography, trees/ hedgerows and other built development. Where visible the change is often neutral or over time becomes neutral. The development represents ongoing consolidation and extension of the urban form this is, in places, significant change and where the change is particularly high this is adverse whilst planting and integration evolves over time, restoring lost characteristics of the landscape. The retention of significant tree belts (including protected tree line) will also reduce the visual impact of the proposed development.

3.8 MATERIAL ASSETS – TRAFFIC

A Construction Management Plan (CMP) has been prepared by Cairn and is included in the SHD application, for the proposed development to account for all works associated with the construction of the proposed development. These documents will address likely human health risks and ensure construction practices and measures are put in place to minimise any effects on road users. This CMP will inform a Contractor, when appointed, of the relevant guidance documentation which will need to be followed during construction phase. A more detailed Construction Management Plan will be submitted by the works contractor, expanding on the CMP, and it will be submitted for approval to Wicklow County Council Road prior to the commencement of any construction works. This plan will ensure that temporary traffic works and road safety measures will be put in place during the construction of the proposed development. The plan will ensure that any required traffic management measures are put in place to minimise the impact on local road users.

It is considered that the construction traffic, with primary access from the Regional Roads of the R761 Kilcoole Road and the R744 Farrankelly Road, will not impact significantly on the existing traffic situation on the surrounding road network.

To minimise disruption to the surrounding environment, the following mitigation measures will be implemented:

- During the pre-construction phase, the site will be securely fenced off from adjacent properties, public footpaths and roads.
- All road works will be adequately signposted and enclosed to ensure the safety of all road users and construction personnel.
- A dedicated 'construction' site access / egress junction will be provided during all construction phases.
- Provision of sufficient on-site parking and compounding to ensure no potential overflow of construction generated traffic onto the local network.
- Site offices and compound will be located within the site boundary. The site will be able to accommodate employee and visitor parking throughout the construction period through the construction of temporary hardstanding areas.
- A material storage zone will also be provided in the compound area. This storage zone will include material recycling areas and facilities.
- A series of 'way finding' signage will be provided to route staff / deliveries into the site and to designated compound / construction areas.
- Dedicated construction haul routes will be identified and agreed with the local authority prior to the commencement of constructions activities on-site.
- Truck wheel washes will be installed at construction entrances if deemed necessary and any specific recommendations with regard to construction traffic management made by the Local Authority will be adhered to.
- On completion of the works all construction materials, debris, temporary hardstands etc. from the site compound will be removed off site and the site compound area reinstated in full on completion of the works.

3.8.1 Operational Phase

To encourage sustainable travel patterns and to help reduce the potential traffic impact of the proposed development it is proposed to promote sustainable travel to the future occupants of the development. This will involve the preparation of a Travel Plan (form of Mobility Management Plan) that will include providing each property with an Travel Welcome Brochure that will include maps of all pedestrian and cycle routes in the area, highlighting the location of the main community facilities, amenities, retail centres, bus stops and the train station, and providing details of bus and train routes and timetables.

Up to date maps and public transport timetables will be put on display in proposed crèche and residential amenity buildings.

The proposed development will construct the road objective RO7 from the Greystones - Delgany & Kilcoole Local Area Plan, which is *'To provide for a local access road to facilitate development of zoned lands and to provide for the*

development of a through road from Priory Road to the R761 (Kilcoole Road). This proposed road link will improve accessibility for the immediate local area including people living along Priory Road and Eden Gate.

The proposed development includes the completion of a 650m section of the proposed Three Trouts Stream Greenway, which is an object of the Greystones - Delgany & Kilcoole Local Area Plan (TS12). A toucan crossing is to be provided across the Kilcoole Road to connect to Mill Lane, which continues northeast to Mill Road leading towards the Town Centre. A greenway link connecting from Eden Gate to the proposed development Spine Road is provided in accordance with Local Objective AP6. This greenway then continues through the proposed development to connect to the proposed Three Trouts Stream Greenway. Footpaths will be provided throughout the proposed development and these will link with existing footpaths and facilities. These measures provide a very high level of permeability for pedestrians and cyclists to and through the site, which will help encourage walking and cycling by both residents and visitors of the proposed development and also the adjacent residential areas.

An assessment of the proposed two accesses to the development site via the Proposed Kilcoole Road Access and Priory Road Access was carried out. The results indicate that the proposed Priority Road Access junction will operate at only 11% of its theoretical capacity and will be able to easily cater for the very low level of traffic expected to use the proposed residential development during AM and PM peak hours.

The Institution of Highways and Transportation document 'Guidelines for Traffic Impact Assessments' states that the impact of a proposed development upon the local road network is considered material when the level of traffic it generates surpasses 10% and 5% on normal and congested networks respectively. When such levels of impact are generated a more detailed assessment should be undertaken to ascertain the specific impact upon the networks operational performance. These same thresholds are reproduced in the TII document entitled Traffic and Transport Assessment Guidelines (2014).

In accordance with the IHT and TII guidelines we have undertaken an assessment to establish the potential level of impact upon the key junctions of the local road network. The results show that the proposed development will not result in any significant traffic impacts on the surrounding road network.

3.9 MATERIAL ASSETS – WASTE MANAGEMENT

The management of wastes generated during the construction of the proposed development will be in accordance with a Construction and Demolition Waste Management Plan (an outline of which is included with the SHD application). As long as the construction is completed in accordance with the plan it is envisaged that the impact of the construction (excavation and construction waste) phase will be temporary and slight.

With regard to how it has been demonstrated how construction and domestic wastes will be managed through design, management and waste reduction and recycling initiatives at the proposed development, it is predicted that the impact of the development on the receiving environment, existing material assets and local waste management services will be minor.

With the implementation of the proposed mitigation measures:

- The predicted impact of operational waste will be long term, moderate and negative.
- There is likely to be significant available capacity within existing Irish waste management infrastructure to manage operational phase wastes from the proposed development.
- The development shall be designed to provide adequate domestic waste storage areas for common residential areas (apartments) and individual houses. This will promote the appropriate segregation at source of domestic generated waste from all residential units at the development.

3.10 MATERIAL ASSETS – UTILITIES

Implementation of the measures outlined in Section 12.6 of the EIAR Volume II will ensure that the potential impacts of the proposed development on the sites material assets do not occur during the construction phase and that any residual impacts will be short term.

The overall volume of foul water discharging for treatment and disposal will increase due to the development of the lands. The development of the lands will be constructed in 2 no. phases, with the final phase being completed circa 2022.

The volume of potable water for treatment and use will increase due to the development of the lands. The development of the lands will be constructed in phases.

The demand on power supply, gas supply and telecommunications supply will all increase due to the development of the lands. The development of the lands will be constructed in phases, with the final phase being completed within 5 years of the grant of planning permission.

3.11 ARCHAEOLOGY, ARCHITECTURE AND CULTURAL HERITAGE

A total of 12 SMR sites and one RMP site are located within 500m of the proposed development area. All of these sites were identified during archaeological investigations in advance of the construction of the GSAR and adjacent residential developments and were previously unknown sites with no surface expression. The overall picture gleaned from these investigations is that the area immediately south and east of the proposed development area was part of an extensive Bronze Age landscape which had both ritual and secular elements in close proximity. Activity in this area continued in the early medieval and later medieval periods.

Aerial photographic analysis identified one site of archaeological significance within the proposed development area. This area is located in the southwest corner of Field 3, which itself forms the south-western portion of the proposed development area. A series of semi-circular cropmarks are visible in the southwest of the proposed development area. These appear in a cluster on the 2013 Google Earth images. The possible enclosures were not visible within the historic mapping coverage of the proposed development area. However, a lime kiln is shown within Field 3 on the first edition OS map.

The field inspection confirmed that much of the proposed development area would have provided an attractive settlement location for past communities. The south facing, raised ground located to the immediate south of the Three Trouts River possesses high archaeological potential. However, no previously unrecorded upstanding features of archaeological interest were identified.

The geophysical survey and test trench investigation have both shown that sub-surface archaeological remains survive at the site. Testing has identified three areas of archaeology across the proposed development area, the most extensive of which is Archaeological Area 1 in Field 3. This area is defined by two ring-ditches and outer enclosure with associated pits and other archaeological features as previously identified in aerial photography and geophysical survey. It is possible that the ring-ditches are prehistoric (possibly Bronze Age) in date and as the outer enclosure respects these it is suggested that this is contemporary.

Archaeological Areas 2 and 3 represent dispersed archaeological activity across the development area some of which may be contemporary with the ring-ditches and enclosure while some features—notably the kiln in Trench 45—are likely to date to the early medieval or medieval period.

The archaeology discovered in this testing assessment is similar in nature to, and possibly an extension of, the recently discovered archaeological sites in the immediate area at Charlesland. At Charlesland a significant Bronze Age ritual landscape including two ring-ditches, an urn burial, a cremation pit, structures, and burnt mounds have been excavated in advance of residential and road development.

No potential impacts with respect to historical, archaeological or architectural heritage matters are anticipated during the operational phase of the development. Consequently, no remedial or reductive measures are considered necessary.

The development will result in the removal of previously unrecorded features within the subject lands. However, without the archaeological measures undertaken to date with respect to the development, the existence of this feature was unknown. The location of the sites will now be added to the Sites and Monuments Record of the Archaeological Survey of Ireland and its excavation will greatly add to the archaeological and historical knowledge base to the general area and region as a whole. Consequently, it is considered that if this feature is subjected to a '*preservation by record*' process as a reductive/remedial measure, then the predicted impact is considered to be beneficial rather than adverse.

3.12 RISK MANAGEMENT

The Construction Management Plan, submitted with the SHD application, as well as good housekeeping practices will limit the risk of accidents during construction. Fire safety will be dealt with under the Fire Safety Code at design and construction stage. The estate management company will have responsibility for fire safety during operations. In relation to falls these have been dealt with during design.

The proposed development will involve the ground works to facilitate the proposed development. Site investigations have been carried out and have not identified any hazardous material. Further testing will be carried out prior to construction to inform the detailed design. In the event that any hazardous material is identified the appropriate measures will be taken in accordance with the requirements of the EPA.

Through the implementation of mitigation measures, there are no identified incidents or examples of major accidents and or natural disasters that present a sufficient combination of risk and consequence that would lead to significant residual impacts or environmental effects.

Works on the public road, such as the construction of the Toucan crossings and the laying of underground pipes would be carried out on behalf of the relevant statutory undertakers, and would be subject to separate construction management plans.

3.12.1 Direct and Indirect Effects Resulting from Use of Natural Resources

Details of significant direct and indirect effects arising from the proposed development are outlined in Chapters 6-15 which deal with 'Aspects of the Environment Considered'. No significant adverse impact is predicted to arise from the use of natural resources.

3.12.2 Direct and Indirect Effects Resulting From Emission of Pollutants, Creation of Nuisances and Elimination of Waste

Details of emissions arising from the development together with any direct and indirect effects resulting from same have been comprehensively assessed and are outlined in the relevant in Chapters 6-16 which deal with '*Aspects of the Environment Considered*'. There will be no significant direct or indirect effects arising from these sources.

3.12.3 Forecasting Methods Used for Environmental Effects

The methods employed to forecast the effects on the various aspects of the environment are standard techniques used by each of the particular individual disciplines. The general format followed was to identify the receiving environment, to add to that a projection of the "*loading*" placed on the various aspects of the environment by the development, to put forward amelioration measures, to lessen or remove an impact and thereby arrive at net predicted impact.

3.12.4 Technical Difficulties Encountered in compiling any specified information

No particular difficulties, such as technical deficiencies or lack of knowledge, were encountered in compiling any of the specified information contained in this report such as that a prediction of impact has not been possible.

4.0 CUMULATIVE IMPACTS

Where relevant the EIAR also takes account of other development within the area. Each of the relevant specialists has considered the potential for cumulative impact in preparing their assessments. While there is the potential for negative impacts to occur during the construction stage of the scheme, with the implementation of the appropriate mitigation outlined in the EIAR, the residual cumulative impact is not considered to be significant.

The proposed development also has the potential for cumulative, secondary and indirect impacts particularly with respect to such topics as traffic which in many instances are often difficult to quantify due to complex inter-relationships. However, all cumulative, secondary and indirect impacts are unlikely to be significant and, where appropriate, have been addressed in the content of this EIAR document. Each Chapter of the EIAR includes a cumulative impact assessment of the proposed development with other planned 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.

5.0 INTERACTIONS BETWEEN ENVIRONMENTAL FACTORS

Chapter 15 of the EIAR (Volume II) provides detail on the 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 2001-2018. The detail in relation to interactions between environmental factors is covered in each chapter of the EIAR.

In addition to the individual assessments of impacts on human beings, fauna and flora, soil, water, air, climate factors, the landscape and material assets, including architectural, archaeological and cultural heritage, the inter-relationships between these factors was also taken into account as part of the EIAR scoping and impact assessment. Where the potential exists for interaction between two or more environmental topics, the relevant specialists have taken these potential interactions into account when making their assessment and, where possible, complementary mitigation measures have been proposed. These are set out in Chapter 15 of the EIAR (Volume II).

The primary interactions can be summarised as follows:

- Engineering bridge design with biodiversity and archaeology;
- Landscape design, engineering services with biodiversity and archaeology;
- Visual impact with biodiversity;
- Biodiversity with water and soils;
- Noise and vibration and traffic; and
- Air quality and climate and traffic.

The relevant consultants liaised with each other and the project architects, engineers and landscape architects where necessary to review the proposed scheme and incorporate suitable mitigation measures where necessary. As demonstrated throughout this EIAR, most inter-relationships are neutral in impact when the mitigation measures proposed are incorporated into the design, construction or operation of the proposed development.

6.0 SUMMARY OF EIA MITIGATION AND MONITORING MEASURES

Chapter 16 of the EIAR (Volume II) provides a summary of all the mitigation and monitoring measures proposed throughout the EIAR document for ease of reference for the Board and all other interested parties.