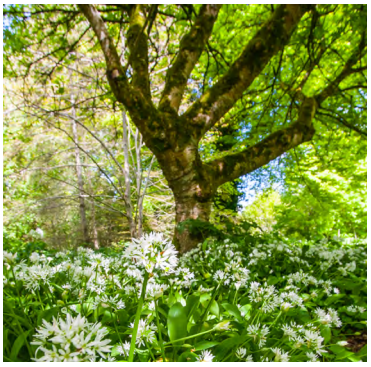
Bluescape Limited

LACKENROE SHD

NTS

NON-TECHNICAL SUMMARY



VOLUME I

awnconsulting

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LACKENROE **SHD**

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CHAPTER 1 | INTRODUCTION TO EIAR AND NON-TECHNICAL SUMMARY

1.1 Non-Technical Summary Context

This Environmental Impact Assessment Report (EIAR) has been prepared on behalf of Bluescape Limited to assess a proposed residential development at Lackenroe and Johnstown (townlands), Glounthaune, Co. Cork.

The preparation of a Non-Technical Summary (NTS) is a requirement as stated in the EIA Directive 2014/52/EU to "ensure that the public are made aware of the environmental implications of any decisions about whether to allow new projects to take place".

This EIAR has been prepared in accordance with guidance contained in the Directive 2011/92/EU (as amended by Directive 2014/52/EU), the Planning & Development Acts 2000 (as amended), the Planning & Development Regulations, 2001 (as amended), Annex IX of the 2014/52/EU Directive and Schedule 6 of the European Union (Planning and Development) (Environmental Impact Assessment) (Regulations) 2018 (S.I. No. 296/2018), which identifies the specific information to be assessed in an EIAR.

The purpose of these Directives to ensure that projects likely to have significant effects on the environment are subject to a comprehensive and systematic assessment of environmental effects prior to development consent being given.

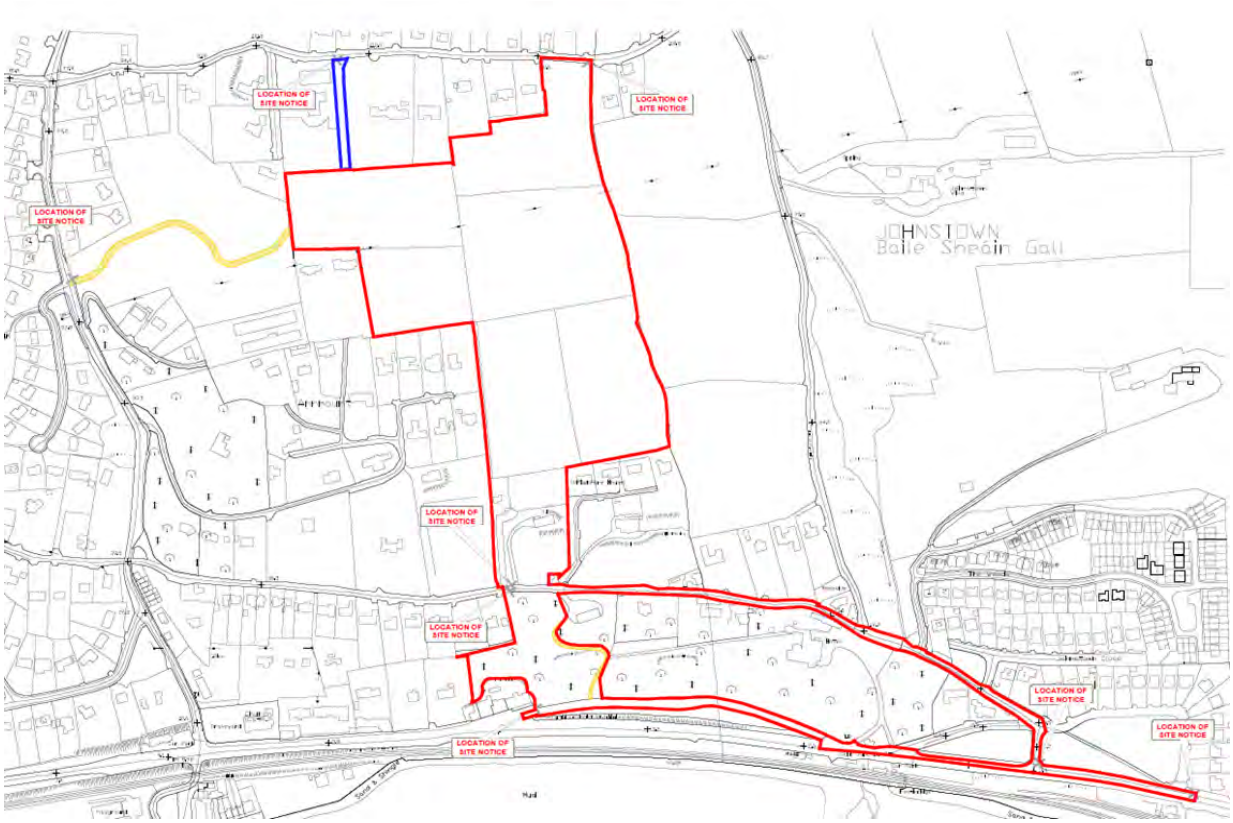


Figure 1.1 Site Location

1.2 EIA Methodology

As per Article 5(1) of the 2014 Directive, an EIAR should provide the following information:

- Description of Project;
- Description of Baseline Scenario;
- Description of Likely Significant Effects;
- Description of Avoidance / Mitigation Measures;
- Description of Reasonable Alternatives (and rationale for chosen option); and
- A Non-Technical Summary.

Annex IV of the Directive sets out a more detailed outline of the information required in an EIAR. The subject EIAR has been prepared in full accordance with these stated requirements of Annex IV.

We would also note that the pre-application discussions with the Planning Authority informed the content/ scoping of the EIAR. The EIA process has been project managed to ensure that the EIAR documentation and relevant analysis are confined to topics which are explicitly described in the legislation, and where environmental impacts may arise. Evaluation and analysis have been limited to topics where the indirect, secondary or cumulative impacts are either wholly or dominantly due to the project or development under consideration.

The EIA process can be broadly described as containing the following steps.

- EIA Screening
- EIA Scoping
- Preparation of an EIAR which informs planning consent process.

1.2.1 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.

Paragraph 10(b) of Part 2 of Schedule 5 of the Planning and Development Regulations, 2001 refers to Infrastructure Projects refers to the thresholds where a Mandatory EIAR is required.

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

(ii) Construction of a car-park providing more than 400 spaces, other than a car-park provided as part of, and incidental to the primary purpose of, a development.

(iii) Construction of a shopping centre with a gross floor space exceeding 10,000 square metres.

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

(In this paragraph, "business district" means a district within a city or town in which the predominant land use is retail or commercial use.)"

As the proposed development comprises the construction of 289 no. residential units and 742.8 sqm non-residential floor space (creche, commercial unit and community unit) on a site area of 13.87 hectares, an EIAR is required as prescribed by Class 10(b)(iv) of the 2001 Regulations.

1.2.2 EIA Scoping

Scoping is the process of determining the content and extent of the matters which should be covered in the environmental information to be submitted in the EIAR. The primary objective of the EIAR is to identify baseline environmental and socio-economic conditions in the area of the proposed development, predict potential beneficial and/or adverse effects of the development during both construction and operational phases and propose appropriate mitigation measures where necessary. This EIAR also assesses the inter relationship between these aspects and the cumulation of effects with other existing and/or approved projects in the area.

Scoping for this EIAR involved an assessment of all relevant guidance and pre-planning consultation meetings held with Cork County Council in accordance with Section 247 of the Planning and Development Act 2000 in September 2018, May 2021 and August 2021. A series of meetings have taken place with the technical staff of Cork County Council which assisted in the preparation of this EIAR and the planning application.

Scoping also included notifying the following prescribed bodies of the extent of the proposed development and that an EIAR regarding same was being prepared.

1. Department of Tourism, Culture, Arts, Gaeltacht, Sport and Media
2. The Heritage Council
3. An Taisce
4. Irish Water
5. Inland Fisheries Ireland (Southwest Region)
6. Transport Infrastructure Ireland
7. The National Transport Authority
8. Department of Local Government, Housing and Heritage
9. Department of Education and Skills
10. Cork County Childcare Committee
11. National Parks & Wildlife Service

The particulars sent to the above bodies are contained in Appendix 1-1 with any responses received contained in Appendix 1-2. The scoping process has also considered various possible alternative approaches to the proposed development. Consideration of alternative sites and layouts within the final chosen site are set out in Chapter 3 of this EIAR.

1.3 Structure of the EIAR

The EIAR is divided into 3 volumes:

Volume I – This Non-Technical Summary

Volume II – The main EIAR report containing 15 chapters comprising.

1. Introduction
2. Project Description
3. Alternatives
4. Landscape & Visual

5. Material Assets – Traffic & Transport
6. Material Assets – Services, Infrastructure & Utilities
7. Land & Soils
8. Water (Hydrology & Hydrogeology)
9. Biodiversity
10. Noise & Vibration
11. Cultural Heritage
12. Air Quality & Climate
13. Population & Human Health
14. Interaction of Impacts
15. Summary of Mitigation Measures.

Volume III - The Appendices numbered in accordance with the chapter they relate.

1.4 EIAR Team & Qualifications

HW Planning have coordinated the subject EIAR. Environmental specialist consultants were also commissioned for the various technical chapters of the EIAR document which are mandatorily required as per the EIA Directive and Planning and Development Regulations 2018.

Each environmental specialist was required to characterise the receiving baseline environment; evaluate its significance and sensitivity; predict how the receiving environment will interact with the proposed development and to work with the EIA project design team to devise measures to mitigate any adverse environmental impacts identified.

In accordance with the EIA Directive 2014/52/EU, we confirm that the EIAR has been carried out by fully qualified and competent experts in their relevant fields as outlined in this chapter. A full list of all consultants and the corresponding chapters that have been prepared is detailed below.

Planning Consultants: HW Planning

Address: 5 Joyce House, Barrack Square, Ballincollig, Co. Cork

Chapters Prepared: Chapter 1 – Introduction, Chapter 2 - Project Description, Chapter 3 - Alternatives Considered, Chapter 13 - Population & Human Health, Chapter 14 - Interaction of Impacts and Chapter 15 - Summary of Mitigation Measures

Personnel: Harry Walsh, Director - BA HONS, Master of Regional and Urban Planning, MIPI).

Landscape Architects: Cunnane Stratton Reynolds

Address: Copley Hall, Cotters Street, Cork

Chapters Prepared: Chapter 4 – Landscape & Visual

Personnel: Jim Kelly. Director - B.Agr.Sc in Landscape Architecture (UCD), PG.Dip Landscape Architecture, Member of the Irish Landscape Institute MILI Chartered Landscape Architect, MLI (UK), Chartered Landscape Architect, CMLI (UK)

Evelyn Sikora, Senior Landscape Planner, BA MA, MILI

Project Engineers: AECOM

Address: 1st Floor, Montrose House, Carrigaline Road, Douglas, Cork

Chapters Prepared: Chapter 6 - Material Assets – Services, Infrastructure & Utilities, Chapter 7 - Land & Soils, Chapter 8 - Water (Hydrology & Hydrogeology).

Personnel: Emma McKendrick, Regional Director - BEng CEng MICE FIEI

Keith Fitzpatrick - Associate Director - NCEA in Electrical Engineering (Merit), BSc Building Services Engineering, Masters in Engineering Management (MEM), ACIBSE, MIEI, MIET.

Traffic Engineers: MHL & Associates.

Address: Carrig Mor House, 10 High Street, Douglas Road, Cork.

Chapters Prepared: Chapter 5 - Material Assets – Traffic & Transportation.

Personnel: Ken Manley, Director - BE CEng MIEI HDip Envm Eng FConsEI

Ecologist: Kelleher Ecology Services

Address: Curraghdermot, Castlelyons, Co. Cork

Chapters Prepared: Chapter 9 - Biodiversity

Personnel: Dr. Katherine Kelleher, Principal Ecologist & Director – BSc in Zoology and PhD in Ecology.

Dr. Daphne Roycroft, Ecological Consultant. - BSc and PhD in Ecology

Michelle O'Neill - Michelle has 10 years of experience working as an ecological consultant within the public and private sector on projects that include habitat and botanical surveys, breeding and winter bird surveys, mammal surveys, data analysis, assessment and report writing.

Dr Isobel Abbott, Ecological Consultant - BSc in Zoology, PhD in Ecology.

Einne O'Cathasaigh, Ecological Consultant - MSc in Marine Biology, BA in Zoology

Dr Domhnall Finch, Senior Ecologist - B.Sc. degree in Environmental Science, Master's degree in Biodiversity and Conservation, PhD.

Environmental Consultant: AWN Consulting

Address: The Tecpro Building, Clonshaugh Business & Technology Park, Dublin 17

Chapters Prepared: Chapter 10 - Noise & Vibration, Chapter 12 – Air Quality & Climate

Personnel: Alex Ryan, Acoustic Technician - BA, BAI and MAI in Mechanical and Manufacturing Engineering, Associate Member of the Institute of Acoustics

Dr. Avril Challoner, Senior Environmental Consultant, - BEng (Hons) in Environmental Engineering, HDip in Statistics, PhD in Environmental Engineering (Air Quality). She is a Chartered Scientist (CSci) and Member of the Institute of Air Quality Management.

Built Heritage/Archaeology: John Cronin & Associates / Louise M Harrington Architectural Heritage & Historic Landscape Consultant

Address: Unit 3a Westpoint Trade Centre, Ballincollig, Co. Cork / Whitethorn, Douglas Road, Cork.

Chapters Prepared: Chapter 11 - Cultural Heritage

Personnel: John Cronin, Director – Qualifications in archaeology (B.A., University College Cork (UCC), 1991), regional and urban planning (MRUP (University College Dublin (UCD) 1993) and post-graduate qualifications in urban and building conservation (MUBC (UCD), 1999).

Tony Cummins, Senior Archaeologist – primary and post-graduate degrees in archaeology (B.A. 1992 and M.A. 1994, UCC).

Louise Harrington, Historic Landscape Consultant - MA in Historic Landscape Studies (with Distinction) from the University of York, an MPhil from University College Cork, and a BA in the History of Art with Spanish from Trinity College Dublin.

Project Architects: Deady Gahan Architects.

Address: Eastgate Village, Little Island, Co. Cork

Chapters Prepared: N/A

Personnel: Eamonn Gahan, Director - Liam Murphy, Architect,

1.5 Cumulative Impacts

The potential environmental effects of the proposed development have not been assessed in isolation. Rather, the potential impacts of this project has been considered in combination with other relevant permitted or proposed projects in the vicinity of the site which may result in cumulative environmental impacts have also been considered, as well as the relevant policies and objectives of any future plans/projects. Each of the projects listed in table 1.1 have been assessed for potential cumulative impacts. These projects were identified by using Cork County Councils Planning Enquiry Systems and An Bord Pleanála's website.

Application Reference	Applicant(s)	Description	Outcome/Current Status
Part 8 Development	Cork County Council	Pedestrian and Cycle Route from Bury's Bridge, Kilcoolishal to Carrigtwohill via Glounthaune	Under Construction/ Partially Complete
21/6851	Citidwell Developments Limited	Demolition of 2 no. farm buildings and a derelict dwelling and the construction of 21 no. units.	Application currently pending a decision from Cork County Council.
21/5072	Barlow Properties Ltd	Construction of 94no. residential units	Application currently pending a decision from Cork County Council.
21/4622	Glounthaune Homes Trust	Construction of 12 no. residential units	Application currently pending a decision from Cork County Council.
18/6250	Keta Products Ltd.	Demolition of The Great O'Neill Public House and construction of a two-storey extension of the existing Fitzpatricks shop to the east to replace the demolished public house, for use as an extended retail.	Under Construction – Nearing Completion
17/5699 (ABP Reference 300128-17) Amended by 18/6312 & 20/5864	Bluescape Ltd	Phase 1 of Proposed Development. Construction of 38 no. residential units & upgrade of local road network	Construction recently commenced
ABP-301197-18	O'Mahony Developments Limited	Strategic Housing Development Construction of 174 number residential units	Under Construction with initial phases occupied.

Table 1.1 Cumulative Impacts

CHAPTER 2 | PROJECT DESCRIPTION

2.1 Introduction

This Chapter has been prepared by Harry Walsh, (BA HONS, Master of Regional and Urban Planning, MIPI), Director at HW Planning.

Recital 22 of the 2014 EIA Directive requires a detailed description of the project be included in an EIAR:

> *''In order to ensure a high level of protection of the environment and human health, screening procedures and environmental impact assessments should take account of the impact of the whole project in question, including, where relevant, its subsurface and underground, during the construction, operational and, where relevant, demolition phases".*

2.2 Description of Existing/Baseline Environment

The subject lands of approximately 13.9 hectares in area, are situated in the settlement of Glounthaune approximately 9km east of Cork City Centre and 6km west of Carrigtwohill. The site is located to the north of the existing village centre and comprises two separate land parcels to the north and south of 'the Terrace' (L-2970). The northern land parcel of 11.41 hectares in area comprises sloping and south facing agricultural lands with attractive views over Cork Harbour/River Lee Estuary. The parcel is subdivided by existing hedgerows into several smaller fields. To the east of the northern lands are further undeveloped agricultural fields with a linear settlement pattern of one-off houses along the northern, western and southern boundaries. The northeastern corner bounds the L-2969 where there is an existing agricultural field entrance. The southern boundary of the land parcel is situated circa 430 metres northwest of Glounthaune station. A cluster of 1 no. derelict dwelling house and associated outbuildings is situated in the southern areas of the northern parcel.

The southern land parcel of 1.24 hectares in area, consists of a sloping undeveloped site situated between the Terrace and Johnstown Close to the south. The southern land parcel is largely overgrown by vegetation with a number of Category A/B trees, particularly in northern and eastern areas of the site. The southern parcels fronts onto Johnstown Close and will benefit from the delivery of the 'Pedestrian and Cycle Route from Bury's Bridge, Kilcoolishal to Carrigtwohill via Glounthaune' permitted through the Part 8 process which is nearing completion. An existing 4 storey apartment building known as 'Waterside' is located at the sites southwestern boundary adjacent to a local neighbourhood centre containing Fitzpatrick's shop and The Great O'Neill public house. Glounthaune train station is located approximately 250 metres east of the site's southern boundary to which it is linked via pedestrian and cycle infrastructure.

The southern parcel is located to the west of Ashbourne House and gardens, which is listed as a Protected Structure in the Cork County Development Plan 2014. Ashbourne House was previously in use as a hotel and more recently as a Direct Provision Centre for the HSE. The remainder of the subject site relates to the existing road network (The Terrace and Johnstown Close) and greenway where it is proposed to provide new foul/ surface water infrastructure.

The subject lands are located within the settlement boundary of Glounthaune as defined in the Cobh Municipal District Local Area Plan 2017. The proposed development represents the second phase of residential development at the subject lands, which is being delivered in accordance with a Masterplan for the overall lands developed by Deady Gahan Architects in 2017. The first phase of the 'Lackenroe Masterplan' is currently being realised, with construction having recently commenced on the construction of 38 no. dwelling houses

at the site to the immediate west of the northern and parcel permitted by Cork County Council reference 17/5699 and An Bord Pleanála reference 300128-17 (subsequently amended by 18/6312 and 20/5864).

2.3 Operational Phase

2.3.1 Description of Proposed Development

The proposed Strategic Housing Development (SHD) will consist of the Phase 2 of the residential development at Lackenroe and Johnstown (townlands), Glounthaune Co. Cork, which adjoins Phase 1 to the west and comprises the construction of a mixed-use residential development of 289 no. residential units consisting of 201 no. dwelling houses and 88 no. apartment/duplex units, a two storey creche, 4 no. ESB substations and all ancillary site development works. The proposed development will be constructed on lands to the north and south of the public road, L-2970, known locally as 'the Terrace'. A portion of the site to the south of 'the Terrace' was formerly within Ashbourne Garden and is considered to be within the curtilage and attendant grounds of Ashbourne House, which is a Protected Structure (Ref 00498).

The proposed development to the north of 'the Terrace' provides for 260 no. residential units comprising of 196 no. dwelling houses, 64 no. apartment/duplex units and a two storey creche. The 196 no. dwelling houses includes 5 no. 4 bedroom detached dwellings, 44 no. 4 bedroom semi-detached dwellings, 12 no. 4 bedroom townhouses, 2 no. 3 bedroom detached dwellings, 22 no. 3 bedroom semi-detached dwellings, 47 no. 3 bedroom townhouses and 64 no. 2 bedroom townhouses. The 64 no. apartment/duplex units contains 5 no. 3 bedroom units, 32 no. 2 bedroom units and 27 no. 1 bedroom units contained in 6 no. three storey apartment buildings, with ancillary bicycle parking and bins stores.

The proposed development to the south of 'the Terrace' provides for 29 no. residential units comprising of 5 no. dwelling houses and 24 no. apartments. The 5 no. dwellings include 1 no. 3 bedroom detached dwelling, 2 no. 3 bedroom townhouses and 2 no. 2 bedroom townhouses. The proposed apartments are provided in a four-storey mixed-use building containing a ground floor community unit and a commercial unit with apartments at ground and upper floor levels comprising 3 no. 3 bedroom units, 7 no. 2 bedroom units and 14 no. 1 bedroom units with ancillary rooftop terrace, car parking, bicycle parking and bin stores.

Vehicular access to 2 no. dwellings in the lands to the north of 'the Terrace' will be provided via an upgraded entrance from 'the Terrace' with vehicular access to the remainder of dwellings in the lands to the north of 'the Terrace' via the signalised junction from the L-2968 and internal road network permitted by Cork County Council reference 17/5699 and An Bord Pleanála reference 300128-17. A separate secondary emergency access is also proposed from the L-2969 to the north.

Vehicular access to the 5 no. dwellings to the south of the 'the Terrace' will be via a new entrance from 'the Terrace' and the proposed apartment building will be accessed from Johnstown Close. The proposed development also makes provision for a pedestrian link from the proposed development north of 'the Terrace' to Johnstown Close via 'the Terrace' which will include a signalised pedestrian crossing and associated traffic calming measures on 'the Terrace'.

Ancillary site works include the demolition of 1 no. existing derelict dwelling house and associated outbuildings, landscaping and servicing proposals including the realignment of the existing pedestrian/cycle route on Johnstown Close, the undergrounding of existing overhead lines, upgrade of the storm and foul sewer network to the south and east of the subject lands along 'the Terrace' and Johnstown Close (L-3004).

Figure 2.1 Proposed Development with Permitted Phase 1 to the west

When assessed cumulatively with the permitted first phase the proposed development provides for 327 no. residential units on total site area of circa 16.6 hectares. As referenced in the above development description, the proposed development provides for other uses, ancillary to the residential development including.

- A two storey 67 no. child creche (551.4 sqm) in the northern land parcel of the development. The creche facility is located adjacent to a proposed Multi-Use Games Area (MUGA) and central amenity parkland, providing for a communal central node in the northern parcel.
- The proposed mixed-use building in the southern land parcel, fronting onto Johnstown Close provides for a ground floor community unit (113.6 sqm) and commercial unit (77.8 sqm) which both front onto the pedestrian/cycle route on Johnstown Close (also referred to in this EIAR as the 'greenway').

A summary of some of the key development statistics is provided in Table 2-1 as shown.

Key Figures of Proposed Development	
No. of residential units	289 (201 no. dwelling houses and 88 no. apartment/ duplex units.
Site Area	**Total Area** - 13.87 hectares **Northern Land Parcel** - 11.4 hectares **Southern Land Parcel** - 1.24 hectares **Other Areas (e.g Public Roads)** - 1.23 hectares
Developable Site Area	8.7 hectares
Density (Developable Site Area)	Within the proposed residential developable area 287 no. residential units are proposed reflecting a residential density of 33 units per hectare*
Open Space Provision	12.2%
Creche	Two storey creche with capacity for 67 no. children centrally located within northern parcel. – Gross Floor Area of 551.4 m².
Other Uses	Commercial unit (77.8 m²) and Community unit (113.6 m²) situated at ground floor level of apartment building in southern parcel.
Total Car Parking spaces	486
Total Bicycle Parking spaces	206

Table 2-1 - Key Statistics of Proposed Residential Development

** 2 no. additional dwelling houses are proposed in the southern areas of the northern parcel. (Referred to as units 259 and 260 on site layout plan prepared by Deady Gahan Architects). The proposed development includes the demolition of an existing derelict dwelling house and several outbuildings in this area. Due to the site levels in this area, it is not considered feasible to include this area within the developable site area, with the primary function of the 2 no. proposed replacement dwellings, being the provision of passive supervision of the proposed pedestrian/cycle path which links the two parcels.*

For the purposes of calculating the residential density of the proposed development these 2 no. units have not been factored into density calculations.

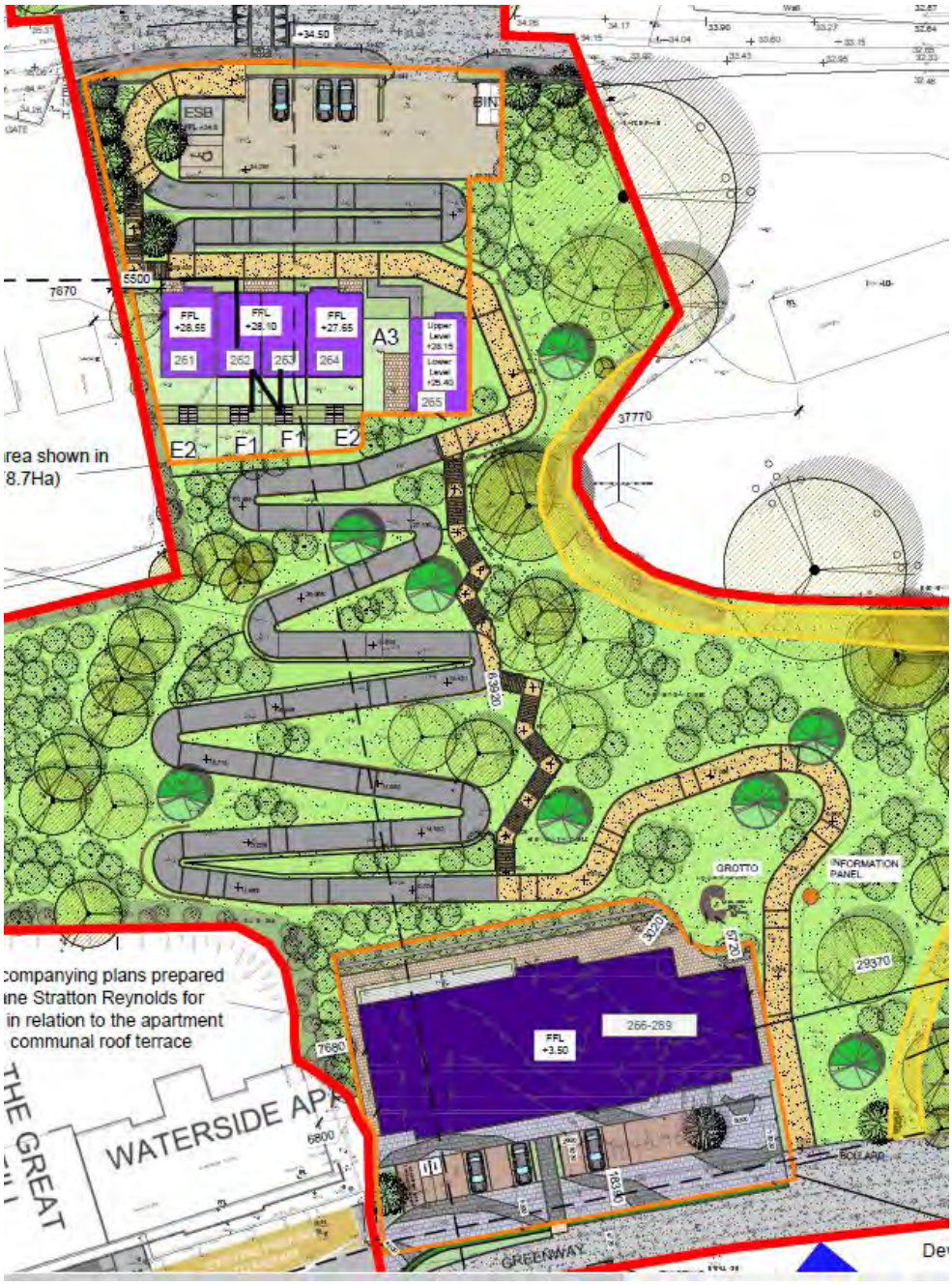
2.3.2 Access, Connectivity & Public Realm

Vehicular access to the northern land parcel will be provided via the signalised junction from the L-2968 (Knockraha Road), permitted in Phase 1 which was designed to accommodate vehicular access to future development of the wider masterplan lands.

The proposed development provides for pedestrian and cyclist paths though the northern parcel onto 'the Terrace' where a signalised pedestrian crossing is proposed to link the lands to the north and south of the Terrace. A separate vehicular entrance to serve 5 no. dwelling houses in the southern parcel is proposed, and the continuation of the proposed pedestrian/cyclist paths which will connect to the greenway on Johnstown Close, providing pedestrian and cyclist links to the train station.

The proposed development also provides for the realignment of the existing greenway to the south of the site, along Johnstown Close.

Figure 2.2 Upgrades to the Terrace and Pedestrian/Cycle Path through Southern land parcel



2.3.3 Proposed Layout & Landscape Strategy

The design rationale for the proposed development has been 'landscape led', with the site topography and setting in its local and wider contexts forming a critical component of the development strategy of the lands. Key principles include.

- The promotion of a sense of place by providing attractive and distinctive environments throughout the proposed residential neighbourhoods.
- To prioritise pedestrian and cyclist permeability and connectivity to local services including Glounthaune railway station.
- The protection and retention of 'Champion' trees in the southern land parcel which positively contribute to the character of Glounthaune.

Any trees which require removal in order to accommodate the proposed three metre pedestrian/cycle path to the train station, village core and greenway will be mitigated by extensive planting of new native trees, hedgerows and landscaping treatments.

2.3.4 Servicing, Infrastructure and Utilities

2.3.4.1 Surface Water Drainage

The drainage strategy for the development provides for the discharge of surface water from the scheme to the existing outfall, located to the south of Johnstown Park and southeast of the subject development lands. To achieve this, it is proposed to lay a new 300mm surface water sewer from the southern boundary of the northern land parcel, along 'the Terrace' and Johnstown Close, which will connect to an existing manhole.

While it is proposed to discharge run-off from the proposed development to an area that is tidal in nature, rather than a stream/ river, in order to reduce the rate of run-off from the proposed development it is proposed to limit discharge from the site to the greenfield rate. It is proposed to attenuate run-off from the proposed development through attenuation tanks, with permeable pavements provided across the scheme and a green roof proposed for the mixed-use building (containing 24 no. apartments, commercial and community units) fronting onto the greenway at Johnstown Close.

2.3.4.2 Waste/Foul Water Drainage

Wastewater discharge from the northern parcel will be discharged by gravity into the 225mm diameter public foul sewer to the southeast near 'The Woods' residential development. To achieve this, it is proposed to lay a new 225mm foul water sewer from the southern boundary of the proposed development along the Terrace and connect to the existing 225mm foul water system. It is proposed to discharge the wastewater generated by the proposed development south of 'the Terrace' by gravity to the existing network to the west of the proposed mixed-use building to the south of the site.

2.3.4.3 Water Supply

It is proposed to service the proposed development via a new connection from the existing watermain along the sites northern boundary and to also connect to the existing watermain to the south of the site. To reduce the water demand generated from the proposed development, water conservation measures will be incorporated in the sanitary facilities throughout the development, e.g. dual flush toilets.

A 'Proposed Site Layout Plan', prepared by Deady Gahan Architects is included as appendix 2-4 of this EIAR.

2.4 Construction Phase

The construction phase will take place in accordance with the prepared 'Construction and Demolition Waste Management Plan' (CDWMP) Appendix 2-2 and 'Construction & Environmental Management Plan' (CEMP) Appendix 2-3 prepared by AECOM.

2.4.1 Construction Programme and Phasing

Construction will take place across three phases.

- Phase 1: 97 no. units in which includes the proposed mixed-use building to the south, creche and the demolition of existing structures in the northern parcel. Phase 1 will also provide for the full delivery of the three metre pedestrian/cyclist path through both parcels and the upgrades to the foul and surface water network along the Terrace and Johnstown Close.
- Phase 2: 93 Units in northern parcel.
- Phase 3: 99 Units in northern parcel.

No construction works relating to the proposed development will occur until the signalised junction and road upgrades permitted by Cork County Council reference 17/5699 and An Bord Pleanála reference 300128-17 are implemented and operational.

2.4.2 Mitigation/Replacement Planting

During construction it is proposed to provide for significant levels of replacement/mitigation planting to mitigate the loss of existing tree/hedgerow and vegetation

2.5 Impact Assessment

2.5.1 Construction Phase

The construction phase of the proposed development will be short term in nature and will be implemented in accordance with the requirements and recommendations of the accompanying construction management plans. Without appropriate mitigation measures, the construction stage of the development could result in potential significant indirect, cumulative and residual effects on the surrounding environment such as impacts on the local road network, potential ground/water contamination, noise, vibration, dust, air quality, pollution, waste management and impacts on mature trees.

2.5.3 Operational Phase

Once constructed the proposed development will be irreversible and permanent in nature. The proposed development will result in the construction of an additional 289 no. residential units (327 no. units when assessed cumulatively with Phase 1) with ancillary creche, community and commercial units. The proposed development will result in several positive effects in the local area by providing a broad range of housing units, which will serve all aspects of the current housing market and address the current housing shortage in the Metropolitan Cork Area. The development will support the long-term future of Glounthaune train station as well as providing employment during the construction phase of the development and other associated economic benefits. The proposed development, along with the new greenway between Glounthaune and Carrigtwohill,

along with the public realm upgrades and signalised junction permitted in Phase 1, will result in a safer environment for pedestrians and cyclists to access the village core and train station.

2.6 Mitigation, Monitoring & Residual Impacts

2.6.1 Construction Phase

The relevant EIAR chapters and the appended CDWMP and CEMP prepared by AECOM, detail the proposed mitigation and monitoring procedures to be implemented during the construction phase of the proposed development including Earthworks, Site Security Fencing and Hoarding, Traffic Management, Material Handling and Storage, Spill Control Measures, Surface Water Drainage, Water Supply, Noise & Vibration, Dust & Air Quality, Waste/Hazardous Waste Management, Protection of Existing Trees, Protection of Existing Stone Grotto, Invasive Species and Health & Safety.

2.6.2 Operational Phase

Once operational it is expected that the proposed development will result in long-term positive impacts for Glounthaune and the local area. The proposed development will result in the provision of an additional 289 no. residential units at a location with unique access to high capacity and frequency public transport opportunities. The proposed creche and commercial/community units will provide a diversification to the existing economy and childcare provision of Glounthaune. It is expected that the sites location, adjacent to the new greenway will result in a greater uptake of walking, cycling and public transport opportunities, underpinning national, regional and local planning objectives to improve sustainable modes of transport and reducing dependency on the private vehicle.

CHAPTER 3 | ALTERNATIVES CONSIDERED

3.1 Introduction

This Chapter has been prepared by Harry Walsh, (BA HONS, Master of Regional and Urban Planning, MIPI), Director at HW Planning.

The purpose of this Chapter is to assess the project alternatives throughout the design and consultation phases of the project, taking into account and comparing environmental effects and illustrating how the final proposed layout has been arrived at.

Article 94 and Schedule 6, paragraph 1(d) of the Planning and Development Regulations 2001, as amended, requires the following information to be furnished in relation to alternatives:

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

This chapter provides an outline of the main alternatives examined throughout the design and consultation process to indicate the primary reasons for choosing the proposed development, considering and providing a comparison of the environmental effects.

3.2 Alternative Locations

Regarding alternative locations, Section 3.4.1 of the Draft 2017 EPA Guidelines, recognise that 'some instances some of the alternatives described below will not be applicable – e.g. there may be no relevant 'alternative location'…". Section 3.4.1 of the Guidelines continues stating.

> *"Analysis of high-level or sectoral strategic alternatives cannot reasonably be expected within a project level EIAR…''*
>
> *''…….It should be borne in mind that the amended Directive refers to 'reasonable alternatives… which are relevant to the proposed project and its specific characteristics'".*

The subject lands are situated within the 'Settlement Boundary' of Glounthaune as defined in the currently adopted Cobh Municipal District Local Area Plan and are the only lands within the settlement in the current ownership of Bluescape Limited. The proposed development represents the second phase and realisation of a masterplan for residential development at the wider lands. Permission was previously granted by Cork County Council at the lands immediately northwest of the site, subject to Cork Council Planning Reference 17/5699 for the.

> *''Construction of residential development of 40 no. 2 storey dwelling houses and all ancillary site development works. The proposed development consists of the provision of 20 no. 4 bedroom detached houses, 10 no. 3 bedroom semi-detached houses and 10 no. 4 bedroom semi-detached houses. The proposed development makes provision for the upgrade of the Knockraha road and access to the proposed development will be via a proposed signalised junction with Cois Chuain, with a pedestrian access to the country road to the north of the site.''*

The decision to grant permission was then appealed by third parties to An Bord Pleanála (ABP Reference 300128-17) who upheld the Councils decision to grant permission. 300128-17 has subsequently been amended by planning references 18/6312 and 20/5864. Permission currently exists for 38 no. dwelling houses in Phase 1 and construction has recently commenced on the permitted dwellings.

3.3 Do-Nothing Alternative

The 'do-nothing' alternative would result that serviced and zoned greenfield lands within the defined settlement of boundary of Glounthaune would remain undeveloped and remain in agricultural use. The 'do nothing' scenario would also result that the proposed public realm upgrades to the Terraces would not take place.

In the long term, the site remaining in agricultural use would result that the site would retain its agricultural functions. The southern land parcel, some existing trees which are coming towards the end of their natural lifetime will likely not survive, resulting in a loss of tree cover. The lands remaining undeveloped would result in the potential spread of invasive species across the southern site would result in negative biodiversity and landscape impacts.

A "do-nothing" scenario was considered to represent an inappropriate unsustainable and inefficient use of these serviced residential zoned lands within the defined settlement boundary of Glounthaune.

3.4 Alternative Uses

The subject lands are identified specifically as being within the 'Existing Built-up area' zoning objective of Glounthaune in the 2017 Cobh Municipal District Local Area Plan. Regarding these areas, Objective ZU 3-1, of the Cork County Development Plan 2014 aims to;

> *'Normally encourage through the Local Area Plan's development that supports in general the primary land use of the surrounding existing built up area. Development that does not support, or threatens the vitality or integrity of, the primary use of these existing built-up areas will be resisted.'*

A review of the various land-uses in the vicinity of the site largely consists of undeveloped agricultural lands, individual residential properties and residential developments such as 'Cois Chuain', 'The Highlands' 'Thornberry', 'The Woods' and 'Harpers Creek'. The southern areas of the site are situated adjacent to existing mixed-uses in the village of Glounthaune including a residential apartment complex, Fitzpatrick's shop and the Great O'Neill pub. The southern area of the site is also situated adjacent to the recently constructed *'Pedestrian and Cycle Route from Bury's Bridge, Kilcoolishal to Carrigtwohill via Glounthaune'* greenway permitted through the Part 8 process by Cork County Council. The greenway/cycleway links the southern area of the site with Glounthaune train station to the southeast of the lands.

The proposed residential development with ancillary childcare, community and commercial units is consistent with the existing character and land uses in the sites immediate vicinity and the provisions outlined in Objective ZU 3-1. It is not considered appropriate to provide land-uses such as high-intensive employment or industrial development in the sites immediate context. It is also considered that an alternative consisting of only open space, recreation, community or education uses would reflect an inefficient use of serviced lands within the development boundary of the Glounthaune. It is considered that residential use represents the most efficient use of the lands, due to the sites location proximate to a high frequency public transport link to urban and employment centres in the area. In this context, the proposed residential development with associated

childcare and community spaces and a commercial unit fronting onto Johnstown Close comprises the most appropriate land-use alternative of the lands and is in accordance with the proper planning and sustainable development of the area.

3.5 Alternative Layouts

Throughout the duration of the project, the applicant and the design team considered several different layouts and options regarding the proposed development. Each stage of the project required a reassessment of the design strategy of the scheme and an evaluation of how each proposed layout responded to the sites local and wider contexts.

3.5.1 Alternative A - Section 247 Meeting 1- September 2018

Alternative A comprised of a development of the following.

Item	Statistic
Total Site Area	11.5Ha
Residential Developable Area	7.75Ha
No. of residential units	234no
Residential Density	30.2UPH
Housing Mix	210no Houses & 24no Apartments
Public Open Space (Residential Area)	12% Usable
Crèche	60no child crèche
Other Uses	N/A
Access to Residential Development	**Vehicle** From the west via Phase 1 and the signalised junction that was permitted under application references 17/5699 and ABP 300128-17 **Pedestrian/cyclist** 1) via phase 1 2) link in the north east corner onto the L-2969 3) onto The Terrace

Table 3.1 - Alternative A – September 2018 – Key Statistics

Figure 3.1 - Alternative A – September 2018 – Proposed Layout

3.5.2 Alternative B – Tripartite Meeting - June 2019

Alternative B comprised of a development of the following.

Item	Statistic
Total Site Area	12.27Ha
Residential Developable Area	9.37Ha
No. of residential units	301no
Residential Density	32.1UPH
Housing Mix	151no Houses & 150no Apartments
Public Open Space (Residential Area)	12% Usable
Crèche	60no child crèche
Other Uses	Community Hall forms part of the crèche building
Access to Residential Development	**Vehicle** From the west via Phase 1 and the signalised junction that was permitted under application references 17/5699 and ABP 300128-17 **Pedestrian/cyclist** 1) via phase 1 2) link in the north east corner onto the L-2969 3) onto The Terrace - Upgrades works proposed to The Terrace in order to provide connectivity to the existing train station

Table 3.2 - Alternative B – June 2019- Key Statistics

The design rationale for the proposed development was revisited following Cork County Councils recommendations during the Section 247 meeting, including.

1. Pedestrian & Cycle Connectivity

- The introduction of a partial one-way eastbound traffic system along the Terrace to accommodate for a continuous footpath to join with the existing footpath network to the southeast at Johnstown Close.
- A designated contra-flow westbound cycle lane from the junction of Johnstown Close and the Terrace to the southern cycle/pedestrian entrance of the site.
- A vehicular speed limit of 30km/h to be enforced.
- The installation of appropriate public lighting, signage, road marking and road surfacing treatments to prioritise cyclists and pedestrians over vehicles.

2. Character Areas

Alternative B proposed for 4 no. distinct character areas, which evolved naturally around the primary open spaces. Density, scale, open space landscaping and the choice of building materials all contributed to the creation of separate character areas within the overall scheme.

3. Community Facilities

In order to provide facilities that will benefit future residents of the wider community, a community hall/space was introduced at ground floor level of the proposed creche building at the north -western corner of the site, adjacent to the site entrance from phase 1.

Figure 3.2 - Alternative B – June 2019– Proposed Layout

4. Visual Impact/ Response to Site Topography

The locations of buildings and detailed landscaping proposals sought to ensure that the proposed development successfully integrated with the sites local and wider contexts. The positioning and levels of the proposed dwellings were adjusted to appropriately reflect the sites topography and setting in the landscape and to reduce cut and fill levels from previously proposed in Alternative A.

3.5.3 Alternative C – Section 247 Meeting 2 - May 2021

Following receipt of the Boards Opinion in July 2019 (Reference ABP-304468-19), it was recognised that proposals to the Terrace and Johnstown Close described in Alternative B would not be accepted, and that a revised pedestrian/cyclist connectivity strategy for the development would be required. It was also acknowledged that the undeveloped lands immediately south the site and north of Johnstown Close would represent the most direct route from the site to the village core/train station. It was subsequently decided that the feasibility for the inclusion of the additional lands should be investigated as an alternative to provide pedestrian and cycle connectivity to satisfy natural desire lines to the south.

Bluescape Limited subsequently reached an agreement with the landowner to the south regarding the acquisition of these lands, which would form part a revised development strategy for the wider development. The inclusion of the additional lands within the development represents an opportunity for a more practical and deliverable solution in achieving sustainable connectivity than previously proposed. Following confirmation that the additional lands (southern parcel) were to be included within the revised layout, the feasibility of the design of a dedicated pedestrian route though the site was investigated.

It was established that any pedestrian route proposed would need to abide by several core principles including:

- The proposed route and form of the path should be easily accessible, attractive, and safe for future users. The path should also satisfy natural 'north-south' desire lines from the site to the village core and train station.
- The route should respond to the sites existing terrain and topography. The route and form of the path should not only provide future residents with connectivity to the south but also minimise cut and fill across the site and the loss of high specimen trees.
- Any proposal would need to provide a safe crossing of the Terrace for pedestrians and cyclists and deliver necessary public realm upgrades to address any potential conflicts between motorists, pedestrians, and cyclists.
- The route will need to be useable and accessible to people of all ages and abilities and consistent with Part M and Universal Access requirements.
- The proposed route will need to compliment the wider pedestrian/cycle connectivity network in Glounthaune. The route will need to reflect the recent delivery of the new 'Pedestrian and Cycle Route from Bury's Bridge, Kilcoolishal to Carrigtwohill via Glounthaune' greenway on Johnstown Close to the south, and positively contribute to the wider pedestrian/cycle network in Glounthaune.
- The route will need to benefit from sufficient passive supervision from proposed residential units to ensure its usability and attractiveness as a viable connection to the village core and train station.
- The proposed path and layout of the southern parcel has to be respectful of the sites setting within the attendant grounds of Ashbourne House which is defined as a Protected Structure in the Cork County Development Plan 2014.

Alternative C comprised of a development of the following.

Item	Statistic
Total Site Area	12.69Ha
Residential Developable Area	8.7Ha
No. of residential units	306no
Residential Density	35.1UPH (306÷8.7)
Housing Mix	222no Houses & 84no Apartments
Public Open Space (Residential Area)	10% Usable
Crèche	67no child crèche
Other Uses	N/A
Access to Residential Development	**Vehicle** From the west via Phase 1 and the signalised junction that was permitted under application references 17/5699 and ABP 300128-17 **Pedestrian/cyclist** 1) via phase 1 2) link in the north east corner onto the L-2969 3) from Johnstown Close/The Terrace with a link to the existing train station

Table 3.3 - Alternative C –May 2021 - Key Statistics

Figure 3.3 - Alternative C –May 2021 – Proposed Layout

The evolution of the layout was focussed on six principal elements, specifically.

1. Site Layout - Sustainable Communities

Alternative C provided for an increased emphasis on inclusivity within the layout. By further enhancing permeability and arranging units to overlook the public open spaces that are provided throughout the site, social interaction and a sense of ownership amongst residents were strongly promoted.

2. Site Layout - Street Hierarchy/Wayfinding

By establishing a clear street hierarchy (Primary local Streets, Secondary Local Streets & Shared Surfaces), and providing looped systems a clear and logical wayfinding strategy was established. This was further enhanced by the inclusion of varied street widths and parking formations which created distinctive and recognisable spaces.

3. Site Layout - Crèche relocation/Central feature

Relocation of crèche to a more central location in the site. The proposed location of the creche adjacent to a newly proposed Multi-Use Games Area (MUGA) resulted in a prominent central node within the site representing a communal destination' point for future residents and visitors.

4. Connectivity - Additional lands

The revised connectivity strategy for the site provided for a continuous and universal accessible, 2 metre pedestrian path through the site which would then join with the new greenway to the south at Johnstown Close. A pedestrian crossing on the Terrace would also be provided. Due to the challenging site levels and existing ground conditions, the route and form of the universal accessible path meandered through the site, with a more direct stepped path also provided for able bodied users.

5. Connectivity - Landscape strategy

Alternative C Landscape Strategy sought to mitigate any tree removals necessary to deliver the pedestrian path, by providing generous amounts of replacement planting throughout the site.

6. Connectivity - Urban edge

Alternative C proposed new four storey mixed-use building facing Johnstown Close which would serve as a landmark entry point to the site from the village core to the south.

3.5.4 Alternative D – Section 247 Meeting 3 - July 2021

In their assessment of Alternative C, the Planning Authority noted improvements relating to the revised connectivity strategy through the southern lands. However, it was advised that greater detail regarding the deliverability of the pedestrian path through the southern lands was necessary and that dedicated cycle connectivity should also be accommodated within the scheme to link the greenway.

Alternative D comprised of a development of the following.

Item	Statistic
Total Site Area	12.69Ha
Residential Developable Area	8.7Ha
No. of residential units	299no (297no plus 2no replacement units)
Residential Density	34.1UPH (297÷8.7)
Housing Mix	219no Houses & 80no Apartments
Public Open Space (Residential Area)	10% Usable
Crèche	67no child crèche
Other Uses	1no Community unit & 1no Commercial unit
Access to Residential Development	**Vehicle** From the west via Phase 1 and the signalised junction that was permitted under application references 17/5699 and ABP 300128-17. There is also a temporary emergency vehicle access with flexible bollards in north-east corner **Pedestrian/cyclist** 1) via phase 1 2) link in the north east corner onto the L-2969 3) from Johnstown Close/The Terrace with a link to the existing train station

Table 3.4 - Alternative D – July 2021 - Key Statistics

Figure 3.4 - Alternative D –July 2021 – Proposed Layout

The evolution of the layout from previous alternatives was focussed on six principal elements, specifically.

1. Path Re-Alignment

The proposed 2 metre path/walkway within the southern land parcel was realigned with the goal of enhancing tree retention and the provision of greater supervision from the southern apartment building and dwellings to the north.

2. Separation Distances

Alternative D provided for increased separation distances between proposed dwellings and the eastern/ western boundaries of the northern site. This was prioritised specifically for the purposes of the retention of existing vegetation and hedgerows and increased setbacks from existing dwellings in the vicinity.

3. Replacement Dwellings & Passive Surveillance

The introduction of 2 no. replacement bungalow dwellings in the southern areas of the northern parcel to provide additional passive surveillance of the 2 metre walkway.

4. The Terrace Upgrades

A raised pedestrian crossing and traffic calming measures to 'The Terrace' which will enable residents and visitors to safely access the amenities and train station to the south.

5. Emergency Vehicle Access

To ensure that there are multiple site access options for emergency vehicles, an additional emergency access with flexible bollards has been added from the public road (L-2969) to the north of the site. This ensured that along with the main vehicle access from the west (via Phase 1), that there will be 2 no. entry points for emergency vehicles, in the event additional access is needed.

6. Community Space

Alternative D provided for a flexible community space at ground floor level of the proposed apartment building fronting onto Johnstown Close.

3.5.5 Alternative E – July – November 2021 – Proposed Development

In preparation of Alternative E (the proposed development) further investigations were conducted regarding the efficiency of the proposed layout and route of the southern amenity path. The end result is the proposed development of 289 no. residential units with creche, community/commercial units and public realm/ connectivity upgrades.

Alternative E comprised of a development of the following.

Item	Statistic
Total Site Area	13.87Ha
Residential Developable Area	8.7Ha
No. of residential units	289 (287no plus 2no replacement units)
Residential Density	33UPH (287÷8.7)
Housing Mix	201 Houses & 88 Apartments
Public Open Space (Residential Area)	12.18% Usable
Crèche	67no child spaces
Other Uses	1no Community unit & 1no Commercial unit
Access to Residential Development	**Vehicle** From the west via Phase 1 and the signalised junction that was permitted under application references 17/5699 and ABP 300128-17. There is also a temporary emergency vehicle access with flexible bollards in north-east corner **Pedestrian/cyclist** 1) via phase 1 2) link in the north east corner onto the L-2969 3) from Johnstown Close/The Terrace with a link to the existing train station

Table 3.5 - Alternative E – July – November 2021 – Key Statistics

Figure 3.5 - Alternative E – July – November 2021 – Proposed Layout

The evolution of the layout was focussed on six principal elements, specifically.

1. Open Space Allocation - Central Parkland

The final proposed layout includes a central parkland to the southeast of the proposed creche/MUGA, forming a distinctive central node point within the overall development.

2. Path Widening & Final Route

To accommodate both pedestrian and cyclist movements through the site, the proposed spine path was widened from 2 metres to 3 metres from previously proposed in Alternatives C/ D. This will ensure that both pedestrians and cyclists have dedicated connectivity links from the sites' northern areas right through to the sites' frontage with Johnstown Close and greenway. The proposed path will form part of an integrated suite of upgrades to the pedestrian/cyclist network in the area, including the recent delivery of the greenway and upgrades to the local road network permitted by Phase 1 of the Lackenroe Masterplan.

3. Cyclist Connectivity

A bicycle wheeling ramp is provided adjacent to the stepped footpath to accommodate future cycle journeys. This will facilitate convenient cyclist movements between the site and the greenway, village core and train station, enhancing the overall permeability and mobility strategy.

4. Existing grotto retention

The southern apartment building footprint has been re-adjusted to facilitate an increased separation distances from the remains of an existing grotto which formed part of a historic quarry/rock garden at the site associated with the former occupants of Ashbourne House to the east.

5. Public realm - South of apartments

Realignment of the greenway to accommodate motorists, pedestrians, and cyclists in this area.

6. Communal amenity space for apartments

A rooftop terrace is proposed at the southern apartment building which will function as a high-quality private amenity space for future residents. The proposed roof terrace will also provide additional supervision over the greenway and meandering pedestrian/cycle path to the north of the building.

3.6 Comparison of Environmental Impacts – Construction Phase

This section provides a summary of the comparison of environmental impacts during the construction phase between the various alternatives outlined above. Table 3.6 as shown provides an objective comparison analysis of the evolution of the proposed development in context of the categories outlined above.

Criteria	Alternative A	Alternative B	Alternative C (Introduction of southern land parcel)	Alternative D	Alternative E
Landscape & Visual	X	=	X	✓	✓
Traffic & Transportation	X	x	✓	✓	✓
Services, Infrastructure & Utilities	X	x	X	=	=
Land & Soils	=	✓	X	✓	✓
Water - Hydrology & Hydrogeology	X	✓	=	=	=
Biodiversity	X	✓	X	✓	✓
Noise & Vibration	=	=	X	✓	✓
Cultural Heritage	=	x	X	✓	✓
Air Quality & Climate	=	x	x	✓	=
Population & Human Health	X	x	=	✓	✓

✓ Where it has been considered that there has been an improvement from the previous alternative

= Where the impact is considered similar for all options or impact is considered to be comparable with previous alternative

X Where a particular option is considered to have a more negative impact on a particular aspect of the environment than other alternatives.

Table 3.6 – Comparison of Impacts -Construction Phase

3.7 Comparison of Environmental Impacts – Operational Phase

This section provides a summary of the comparison of environmental impacts during the operational phase between the various alternatives outlined above. Table 3.7 as shown provides an objective comparison analysis of the evolution of the proposed development in context of the categories outlined above.

Criteria	Alternative A	Alternative B	Alternative C (Introduction of southern land parcel)	Alternative D	Alternative E
Landscape & Visual	X	✓	X	✓	✓
Traffic & Transportation	X	✓	✓	✓	✓
Services, Infrastructure & Utilities	X	✓	✓	=	=
Land & Soils	=	✓	X	✓	✓
Water - Hydrology & Hydrogeology	X	✓	✓	=	=
Biodiversity	X	✓	X	✓	✓
Noise & Vibration	=	=	=	=	=
Cultural Heritage	=	=	X	=	✓
Air Quality & Climate	=	=	=	=	=
Population & Human Health	X	✓	✓	✓	✓

✓ Where it has been considered that there has been an improvement from the previous alternative

= Where the impact is considered similar for all options or impact is considered to be comparable with previous alternative

X Where a particular option is considered to have a more negative impact on a particular aspect of the environment than other alternatives.

Table 3.7 – Comparison of Impacts – Operational Phase

CHAPTER 4 | LANDSCAPE AND VISUAL

Introduction

This chapter describes the landscape and visual effects of a proposed Strategic Housing Development (SHD) in the village of Glounthaune, Co. Cork. The elements of the proposal most relevant to the landscape and visual assessment is for the construction of a mixed-use residential development of 289 no. residential units consisting of 201 no. dwelling houses and 88 no. apartment/duplex units, a two storey creche, 4 no. ESB substations and all ancillary site development works. Landscape and Visual Impact Assessment (LVIA) is a tool used to identify and assess the significance of and the effects of change resulting from development on both the landscape as an environmental resource in its own right and on people's views and visual amenity.

The assessment of landscape and visual effects included a desktop study, and compilation of baseline information and a number of site visits which were carried out in June and July 2021. It also included review of the proposed development drawings and visualisations (photomontages).

Existing Environment

The site, located in the northern part of Glounthaune village is located on sloping land overlooking Lough Mahon. Certain parts of the site and surrounding roads, in particular the road north of the site, have open views towards Lough Mahon. The landcover of the site is a combination of large agricultural fields divided by mature hedgerows and tree lines to the north of the site and of densely wooded areas to the south of the site, extending to Ashbourne Walkway.

The site has a number of distinctive features which contribute to its character. There are two distinctive character areas, as the larger fields to the north of the site, which are more open, and some fields which have good views of the harbour. This area has a separate character to the wooded, enclosed character of the southern part of the site, part of which once formed part of the Ashbourne house grounds.

Landscape and Visual Effects

During the construction phase, the significance of visual effect will vary depending on the viewpoints, and is considered temporary in nature. The construction phase effects of the viewpoints are likely to range from No effect to Slight in the majority of viewpoints, while viewers at three Viewpoints (4,6,7) and areas likely to be in close proximity are likely to experience more pronounced visual effects ranging from Moderate-Significant.

Overall, the Operational Phase visual effects at the 14 viewpoints range from Imperceptible to Significant, while in four of the views, (Viewpoints 2,3,5,8) no visibility of the proposed development can be seen. Only two of the 14 viewpoints are considered to have adverse visual effects, with the majority considered neutral. This indicates that in the majority of the viewpoints where the development is visible, the proposed development fits in well with the surroundings, as illustrated in Viewpoints 1,4,7,9,10,11,12,13,14. While two viewpoints 6 and 9 are considered to illustrate adverse visual effects, it should be noted that both are evident over a short section of the road. Regarding viewpoints 6 and 7 from The Terrace, and it should be noted that there viewpoints are in close proximity to each other, and the visual effects differ greatly, with Viewpoint 7 illustrating Slight and neutral visual effects.

The significance of the landscape effect varies throughout the site. The northern part of the site is considered of Medium sensitivity and with a Medium magnitude of change and therefore results in a Moderate landscape effect. The effect is considered neutral as the proposed development is set well back from the existing scenic route and surrounds and will be located adjacent to a (permitted) residential development to the west. The increased pedestrian connectivity to the village centre and train station is seen as a beneficial effect

The southern section of the site (south of The Terrace) is considered Highly sensitive, and its original tree and shrub collection is of historic significance. The magnitude of change in this portion is considered High due mainly to the extent of tree removal, and the landscape effect in this part of the site is considered to be Significant and adverse. While the distinctive character and high proportion of mature trees, some of which are Category A and Heritage trees, will change, it is recognised that extensive mitigation planting and in particular tree planting will mature over time, improve the landscape setting of the development.

CHAPTER 5 | MATERIAL ASSETS – TRAFFIC & TRANSPORT

The proposed development consists of the construction of **289** residential units consisting of 201 no. dwelling houses and 88 no. apartment/duplex units, a two storey creche (with capacity for 67no. children), 4 no. ESB substations and all ancillary site development works.

The TTA methodology including the scope and means of assessment of the identified key junctions has been agreed with the Local Authority as part of the pre-application process.

The TTA has demonstrated the following:

i The proposed residential development is in accordance with the Local Area Plan and forms an important continuation in the delivery of planned growth in the area.

ii A review of the existing roads network and collision data in the vicinity of the site indicates that there are no significant problems in relation to the safety of the existing Roads Network.

iii Junction 1: The priority-uncontrolled junction of the L2968 and the L2969 is seen to operate within capacity up to and including the design year 2041 both with and without the development traffic.

iv Junction 2: Access to Cois Chuain from the L2968 is seen to operate within capacity up to and including the design year 2041.

v Junction 3: The priority-uncontrolled junction of the Glounthaune Road and Johnstown Close is currently operating within capacity, however by the design year 2041 the junction will operate close to capacity for the morning peak.

vi Junction 4: The priority-uncontrolled junction of 'The Terrace and the L2968 will operate within capacity up to and including the design year 2041.

vii Junction 5: The priority-uncontrolled junction of Johnstown Close and 'The Terrace' will operate within capacity up to and including the design year 2041.

viii Junction 6: The proposed signal-controlled junction serving the development and incorporating Junction 2: Cois Chuain. This junction was analysed using LinSig for future years with development traffic in place. The results show that the junction will operate within capacity up to an including the design year with minimal delay experienced. The analysis was carried out assuming that the pedestrian phase of the signals will be called each and every cycle facilitating safe pedestrian connectivity in the direction of the local school.

ix The proposed site layout is permeable to the roads network and is well connected to existing pedestrian linkages, to public transport offerings and schools. The recently completed IU-1 Interurban cycleway runs south of the site and is accessible by an off-road connection through the lands south of The Terrace. The proposed new access arrangements are safe and suitable and are in accordance with the Design Manual for Roads & Bridges (DMRB) and the Design Manual for Urban Roads & Streets (DMURS).

x The site benefits from being in close proximity to regular transport provision (train station and bus), within walking distance of the site, which enables journeys throughout Co. Cork.

A modal shift of 40% (implying an anticipated increase in public transport usage or active travel in the immediate area of 23.5%) for future year models is deemed to be reasonable. This modal shift increase, of 23.5% has been applied to proposed development traffic from the opening year (when the development is fully completed) 2026, up to the design year 2041. This same modal shift increase, of 23.5% has not been applied to the background traffic of the modelled junctions, ensuring that a conservative (worst-case) analysis has been carried out.

CHAPTER 6 | MATERIAL ASSETS – UTILITIES

Material Assets considers physical resources in the environment which may be of human or natural origin. The objective of the assessment is to ensure that these assets are used in a sustainable manner, so that they will be available for future generations, after the delivery of the proposed development. In accordance with the 2017 Draft EPA Guidelines on the Information to be Contained in Environmental Impact Assessment Reports, "Material assets can now be taken to mean built services and infrastructure". Material assets of a natural origin are dealt with comprehensively within the other chapters of the Environmental Impact Assessment Report.

This chapter considers the key aspects relating to material assets of a human origin of the proposed development site and the surrounding area, namely surface water discharge, wastewater discharge, potable water supply, electricity, gas supply and telecoms. The Material Assets chapter describes existing services to the application site and describes the predicted impacts which the development may have on these services and recommends mitigation measures.

It is proposed to provide a separate surface water drainage network within the proposed development which will discharge to Lough Mahon through the existing outfall at Johnstown Park. The proposed network will include attenuation and treatment of surface water run-off generated within the site. The surface water drainage network has been designed such that the rates of surface water leaving the development site are no greater than predevelopment run-off rates.

A new separate gravity piped wastewater drainage network will be provided to serve all new buildings. The wastewater from the entire development will discharge via a single point of connection into the 225mm diameter public foul sewer running along 'the Terrace'. In order to achieve this, it is proposed to lay a new 225mm foul water sewer from the southern boundary of the proposed development along 'the Terrace' and connect to the existing 225mm foul water system.

It is proposed to service the proposed development via a new 150mm diameter watermain connection off the 150mm diameter watermain running along the northern boundary and to also connect to the 100mm diameter watermain running along the southern boundary of the development site.

The proposal is for ESB to provide a new MV network to the development, supplying a series of kiosk type substations located to suit the phasing of the development. It is proposed that 4No. substations are provided. An underground LV network will be provided, supplying mini pillars as required to feed the individual premises.

The proposal is for GNI to provide a new medium distribution network to serve the development. The network can be accessed from the L-2968 and internal road network permitted by Cork County Council reference 17/5699 and An Bord Pleanála reference 300128-17.

The proposal is for a new telecoms network to serve the development. The provision will consist of a network of underground ducts within the public footpaths with individual ducts serving each dwelling. The tie in point to the existing Eir network will be developed with the NBI / Eir prior to construction.

The public lighting scheme is based on best practice, National Transport Authority guidance's and national & international industry standards, incorporating the following considerations;

- Light pollution,
- Disability and discomfort glare,
- Sky glow,
- Cork County Council (Cork CoCo) – Product Lighting Manual and Product specification 2020.

Subject to the implementation of the various construction phase mitigation measures recommended in Chapter 6, the proposed development is not anticipated to have any significant adverse impacts on surface water discharge, wastewater discharge, potable water supply, electricity, gas supply and telecoms.

This chapter concludes that there is unlikely to be any significant adverse impacts on material assets as a result of the proposed development during either the construction or operational phases of development.

CHAPTER 7 | LAND AND SOILS NTS

This chapter was prepared by AECOM. The assessment involved a desktop study of soils, subsoils and bedrock, a review of existing site investigation data and the interpretation and reporting of data. The bedrock Geology Map produced by the Geological Survey of Ireland (GSI) was also consulted. Site specific geological information was obtained from a preliminary ground investigation which was carried out by Priority Geotechnical Limited in July and August 2018.

The site investigation comprised of cable percussion borehole, trial pit excavations, insitu testing, standard penetration tests, soakaway tests, sampling, and laboratory testing. A total of 14 cable percussion boreholes were bored to depths between 1.2m and 4m below ground level (bgl) and 25 trial pits were dug to depths of between 1m and 2.6m below ground level (bgl). The results of the ground investigation are described in Appendix 7.1.

The ground investigation undertaken found that topsoil, where encountered, was approximately 300mm to 400mm thick. Superficial glacial deposits were described as firm to stiff, slightly sandy (slightly) gravelly clay/ silt with varying cobble content 0.7m to 2.1m thick and granular deposits of (very) silty (very) sandy gravel and (very) sandy (very) clayey gravel with varying cobble content 0.3m to 3.0m thick persisted to depths 1.0m bgl to 4.0m below ground level. Typically, the clay / silt deposit transitioned to the gravel overlying the bedrock. No groundwater was encountered during the ground investigation works.

Site development works will include actions such as stripping of topsoil, excavation of sub soil layers, filling on excavated ground, construction traffic and associated construction / ground works. It is expected that all excavated materials will be reused on site.

Topsoil removal and replacement will be required to implement the required works throughout the proposed development. The removal and replacement of soil is a direct and permanent neutral impact on the soils and geology of the site as no topsoil is to be exported. Subsoil and bedrock removal will be required where works require excavation to install services, house foundations, road formations, and other works as previously outlined. The removal of bedrock during excavation is a direct and permanent impact on the soils and geology.

Excavation in existing rock within the proposed development will be required during the construction stage. This will result in an excavated volume of 18,565 m^3. This will be crushed and stockpiled on site for re-use on site. As part of any rock breaking required within the proposed development, the Contractor must select and utilise methods of working and items of plant so that ground vibrations do not exceed the limits set out in Section 10.3.2 of Chapter 10 Noise and Vibration.

Chapter 7 sets out a number of site-specific mitigation measures that are included within the CEMP to mitigate any impacts during the construction stage of the proposed development. The potential impacts generally relate to the excavation of top soil, sub soil and rock; contamination of top soil, sub soil and rock by leakages or spillages; and compaction of top soil and subsoil. Measures to mitigate these potential impacts are included in Chapter 7.

During construction stage, the proposed mitigation measures include the of reuse of top soil, sub soil and bedrock as part of the proposed development, in so far as is possible; undertaking further ground investigation and soil testing; and ground vibration monitoring for the duration of the works.

No impacts on soils and geology are anticipated during the operational phase. The operational stage of the proposed development consists of the typical activities in a commercial and residential area and will not involve further disturbance to the topsoil, subsoils, and geology of the area.

CHAPTER 8 | HYDROLOGY AND HYDROGEOLOGY

This chapter was prepared by AECOM. An assessment of the potential effects on the hydrological and hydrogeological environment associated with the construction and operation of the Proposed Development has been carried out.

The Proposed Development is located within the South Western River Basin District (SWRBD), and specifically within the Lee, Cork Harbour and Youghal Bay catchment. The study area is located within the subcatchment of Tibbotstown_SC_010.

There are no watercourses within the subject site. The study area is located within the South Western River Basin District (SWRBD), and specifically within the Lee, Cork Harbour and Youghal Bay catchment. The study area is located within the subcatchment of Tibbotstown_SC_010.

Surface water bodies were identified within the study area using Ordnance Survey mapping and aerial photography and were verified during a site survey. The water body of relevance is Lough Mahon (Harper's Island) (IE_SW_060_0700), which lie to the south of the proposed development.

Lough Mahon (Harper's Island) is a transitional water body approximately 70 m to the south of the study area. Lough Mahon is part of Upper Cork Harbour and covers an area of over 12 km^2. Cork Harbour which encompasses Lough Mahon has a surface water area of around 100km^2 and is a large, sheltered, naturally deep-water harbour.

The bedrock underlying the site is classified by the GSI as a Locally Important Aquifer - Bedrock which is Moderately Productive only in Local Zones. No karst features have been identified in the area. There are no groundwater wells or springs recorded on the GSI Groundwater Data Viewer mapping within the site. There are three existing wells to the north of the site in the townlands of Lackenroe and Killahora (1707SWW058, 1707SWW055, 1707SWW022).

Groundwater vulnerability is classified as "Extreme", with some minor areas identified as having "Rock at or near Surface or Karst", which is supported by the findings of the ground investigation where rock was encountered between 1.2m and 4m below ground level (bgl).

The site is naturally separated from any local watercourses, and this setback distance means that the impact on surface water quality or the downstream designated sites is unlikely. Notwithstanding this, during each phase of the proposed development (construction and operation) a number of activities will take place on the proposed development site, some of which will have the potential to affect the hydrological regime or water quality at the site or its vicinity.

These potential impacts generally arise from sediment input from runoff and other pollutants such as hydrocarbons and cement-based compounds, with the former having the most potential for impact during the construction phase. Surface water drainage measures, pollution control and other preventative measures have been incorporated into the project design to minimise significant adverse impacts on water quality and downstream designated sites.

During the construction phase, the surface water drainage plan will focus on silt management to control runoff rates to the municipal sewer. The key surface water control measure is that there will be no direct discharge of development runoff into local watercourses. This will be achieved by avoidance methods and design methods (i.e., surface water drainage to sump and holding tank). Preventative measures during construction include fuel and concrete management and a waste management plan which will all be incorporated into the Construction and Environmental Management Plan included in Appendix 2-3.

The impacts to surface water and groundwater quality from the proposed development provided the proposed mitigation measures are implemented are considered to be not significant. No significant cumulative impacts on groundwater or designated sites are anticipated.

CHAPTER 9 | BIODIVERSITY

The biodiversity study and impact assessment of the proposed mixed-use residential at Lackenroe, Glounthaune, Co. Cork was undertaken by Kelleher Ecology Services Ltd. and Croft Ecology. A series of baseline field surveys were completed at the EIAR study site including: habitat & flora, bird, mammal, bat and other taxa. The baseline field surveys along with desktop review were then used to inform the biodiversity evaluation of the EIAR study site, assessment of potential impacts arising from the proposed development and consideration of appropriate mitigation measures to reduce potential negative impact(s) to an acceptable level where possible.

Existing Environment

Designated Nature Conservation Sites

The study site is not part of or adjacent to any designated sites nor does it require any resources from them, thereby ruling out any direct habitat loss at such conservation sites. The closest designated sites are located from c. 42m south of the study site boundary, where they overlap Lough Mahon (Harper's Island) transitional waterbody; Great Island Channel pNHA, Great Island Channel SAC and Cork Harbour SPA.

There is a potential impact-receptor link between the study site and the following designated nature conservation sites via; (i) construction/operational surface-water impacts: Great Island Channel pNHA, Great Island Channel SAC and Cork Harbour SPA, (ii) construction (where relevant)/operational waste-water impacts: Monkstown Creek pNHA and Cork Harbour SPA and (iii) potential disturbance/displacement impacts on qualifying waterbird interest species of Cork Harbour SPA. While all pNHAs are of national importance, all SAC/SPAs are of international importance.

A Natura Impact Statement (NIS) in support of the Appropriate Assessment process has been undertaken in relation to the proposed development here (see Appendix 9-5 of the EIAR) with key findings summarised in this EIAR.

Habitats & Flora

No Annex I habitat listed under the EU Habitats Directive and no botanical species protected under the Flora (Protection) Order 2015, listed in the EU Habitats Directive or Red listed in Ireland were recorded at the study site.

A number of non-native invasive plant species listed on the Third Schedule of the 2011 European Communities (Birds and Natural Habitats) Regulations (i.e. species of which it is an offense to disperse, spread or otherwise cause to grow in any place) are present at the study site as follows; Bohemian Knotweed *Fallopia Bohemica*, Himalayan Knotweed *Persicaria wallichii*, Three-cornered Garlic *Allium triquetrum*, Spanish Bluebell *Hyacinthoides hispanica*, Rhododendron *Rhododendron ponticum* and American Skunk Cabbage *Lysichiton* americanus. Other non-native invasive plant species are also present at the study site (that are not listed on the Third Schedule); Buddleia *Buddleia davidii*, Winter *Heliotrope Petasites fragrans*, Snowberry *Symphoricarpos albus*, Cotoneaster Cotoneaster sp., Fuchsia *Fuchsia magellanica*, Lawson Cypress *Chamaecyparis lawsoniana* and Cypress Leyland *Cupressus x leylandii* species.

The main habitat that will be directly impacted by the proposed development footprint is recolonising bare ground ED3, which is of lower local importance. Other habitats present within the proposed development footprint include habitats of higher local importance (hedgerow WL1, treelines WL2, stonewalls & other stonework BL1), lower local importance (scrub WS1, wet grassland GS4, mixed broadleaved woodland WD1) and habitats of no particular ecological value at present (buildings and artificial surfaces BL3). Treelines WL2

and stonewalls & other stonework BL1 habitat features are associated with the outer boundary of the study site and will be retained. The biodiversity value of broadleaf woodland present at the site is currently compromised by the dominance of non-native plants including several invasive plant species.

Fauna in the Existing Environment

The study site is of lower to higher local importance for fauna overall, where no faunal species of high conservation concern were noted using the study site. While the Red listed Kestrel and 'near threatened' Red-tailed Bumblebee were recorded using the study site; Kestrel is widespread and common nationally, while no habitats of ecological significance for the bee are currently present at the study site.

Conclusion: Residual Impacts & Effects

The study site and associated proposed development works footprint is of lower to higher local biodiversity value overall. While the proposed development will require full or partial removal of some hedgerows of higher local value, it will primarily impact features of lower local value.

Various biodiversity related mitigation measures will be implemented as part of the proposed project such that residual effects associated with potential ecological impacts arising from the proposed residential development are considered;

- Neutral for designated sites in the wider area, where a NIS in support of the AA process has been undertaken in relation to Natura 2000 sites of relevance here (see Appendix 9-5).
- Neutral for the downstream water-features in the wider area (Lough Mahon (Harper's Island) and Lough Mahon transitional waterbodies in this case) and associated habitats/flora and fauna.
- Slight to moderate positive for habitats/flora overall at the study site as new planting/landscaping successfully matures into a native/non-native pollinator friendly dominant scheme with a net gain of native trees/hedgerow in line with All Ireland Pollinator Plan recommendations (e.g. NBDC 2016) or slight to moderate negative for habitats/flora overall at the study site where new planting/landscaping fails to successfully mature into a native/non-native pollinator friendly dominant scheme with a net gain of native trees/hedgerow in line with All Ireland Pollinator Plan recommendations (e.g. NBDC 2016).
- Moderate to significant positive for the study site and wider locality in general with the successful management/eradication of non-native invasive plants **or** moderate to significant negative for the study site and wider locality in general where management/eradication of invasive plants at the study site fails for whatever reason allowing for the spread of same.
- Slight to moderate positive for fauna at the study site in general where new planting/landscaping successfully matures into a native/non-native pollinator friendly dominant scheme with a net gain of native trees/hedgerow in line with All Ireland Pollinator Plan recommendations (e.g. NBDC 2016) or slight to moderate negative for fauna at the study site in general where new planting/landscaping fails to successfully mature into a native/non-native pollinator friendly dominant scheme with a net gain of native trees/hedgerow in line with All Ireland Pollinator Plan recommendations (e.g. NBDC 2016).
- Neutral for fauna (including bats and off-site waterbirds associated with Lough Mahon (Harper's Island) transitional waterbody) in relation to general on-going operational disturbance/displacement impacts including a lighting scheme that ensures artificial light spillage is minimal onto relevant woody features at the study site and adjoining area along with continued access for small and medium sized mammals.

CHAPTER 10 | NOISE & VIBRATION

The existing noise climate has been surveyed during both daytime and night-time periods. It has been found that prevailing noise levels are primarily due to road traffic on N25 and the local road network.

The potential noise and vibration impact on the nearest noise-sensitive locations was assessed for the short-term construction phase and the long-term operational phase.

Provided that the mitigation measures detailed in the chapter, as well as good working practices, are employed during the construction phase and that the limits proposed within the EIS are not exceeded, it is anticipated that the noise impact during the construction phase will be short-term, negative and moderate. The vibration impact is considered to be short-term, negative and imperceptible.

During the operational phase, the key potential noise sources, including increased road traffic and mechanical plant noise emissions, have been assessed and commented upon. The assessment has indicated that, subject to the implementation of the mitigation measures proposed within the EIS, the operational phase impact will be long-term, neutral and imperceptible.

In line with current best practice, a detailed inward noise impact assessment on the most exposed residential units within the proposed development has also been completed. Based on the recommended guidance, i.e. Professional Guidance on Planning & Noise (ProPG), the assessment outlines measures that will be incorporated into the design, including glazing sound insulation requirements that assist in the provision of an appropriate level of amenity in terms of noise.

CHAPTER 11 | CULTURAL HERITAGE

11.1 Introduction

The Cultural Heritage chapter assesses the impact of the proposed development on the known and potential cultural heritage resource. The term 'Cultural Heritage' encompasses heritage assets relevant to both the tangible resource (archaeology and architecture heritage); and non-tangible resources (history, folklore, tradition, language, placenames etc.). The recorded and potential cultural heritage resource within a study area that encompasses the internal lands within the proposed development site and an area extending for 1km in all directions from its boundary, was assessed in order to compile a comprehensive cultural heritage baseline and context to inform the assessment.

11.2 Methodology

Guiding principles in relation to the assessment of impacts of Cultural Heritage, including current legislation and relevant EPA Guidelines were adhered to as part of the methodological approach, with a view to identifying likely and significant impacts on the resource.

Documentary research on the recorded and potential cultural heritage resource within the study area was carried out in order to identify any recorded archaeological, architectural and other cultural heritage sites and features. This information provided an insight into the development of the study area over time and also assisted in an evaluation of the potential presence of unrecorded cultural heritage sites or features within the proposed development site. The principal sources reviewed for the assessment of the recorded archaeological resource were the Sites and Monuments Record (SMR) and the Record of Monuments and Places (RMP) maintained by the Department of Housing, Local Government and Heritage (DHLGH). The relevant Record of Protected Structures (RPS) and the National Inventory of Architectural Heritage (NIAH) were consulted to assess the designated architectural heritage resource. Summaries of the legal and planning frameworks designed to protect these elements of the cultural heritage resource are also provided within the chapter. Various relevant literary sources, datasets and cartographic sources were also reviewed as part of the assessment and a summary of relevant information is presented within the chapter, including extracts from cartographic images and inventory descriptions.

A separate Historic Landscape Impact Assessment of the proposed development was prepared by Louise M. Harrington, an architectural heritage and historic landscape consultant. A summary of this assessment is provided within the chapter while the full report is presented in Appendix 11.2.

The proposed development site and its environs were inspected on a number of occasions during 2021. The lands were assessed in terms of modern land use, remnants of historic landscape features, vegetation cover and the potential for the presence of previously unrecorded archaeological and architectural heritage sites/features. The survey results are described within the chapter and extracts from the photographic record compiled during the field survey are presented in Appendix 11.1.

11.3 Description of Existing Environment

Desktop Study

The proposed development site is located within the townland of Lackenroe which is in the northern outskirts of Glounthaune in an area c.7.5km to the east of Cork city. In general, the lands within the site boundary comprise a south-facing area of varying gradients which is occupied by vacant farm fields in the northern section with a wooded area in the southern end. A number of modern commercial and residential developments are located within surrounding lands.

There are no recorded archaeological sites located within the proposed development site. The Archaeological Survey of Ireland lists four recorded archaeological sites within 1km of its boundary and the nearest example is a fulacht fiadh (CO075-011----) located 600m to the east of the proposed development. None of the recorded archaeological sites within the study area are designated as National Monuments in State Care. A review of the results of archaeological investigations carried out within the surrounding 1km study area revealed that none revealed the presence of any unrecorded archaeological sites or features. In addition, the Topographical Files of the National Museum of Ireland contain no records of the discovery of archaeological objects within the townlands within the study area. No surface traces of potential unrecorded archaeological sites were identified within the boundary of the proposed development site during the desktop study.

While there are no Protected Structures located within the site boundary, the southern portion of the development site does extend into lands that once formed part of Ashbourne Garden, which was developed c.1900-1930 by R.H. Beamish in the style of a woodland garden associated with Ashbourne House (formerly Toureen Lodge) to the east of the development site. “Ashbourne House (Ashbourne House Hotel)” is a Protected Structure in the Cork County Development Plan, 2014-2020, ref.: Record of Protected Structure (RPS) Reference: 00498). The portion of the development site that contains a former section of the Ashbourne Garden has been in separate ownership (from that of Ashbourne House) for over 50 years and, as of November 2021, the planning authority has not notified the owner and/or occupier of the development site that their landholding is within the curtilage and attendant grounds of Ashbourne House. However, for the purposes of this assessment, it is considered that the development does extend into the curtilage and attendant grounds of Ashbourne House but that the development site does not contain the protected structure (i.e., Ashbourne House (Ashbourne House Hotel)). The gardens were particularly significant for its original tree and shrub collection. A Historic Landscape Impact Assessment of this portion of the proposed development site was compiled by Ms Louise Harrington as part of the assessment process. This document is presented in its entirety as Appendix 11.2 and a summary of contextual information sourced from this report is summarised within the chapter.

The former location of the now demolished Anne Mount House is located within a green area in the adjoining lands to the west, at a distance of 140m from the nearest section of the boundary of the proposed development. While this levelled building is listed as a Protected Structure in the current County Cork Development Plan (RPS 00499) no surface traces were noted during an inspection of its location and its surrounds are now occupied by a large number of detached modern residential houses. While the demolished house has not been included in the NIAH for County Cork, its lands have been included in the NIAH Survey of Historic Gardens and Landscapes (Site ID 3067) and the online Survey record notes that much of the property is now occupied by modern housing. The surrounding 1km study area also includes a number of 18th and 19th century buildings and features listed in either the RPS or NIAH and none of these are located within 200m of the proposed development.

Field Survey

The proposed development site and its environs were inspected on a number of occasions in August and September 2021 by an archaeologist and a built heritage specialist and were assessed in relation to existing land use, vegetation cover and the potential for the presence of unrecorded archaeological features and other features of cultural heritage interest. Extracts from the photographic record of the survey are provided in Appendix 11.1 and a written description of survey results is presented within the chapter (Table 11.8). The southern end of the proposed development site was also inspected by a historic landscape specialist (Louise Harrington) in September 2021 (Appendix 11.2).

The proposed development site occupies the south-facing slopes of a ridgeline that commands expansive views over the landscape to the south, including over the River Lee. The gradients within the site are dominated by downslopes to the south which range from gentle to steep and there are no natural watercourses within the boundary. The northern end of the proposed site is occupied by six fields which are enclosed with earthen field banks lined with trees and uniformly thick undergrowth. While the reviewed aerial images of the proposed development site during the past two decades show the fields undergoing periodic tilling, all areas were under grass growth at the time of inspection and no active agricultural use of the lands was evident. The interior of the agricultural fields in the northern end of the site were all vacant with no visible surface traces of structures, footpaths, farm lanes or other agricultural features. There were no surface traces of any potential unrecorded archaeological sites noted during the field surveys of the proposed development site. The southern end of the proposed development site contains the overgrown, relict remains of a former early 20th century rock garden created within a quarried area. The relict rock garden is located within the curtilage and attendant grounds of Ashbourne House, a protected structure, and considered to be of medium cultural heritage value. Within and adjoining the disused quarry are the only extant structures located within the proposed development site. Of these two structures, the first is a grotto that is of medium cultural heritage value given its association with the early 20th century expansion of the gardens of Ashbourne House. Though an undesignated structure that is heavily overgrown, the grotto possesses strong historical associations. The second structure is a much-altered 19th-century single-storey flat-roofed structure that is of negligible cultural heritage value. Descriptions of this area of the proposed development site, including the extant structures, are provided within the chapter (Table 11.8) and additional details on the area's historical context are provided in the Historic Landscape Impact Assessment Report (Appendix 11.2).

11.4 Impact Assessment

Construction Phase Impacts

There are no recorded archaeological sites within the proposed development site, or within 600m of its boundary, and the construction phase of the proposed development will, therefore, have no likely adverse direct or indirect impacts on the known archaeological resource. While no evidence for unrecorded archaeological sites or features was identified within the proposed development site during the desktop research and field surveys carried out as part of this assessment, the potential exists for the presence of unrecorded, sub-surface archaeological features in undisturbed green field areas. As the existence, nature and extent of any unrecorded archaeological features within the study area are unknown; the nature and significance of potential construction phase impacts is indeterminable. However, ground works during the construction phase will have the likely potential to result in negative, direct, permanent, irreversible impacts of unknown significance on any sub-surface archaeological features that may exist within the footprint of the proposed development.

The only remnant features associated with the former Anne Mount House property (Protected Structure 00499) to the south and west of the proposed development are boundary features shown on historic OS maps and the construction phase will have no predicted impact on these boundaries. The character of the

area within the former grounds of this protected structure has been significantly altered by modern housing developments. The construction phase of the proposed development will have no predicted significant impact on the architectural heritage significance and setting of the location of Ashbourne House (Protected Structure 00498) to the east. The portion of the development site that contains a former section of Ashbourne Garden has been in separate ownership (from that of Ashbourne House) for over 50 years. However, for the purposes of this assessment, it is considered that the development does extend into the curtilage and attendant grounds of Ashbourne House. The area within the southern end of the proposed development was developed as a landscaped rock garden area in the early 20th century but fell into disuse and was abandoned in the latter half of the same century. The construction phase of the proposed development will result in a direct, negative, moderate permanent impact on the former garden. Given its cultural heritage significance, a grotto structure within the garden will be retained and conserved as part of the proposed development. The construction phase will result in an indirect, negative, moderate permanent impact on the setting of this structure. The development will involve the demolition of a much-altered 19th-century single-storey structure located to the south of the grotto; given its negligible cultural heritage value, the demolition will result in a direct, negative, not significant, permanent impact.

Operational Phase Impacts

There are no recorded archaeological sites within 600m of the boundary of the proposed development and no adverse operational phase impacts on this element of the cultural heritage resource are predicted. The implementation of the archaeological mitigation measures outlined in Section 11.5 of the chapter will provide for either the avoidance of such features or the recording of any currently unrecorded, sub-surface archaeological features with its boundary by systematic archaeological excavation. As a result, the operational phase of the proposed development will have no predicted impact on the archaeological resource.

The character of the former grounds of Anne Mount House (Protected Structure 00499) to the south and west of the proposed development has been significantly altered by the removal of the house and the widespread development of modern detached housing developments within its grounds. The remnant boundary of this property will be retained in situ during the operational phase of the proposed development. The proposed development will, therefore, result in a likely negative, not significant, indirect, permanent impact on the former site of Anne Mount House during the operational phase.

The recorded location of a landscaped rock garden formerly associated with Ashbourne House (Protected Structure 00498) within the southern end of the proposed development has become almost entirely obscured by heavy overgrowth and the neglect of the area has resulted in a negative impact on its setting. The planned removal of overgrowth from the former rock garden area and the facilitation of access to the location will also have the potential to result in a direct, positive, moderate permanent impact on this area of cultural heritage interest during the operational phase of the proposed development. The extant grotto feature within this former rock garden will be retained in situ at 2.7 metres from the retaining wall of a proposed apartment building and this will result in an indirect, negative, moderate permanent impact on the setting of this structure during the operational phase. The removal of vegetation from the structure and the planned programme of repairs to the structure (in line with an outline conservation method statement (see Appendix 11.3) and the Outline Construction & Environmental Management Plan prepared by AECOM Ireland Ltd) will result in a direct, positive, moderate permanent impact on this structure.

Cumulative Impacts

Based on the results of the assessment of the proposed development in combination with a review of completed and permitted developments within the surrounding landscape, it is concluded that it will not result in any significant adverse cumulative impacts on the archaeological, architectural and cultural heritage of the wider area.

11.5 Mitigation

Archaeology

Given the scale and extent of the proposed development works within undeveloped greenfield areas, a programme of archaeological investigations, to comprise a geophysical survey of the undisturbed greenfield areas followed by targeted archaeological test trenching, will be undertaken prior to the commencement of the construction phase. The presence of woodland and thick overgrowth within the southern end of the proposed development will act as a constraint for carrying out pre-development geophysical and test trenching investigations in this area. All vegetation clearance and ground works within this area will be, therefore, subject to constant archaeological monitoring during the construction phase. These works will be carried out by a suitably qualified archaeological specialists under licences issued by the National Monuments Service. Method statements detailing the proposed strategy for site investigations will submitted for approval to the National Monuments Service as part of the licence application process. These will clearly outline the proposed extent of works and outline the consultation process to be enacted in the event that any unrecorded archaeological sites or other features of cultural heritage significance are identified, including remains of the rock garden features within the southern end of the proposed development. A report will be compiled on all site investigations which will clearly present the results in written, drawn and photographic formats. Copies of these reports will be submitted to the National Monuments Service, Cork County Council and the National Museum of Ireland. In the event that any sub-surface archaeological deposits, features or artefacts are identified during site investigations the Planning Authority and the National Monuments Service will be consulted to determine further appropriate mitigation measures.

Architectural Heritage

The locations of the remnant boundary features associated with the former Anne Mount House property, which now form garden boundaries of modern detached houses adjoining the north end of the proposed development will be cordoned off for the duration of the construction phase.

Undesignated Cultural Heritage

The protection and conservation mitigation measures for the grotto structure within the southern area of the proposed development site are summarised below and are derived from an outline conservation method statement presented in Appendix 11.3. The Outline Construction & Environmental Management Plan prepared by AECOM Ireland Limited that accompanies the SHD application reflects these mitigation measures.

A masonry conservation specialist shall be appointed to oversee the demarcation and vegetation clearance for the creation of a buffer/protection zone. The buffer zone will be bounded by a temporary demountable fence (i.e. “Heras” fence or similar) that will provide a minimum of 2.7 metres clearance around the outer edge of the structure. To achieve the clearance to erect the fence line, trees and shrubbery within the buffer zone will be cut back, taking due care to prevent damage to structure. No removal of embedded roots (or grubbing up of the ground surface) will be undertaken without the express consent/approval from the masonry conservation specialist. Following removal of the vegetation, a full appraisal of the structure, including the compilation of detailed drawn and photographic records, will be undertaken by the masonry conservation specialist. Following the appraisal of the exposed structure the masonry specialist may specify additional and/ supplementary conservation measures.

A suitably experienced masonry contractor shall be appointed to undertake the conservation of the grotto structure. The contractor shall have demonstratable experience of the repair of dry-stone walling and the use of traditional lime mortars and shall be directed and supervised by the client’s masonry conservation

specialist. Mortar has been used within the core of the walls to provide a key for walling material; however, the walling has a drystone appearance that will be retained. To provide a sound base for the replacement any mortar, it will be necessary to remove any decayed or defective mortar. The manual raking-out will be done with care to avoid damaging the edges of the underlying stones. In some localised areas, it may be necessary to dismantle a particular loose section of the masonry. Dismantling will occur so that the stones area carefully laid out beside each other in the manner by which they were taken apart from the wall. Conservation works will not be carried out in extreme weather conditions, and particular care will be exercised if work is being carried out when there is a risk of frost. In such cases, appropriate insulation by hessian sheets will be provided to protect the wall face that has been worked on. Equally, care will be exercised during repointing works when heavy rain is expected. In extremely hot weather intermittent gentle spraying with clean, or covering the work with dampened hessian, will be carried out in order to prevent too rapid drying.

11.6 Residual Impacts

There are no recorded archaeological sites located within the proposed development area or within 600m of its boundary. Any potential impacts on any unrecorded, sub-surface archaeological sites or features that may exist within the site will be addressed by mitigation during the pre-construction and construction phases of the proposed development which will provide for the recording and/or avoidance of any identified features. As a result, no residual impacts on the archaeological resource are predicted to arise from the proposed development. The locations of the remnant boundary features associated with the former Anne Mount House property, which now form garden boundaries of modern detached houses adjoining the north end of the proposed development will be cordoned off for the duration of the construction phase. Furthermore, the proposed development will not impact the architectural heritage significance of Ashbourne House. As a result, no residual impacts on the architectural heritage resource are predicted to arise from the proposed development. With respect to the cultural heritage significance of the former rock garden and associated grotto structure, the implementation of the protection and conservation mitigation measures presented in the chapter and the outline CEMP will ensure that the residual effect on this element of the cultural heritage resource is both managed and minimised.

CHAPTER 12 | AIR QUALITY & CLIMATE

This section provides a non-technical summary of the likely air quality and climate impacts associated with the proposed SHD at Glounthaune, Co. Cork. The assessment of Air Quality & Climate is contained within Chapter 12.

12.1.1 Description of Existing Environment

In terms of the existing air quality environment, baseline data and data available from similar environments indicates that levels of nitrogen dioxide, particulate matter less than 10 microns and less than 2.5 microns are generally well below the National and European Union (EU) ambient air quality standards.

GHG emissions for 2019 are estimated to be 4.5% lower than those recorded in 2018. Emission reductions have been recorded in 6 of the last 10 years. However, compliance with the annual EU targets has not been met for four years in a row. Over the period 2013 – 2020 Ireland is projected to cumulatively exceed its compliance obligations with the EU's Effort Sharing Decision (Decision No. 406/2009/EC) 2020 targets by approximately 13.4 Mt CO_2eq under the "With Existing Measures" scenario and 12.6 Mt CO_2eq under the "With Additional Measures" scenario (EPA, 2020c).

12.1.2 Impact Assessment

Impacts to air quality and climate can occur during both the construction and operational phases of the proposed development. With regard to the construction stage the greatest potential for air quality impact is from fugitive dust emissions impacting nearby sensitive receptors. Impacts to climate can occur as a result of vehicle and machinery emissions. In terms of the operational stage air quality and climate impacts will predominantly occur as a result of the change in traffic flows on the road links near the proposed development.

12.1.2.1 Do Nothing

The Do-Nothing scenario includes retention of the current site without the proposed development in place. In this scenario, ambient air quality at the site will remain as per the baseline and will change in accordance with trends within the wider area (including influences from potential new developments in the surrounding area, changes in road traffic, etc).

12.1.2.2 Construction Phase

Any potential dust impacts can be mitigated through the use of best practice and minimisation measures which are outlined in this report. Therefore, dust impacts will be short-term and imperceptible at all nearby sensitive receptors. It is not predicted that significant impacts to climate will occur during the construction stage due to the nature and scale of the development.

As the National and EU standards for air quality are based on the protection of human health, and concentrations of pollutants for both the construction stage of the proposed development is predicted to be significantly below these standards, the impact to human health is predicted to be imperceptible and short term.

12.1.2.3 Operational Phase

The local air quality modelling assessment concluded that levels of traffic-derived air pollutants resulting from the development will not exceed the ambient air quality standards either with or without the proposed development in place. Using the assessment criteria outlined in Transport Infrastructure Ireland's guidance

document *'Guidelines for the Treatment of Air Quality During the Planning and Construction of National Road Schemes'* the impact of the development in terms of NO_2 is long-term and imperceptible. The proposed development is not predicted to significantly impact climate during the operational stage. Increases in traffic derived levels of CO_2 have been assessed against Ireland's obligations under the EU Targets and emissions ceilings set out by the Target under Regulation (EU) 2018/842 and were found to be imperceptible.

As the National and EU standards for air quality are based on the protection of human health, and concentrations of pollutants for both the construction and operational stages of the proposed development are predicted to be significantly below these standards, the impact to human health is predicted to be imperceptible in the long term.

12.1.2.4 Cumulative Impact

Cumulative construction phase impacts will result from dust emissions impacting people and property within 350m of the proposed development site and neighbouring sites. Cumulative dust impacts are predicted to be negative, short-term and imperceptible at nearby receptors once the dust mitigation measures associated with a low risk of dust impacts as outlined in Appendix 12.2 are implemented.

Operational phase impacts involve an increase in traffic related pollutants in the local area. The traffic data for the proposed development in conjunction with other nearby permitted and proposed developments was found to have an imperceptible, negative and long-term impact on local air quality and climate.

12.1.3 Mitigation

12.1.3.1 Construction Phase

The pro-active control of fugitive dust will ensure the prevention of significant emissions, rather than an inefficient attempt to control them once they have been released. A dust management plan will be implemented onsite. The main contractor will be responsible for the coordination and ongoing monitoring of the dust management plan. Full details of the dust management plan can be found in Appendix 12.2.

12.1.3.2 Operational Phase

The impact of the proposed development on air quality and climate is predicted to be imperceptible with respect to the operational phase in the long term. Therefore, no additional site specific mitigation measures are required.

12.1.4 Residual Impact Assessment

No significant impacts to either air quality or climate are predicted during the construction or operational phases of the proposed development.

12.1.5 Monitoring

Monitoring of construction dust deposition along the site boundary close to the two nearby sensitive receptors during the construction phase of the proposed development is recommended to ensure mitigation measures are working satisfactorily. This can be carried out using the Bergerhoff method in accordance with the requirements of the German Standard VDI 2119

CHAPTER 13 | POPULATION & HUMAN HEALTH

13.1 Introduction

This Chapter has been prepared by Harry Walsh, (BA HONS, Master of Regional and Urban Planning, MIPI), Director at HW Planning. The 'Environmental Impact Assessment of Projects Guidance on the preparation of the Environmental Impact Assessment Report' 2017 specifies the following in relation to the assessment of population and human health.

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

A desktop study of the following published policy documents and data was undertaken to appraise the location and likely and significant potential impact upon population and human health receptors and to assess population trends in the subject site an in the wider hinterland:

- Central Statistics Office (CSO) Census 2011 & 2016 data;
- Cork County Development Plan 2014;
- Draft Cork City Development Plan 2021.

This assessment is a study of the potential indirect and direct socio-economic impacts of the construction phase and the operational phases of the development. Effects on receptors were assessed in terms of magnitude, quality, significance and duration.

13.2 Description of Existing Baseline Environment

13.2.1 Definition of Chapter Study Area

The study area for this section was initially defined based on an assessment of the location of the subject site in relation to Electoral Divisions (EDs), the smallest legally defined administrative areas in the State. The subject site falls along the eastern boundary of the Caherlag ED (ref 47064), which includes Little Island to the south and the eastern suburbs of Glanmire to the west. In recognition of the enhanced wider connectivity of the site due to its proximity to the commuter rail line and Burys Bridge to Carrigtwohill Greenway, it is considered appropriate to include the adjoining ED of Carrigtohill (ref 47077), which lies immediately to the east of the site and includes the settlement of Carrigtwohill and its environs. The delineation of the boundaries of these two ED's excluded Fota Island which falls within the larger Cobh Rural ED to the south.

It is considered that while it would not be appropriate to include the entire ED within the study area, Fota Island and the small northern portion of Great Island which are both readily accessed via the Cobh branch of the suburban rail line should naturally be included within the study area to represent a more realistic catchment for the subject site. Therefore, two Census Small Areas (SA) which generally comprise either complete or part

of townlands or neighbourhoods, were included to the south. These SAs were 047106013 comprising Fota Island and 047106014 representing the small northern portion of Great Island.

Figure 13.1 Study Area

13.2.2 Community and Social Infrastructure

The existing community and social infrastructure assets in the local area has been identified in accordance with the categories outlined in the Table 13.1 below.

Category	Description
Amenity, Open Space and Sports	Parks, Playgrounds, Amenity Walks/Greenways, Pitches, Green Areas, Golf Courses, Sports Pitches, Sports Centres, Swimming Pools, Gyms
Childcare and Education	Childcare, Primary Schools, Post Primary Schools, Special Schools, Third Level Universities, Other Educational Institutions
Community facilities	Community Centres, Religious Facilities, Post Offices, Libraries.
Retail services	Supermarkets, Convenient Shops, Specialty Services, Restaurants/ Take-aways, ATM, Petrol Station
Health	Hospitals, Health Centres, Clinics, Pharmacies, Addiction Services, GPs, Mental Health Services
Emergency	Fire Station, Garda Station
Public Transport	Bus and Train Routes

Table 13.1 Community and Social Infrastructure Categories

13.3 Impact Assessment

13.3.1 Do nothing Scenario

In the 'do nothing' scenario, the subject lands will remain undeveloped and there will be no additional impacts on population and human health factors.

13.3.2 Impacts on Existing Population and Human Health

13.3.2.1 Construction Phase

Construction works are likely to take place over a c. 48 no. month period (c. 4 no. years). The construction methods employed and the hours of construction proposed will be designed to minimise potential impacts to nearby residents. Construction of the proposed development will be implemented in accordance with the Construction and Environmental Management Plan (CEMP) and Construction and Demolition Waste Management Plan (CDWMP) prepared by AECOM which are included in Appendices 2-2 and 2-3 of this EIAR. These documents describe a suite of mitigation measures to be strictly implemented and monitored during the construction phase of the development.

13.3.2.2 Operational Phase

Once constructed, the proposed development will be permanent and non-reversible. The proposed development will result in several significant long-term positive impacts for the local population including.

- The proposed development will result in providing a diverse range of housing and apartments which will positively serve all aspects of the current housing and rental markets and address the current accommodation shortage in the Metropolitan Cork Area.
- The proposed development will result in the creation of a more compact settlement and assist in providing a critical mass of population to support local services and the local economy.

- The proposed pedestrian/cycle path which runs 'north-south' through the subject lands will result in a more permeable and accessible settlement for pedestrians and cyclists alike. The public realm upgrades including the proposed signalised pedestrian crossing on the Terrace will improve pedestrian, cyclist and traffic safety in the area, positively contributing to local human health and safety. As demonstrated in Chapter 5, there is sufficient capacity within the local road network to facilitate the traffic generated by the proposed mixed-use development.
- The proposed public open spaces, amenity areas and multi-use games area within the development, will be accessible to all existing and future residents of the settlement. At present the subject lands are not accessible to the public.
- The proposed 67 no. place creche in the northern parcel will provide a childcare outlet for the existing and future residents of Glounthaune. The proposed creche is situated adjacent to the proposed multi-use games area and central parkland resulting in a central communal area in the site and opportunities for the future creche operator to utilise.
- The proposed commercial and community units at ground floor level of the southern apartment block will positively contribute to the local economy and community facilities in Glounthaune. The location of these units, immediately adjacent to the recently delivered greenway and existing commercial uses will consolidate this area as an important local service node in Glounthaune.

13.4 Mitigation Measures, Monitoring and Residual Impacts

13.4.1 Mitigation & Monitoring

13.4.1.1 Construction Phase

The potential impacts on the human environment relate to other environmental aspects such as air quality, noise and vibration, water quality and traffic and where required, the related mitigation measures are dealt with in the corresponding chapters of this EIAR. Full details of all mitigation and monitoring procedures during construction phase are described in the CDWMP (Appendix 2-2) and CEMP (Appendix 2-3) both prepared by AECOM and in the various EIAR chapters.

13.4.1.2 Operational Phase

The site layout responds to the site's topography and the evolving development context in Glounthaune. The proposed landscape and planting strategy will assist in mitigating the tree loss required to accommodate the proposed pedestrian/cyclist path through the site and will provide future residents with direct access to the greenway and train station.

The pedestrian/cyclist path and signalised pedestrian crossing on the Terrace will result in significant positive and permanent impacts to pedestrian and cyclist mobility in the settlement. The path will not only benefit future residents of the scheme but ensure enhanced road safety and promote the usage of public transport as a viable means of commuting to nearby urban centres. The propose public open spaces, creche, commercial and community uses will all significantly positively and permanently contribute to the communal and public facilities in Glounthaune.

13.4.2 Residual Impacts

It is considered that subject to the mitigation measures outlined in the CEMP, CDWMP and EIAR being implemented the proposed development will result in many positive and permanent residual impacts including.

- The delivery of a new 'north-south' pedestrian/cyclist route will complement the delivery of the recent east-west greenway to Carrigtwohill at Johnstown Close. The public realm upgrades which include the provision of a signalised pedestrian crossing on the Terrace will significantly improve pedestrian, cyclist and motorist safety in the area as well as providing dedicated pedestrian/cyclist connectivity to the greenway, village core and train station.
- The delivery of a new creche and community and commercial units which will positively contribute to Glounthaunes childcare, economy and community facilities.

13.5 Cumulative Impacts

13.5.1 Construction Phase

For the purposes of this assessment of impacts a 'worst case' scenario has been assessed based on the information contained in these planning applications and the other projects stated in Chapter 1. As referenced in the CEMP, the construction phase of the proposed development will only commence, once the signalised junction and public realm upgrades permitted in Phase 1 are constructed and fully implemented. It is envisaged that subject to the implementation of mitigation measures proposed, that the proposed development will result in no significant impacts relating to air quality, noise, vibration or traffic.

13.5.2 Operational Phase

Once constructed, the proposed development will be permanent and non-reversible. It is considered that cumulative impacts relating to human health factors including traffic, road safety, air quality, water quality, noise and vibration will be not significant.

The proposed development in context of other developments in the area may result in negative impacts in terms on the existing landscape, dependant on the context of the visual analysis conducted. This is further detailed in Chapter 4 of this EIAR.

However, in the context of profound benefits in terms of the delivery of new cyclist/pedestrian path which connects to the new greenway, which in turn serves the village core, train station and future schools campus in Carrigtwohill, that the development will result in significant benefits in terms of wider human health considerations.

CHAPTER 14 | INTERACTION OF IMPACTS

14.1 Introduction

This Chapter has been prepared by Harry Walsh, (BA HONS, Master of Regional and Urban Planning, MIPI), Director at HW Planning.

In preparing the EIAR each of the specialist consultants have and will continue to liaise with each other, and will consider 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. As this EIAR document has been prepared by a number of specialist consultants an important aspect of the EIA process is to ensure that interactions between the various disciplines have been taken into consideration.

Article 3(1) of the EIA Directive states.

> *The environmental impact assessment shall identify, describe and assess in an appropriate manner, in the light of each individual case, the direct and indirect significant effects of a project on the following factors:*
>
> (a) population and human health;
>
> (b) biodiversity, with particular attention to species and habitats protected under Directive 92/43/EEC and Directive 2009/147/EC;
>
> (c) and, soil, water, air and climate;
>
> (d) material assets, cultural heritage and the landscape;
>
> (e) the interaction between the factors referred to in points (a) to (d)."

Annex IV of the amended Directive states that a description of impacts should include:

> *"...the direct effects and any indirect, secondary, cumulative, short, medium and long-term, permanent and temporary, positive and negative effects of the project"*

Table 14.1 as shown overleaf summarises the relevant interactions and interdependencies between specific environmental aspects.

Interaction	Landscape & Visual	Material Assets - Traffic	Material Assets - Services	Land & Soils	Water (Hydrology & Hydrogeology)	Biodiversity	Noise & -Vibration	Cultural Heritage	Air Quality & Climate	Population & Human Health
Landscape & Visual		Con & Op	Con & Op	Con & Op	Op	Con & Op	-	Con & Op	-	Con & Op
Material Assets - Traffic	Con & Op		Con	Con	Con	Con	Con & Op	-	Con & Op	Con & Op
Material Assets - Services	Con & Op	Con & Op		Con	Con & Op	Con & Op	Con & Op	Con	Con	Con & Op
Land & Soils	Con & Op	Con	Con		Con	Con	-	Con	Con	Con
Water (Hydrology & Hydrogeology)	-	Con	Con & Op	Con		Con & Op	-	-	-	Con & Op
Biodiversity	Con & Op	Con	Con & Op	Con	Con & Op		Con	-	Con	-
Noise & Vibration	-	Con & Op	Con & Op	Con	-	Con		Con	Con	Con & Op
Cultural Heritage	Con & Op	-	Con	Con	-	-	Con		-	Con & Op
Air Quality & Climate	-	Con & Op	Con	Con	Op	Con	Con	-		Con & Op
Population & Human Health	Con & Op	Con & Op	Con & Op	Con	Con & Op	-	Con & Op	Con & Op	Con & Op	

Table 14.1: Potential Interaction of Effects Matrix (Con = Construction, Op= Operational. If there is considered to be no potential for an effect, the box is left blank.)

CHAPTER 15 | SUMMARY OF MITIGATION MEASURES

15.1 Introduction

15.1.1 Chapter Author

This Chapter has been prepared by Harry Walsh, (BA HONS, Master of Regional and Urban Planning, MIPI), Director at HW Planning.

15.1.2 Chapter Context

The 2017 Draft EPA Guidelines regarding information to be contained in EIAR's identifies the following strategies for the mitigation of effects.

Mitigation by Avoidance: Avoidance usually refers to strategic issues, such as site selection, site configuration or selection of process technology. This may be the fastest, cheapest and most effective form of effect mitigation. In some cases mitigation by avoidance may also be considered as part of the "consideration of alternatives".

Mitigation by Prevention: This usually refers to technical measures. Where a potential exists for unacceptable significant effects to occur (such as noise or emissions) then measures are put in place to limit the source of effects to a permissible and acceptable level.

Mitigation by Reduction: This is a very common strategy for dealing with effects which cannot be avoided. It tends to concentrate on the emissions and effects and seeks to limit the exposure of the receptor. This is regarded as a less sustainable, though still effective, approach, implemented through reducing the effect and/or reducing exposure to the effects.

Mitigation by Remedy/Offsetting: This is a strategy used for dealing with adverse effects which cannot be prevented or reduced. Remedy is compensating for or counteracting adverse effects. Examples include increased planting of specific trees/shrubs to replace unavoidable loss of vegetation, or provision of a new amenity area to compensate for the unavoidable loss of access to the grounds of an old house. Examples of Offsetting include reinstating buildings, walls or features, or the introduction of tunnels to enable wildlife to access other comparable habitats.

15.2 Mitigation/Monitoring Measures

15.2.1 Population and Human Health

15.2.1.1 Construction Phase

A Construction & Demolition Waste Management Plan (CDWMP) and Construction Environmental Management Plan (CEMP), both prepared by AECOM, are included as Appendices 2-2 and 2-3 of this EIAR. These documents and the various EIAR Chapters provide a suite of mitigation/monitoring measures during the construction phase of the project relate to population, human health/human beings including.

- Waste Management
- Site Security Fencing and Hoarding
- Site Working Hours
- Health and Safety
- Covid 19 Protocols
- Construction Traffic - Traffic Management Plan
- Environmental Management measures including spill control measures, noise & vibration and dust & air quality.

The CEMP and CDWMP also detail monitoring measures during construction to mitigate any potential significant impacts on human beings including.

- Waste Management
- Dust & Air Quality
- Continuous Monitoring and Protection of Neighbouring Properties.

15.2.1.2 Operational Phase

The site layout responds to the site's topography and the evolving development context in Glounthaune. The proposed landscape and planting strategy will assist in mitigating the tree loss required to accommodate the proposed pedestrian/cyclist path through the site and will provide future residents with direct access to the greenway and train station.

The pedestrian/cyclist path and signalised pedestrian crossing on the Terrace will result in significant positive and permanent impacts to pedestrian and cyclist mobility in the settlement. The crossing will be taken in charge by Cork County Council. The path will not only benefit future residents of the scheme but ensure enhanced road safety and promote the usage of public transport as a viable means of commuting to nearby urban centres. The Mobility Management Plan (Appendix 13-3) prepared by AECOM, demonstrates how active and sustainable modes of transport will be promoted within the development.

The proposed layout and drainage/surface water strategy will not result in additional flood risk. Regarding the discharge of surface water, while it is proposed to discharge run-off from the proposed development to an area that is tidal in nature rather than a stream/ river, in order to reduce the rate of run-off from the proposed development it is proposed to limit discharge from the site to the greenfield rate. It is proposed to attenuate run-off from the proposed development through attenuation tanks, permeable pavement and a green roof is proposed as part of the proposed mixed-use building fronting onto Johnstown Close. Irish Water have confirmed by way of a Statement of Design Acceptance, that the proposed upgrades/surrounding water network can accommodate the development.

The proposed creche, community and commercial units, in addition to the Multi-Use Games Area, and various public open spaces will provide for new opportunities for existing and future residents of the settlement to avail of public areas and services.

The proposed realignment of the greenway on Johnstown Close will result in an improvement in vehicular/ pedestrian and cyclist safety in this area of the settlement and reduce potential conflicts between various users.

15.2.2 Landscape and Visual

15.2.2.1 Construction Phase

Implementation of appropriate site management procedures – such as the control of site lighting, storage of materials, delivery of materials.

Appropriately scaled hoarding will be erected to restrict views of construction site.

The proposed temporary construction compound and car parking area is located within the northern part of the site and away from any entrances to minimise visual effects.

Visual impact during the construction phase will be mitigated somewhat through appropriate site management measures and work practices to ensure the site is kept tidy, dust is kept to a minimum, and that public areas are kept free from building material and site rubbish).

As detailed in the CEMP protective barriers will be installed by the Contractor around trees to be retained prior to the commencement of works on site. The locations of all tree protection barriers will be as shown on the Tree Protection Plan (TPP) prepared by CSR and as per BS5837. These barriers will remain in place for the duration of the works.

15.2.2.2 Operational Phase

Key elements of mitigation include.

- Retention of an important mature hedgerow and tree line in the northeast of the site and incorporation into an open space
- A total of 593 linear metres of hedgerow was removed while 800 linear metres of hedgerow planting is proposed.
- Retention of trees along east and western boundaries north of The Terrace
- Retention of several large mature trees in southeast corner of the site, near the main road at Glounthaune
- Planting of 8 no. heritage trees to replace 8 no. trees which have to be removed
- The removal of 137 trees in total is proposed, and planting of an additional 656 trees are proposed. An additional 316 smaller trees (whips) for woodland planting are proposed.
- A and a stone grotto located in close proximity to the proposed apartment block is to be retained and incorporated as a feature into the design.

15.2.3 Material Assets – Traffic & Transportation

15.2.3.1 Construction Phase

The re-use of excavated materials generated on-site to reduce the total volume of imported material thereby reducing traffic generation.

Defining delivery times to site to avoid background traffic peak periods.

Construction stage site staff starting at 07:00 and ending at 18:00 to avoid the recorded peak periods.

Road cleaning and wheel-wash systems put in place.

The adoption of the previously referenced Traffic Management Plan.

15.2.3.2 Operational Phase

The scheme proposes significant pedestrian/cycle connectivity works to promote the use of sustainable transport solutions on offer in the area, these being the existing Midleton/Cork Rail Service and development of the east/west greenway.

The traffic modelling results indicate that Junction 3: Glounthaune Road/ Johnstown Close, will deteriorate over time both with/without development traffic. Additional delay is incurred when development traffic is included with the Level of Service (LOS) going from D to E from 2031 to 2041 for the AM peak (08:00-09:00). As this uncontrolled junction crosses the IU-1 Inter-Urban Greenway there is a likelihood that this junction will be signalised in the foreseeable future. This would resolve any capacity issues whilst improving safety for all road users.

The operation of the local roads network and the effectiveness of the Greenway as well as public transport usage will be monitored by the Local Authority on an on-going basis. Traffic modelling has shown that most of the road's network will operate within capacity into the future, with Junction 3 the only junction showing a degradation in capacity for future years. The signalisation of this junction would resolve this issue as well as improving safety on the Inter-Urban Greenway. The implementation of such junction improvements will be carried out by the Local Authority when required.

15.2.4 Material Assets – Services Infrastructure and Utilities

15.2.4.1 Construction Phase

The contractor will be obliged to put temporary measures in place to limit the rate of surface run-off from the site. They will also be obliged to manage the quality of surface water runoff and ensure run-off from the site does not result in excessive siltation of the receiving drainage channels. This will be managed in line with the CEMP.

The Contractor is expected to agree a dedicated water supply connection and a wastewater discharge connection for the construction activities. It is expected they will consult Irish Water to obtain these connections. The demand during the construction phase is not expected to be significant enough to affect existing pressures or capacities.

The Contractor will be obliged to put measures in place to ensure that there are minimal or no interruptions to existing services and all services and utilities are maintained unless this has been agreed in advance with the relevant service provider and local authority.

All works in the vicinity of utilities apparatus will be carried out in ongoing consultation with the relevant utility company and/or local authority and will be in compliance with any requirements or guidelines they may have. Where new services are required, the Contractor will apply to the relevant utility company for a connection permit where appropriate and will adhere to their requirements.

Visual monitoring will be undertaken as part of the regular site audits during the construction of the proposed development and close contact with the electricity, gas and water utility providers will be under the control of the main contractor.

15.2.4.2 Operational Phase

Due to the measures already incorporated in the design (e.g., silt management, restricted discharge off site) no additional mitigation measures will be necessary on surface water during the operational phase.

The potable water network wastewater drainage network are designed in accordance with the Irish Water Code of Practice and Standard Details.

New electrical supplies will be fitted with dedicated circuit breakers to ensure health and safety. Supplies will also be metered to facilitate monitoring of power consumption.

While it is proposed to discharge run-off from the proposed development to an area that is tidal in nature rather than a stream/ river, in order to reduce the rate of run-off from the proposed development it is proposed to limit discharge from the site to the greenfield rate. It is proposed to attenuate run-off from the proposed development through attenuation tanks, permeable pavement and a green roof is proposed as part of the proposed apartment block.

All utilities will be monitored and metered in accordance with the service agreements for the various utilities. Appropriate maintenance regimes will be put in place to monitor/maintain surface water drainage.

15.2.5 Land & Soils

15.2.5.1 Construction Phase

As detailed Chapter 7, the CEMP and CDWMP, mitigation/monitoring measures will be implemented during construction relating to.

- Soil/Subsoil Excavation and Bedrock Excavation
- Contamination of Soil/Subsoil/Bedrock by Leakages and Spillages
- Soil and Subsoil Compaction
- Excavated Material Management
- Excavated Soil & Materials
- Hazardous Materials Waste Management
- Waste Management Plan Awareness & Training

15.2.5.2 Operational Phase

No impacts on soils and geology are anticipated during the operational phase. The operational stage of the proposed development consists of the typical activities in a commercial and residential area and will not involve further disturbance to the topsoil, subsoils and geology of the area.

15.2.6 Water (Hydrology & Hydrogeology)

15.2.6.1 Construction Phase

As detailed Chapter 8, the CEMP and CDWMP, mitigation/monitoring measures will be implemented during construction relating to.

- Earthworks (Excavations & Stock Piling)
- Potential Release of Hydrocarbons during Construction Stage
- Groundwater and Surface Water Contamination from Wastewater Disposal
- An inspection and maintenance plan for the on-site drainage system will be prepared in advance of commencement of any construction works. Regular inspections of the sump and holding tank will be undertaken, especially after heavy rainfall, to check for visual evidence of sediment in the water body.
- During the construction phase field testing and laboratory analysis of a range of parameters with relevant regulatory limits and EQSs will be undertaken for the holding/settlement tank, and specifically following heavy rainfall events (i.e. weekly, monthly, and event-based monitoring is proposed).

15.2.6.2 Operational Phase

- Potential Increased Downstream Flood Risk due to Increased Hardstanding Area
  - The risk of flooding is minimized by the collection, treatment and discharge of water to the municipal sewers.
  - The mitigation measures described in the Site-Specific Flood Risk Assessment (Appendix 8-1) reduces this risk. Water quality risks are reduced by use of hydrocarbon interceptors and silt traps.
  - The surface water run-off from the proposed development is to be separate from the development's wastewater drainage network as described in the Infrastructure Report prepared by AECOM (included in Appendix 2-1).
  - All surface water run-off from roof areas and hardstanding areas shall be collected in the gravity pipe network. The surface water from any open deck parking areas or pavements shall be collected via a series of gullies and channels. On-site attenuation is to be provided to restrict flows from the development to greenfield run-off rates across the site.
- Potential Emissions to Groundwater and/or Surface water
  - The risk of emissions is minimized by the collection, treatment, and discharge of water to the municipal sewers. Water quality risks are reduced by use of hydrocarbon interceptors and silt traps.

15.2.7 Biodiversity

15.2.7.1 Designated Nature Conservation Sites

15.2.7.1.1 Construction Phase

Implement the following construction related run-off controls that are proposed as part of the development in question (after AECOM 2021 in Appendix 2-3 of this EIAR) relating to.

- Spill Control Measures
- Run-off Control Measures

15.2.7.1.2 Operational Phase

Implement operational stage run-off proposals that will be integrated into the development under consideration here that are summarised as follows (see AECOM 2021 in Appendix 2-1 of this EIAR).

- The proposed SuDS surface-water drainage design includes green roofing and permeable paving along with hydrocarbon interceptors and attenuation tanks.

- Maintenance of the drainage system will be carried out on an on-going basis to ensure the system is operating correctly. Maintenance will consist of inspection and assessment, with remedial measures undertaken where required.

15.2.7.2 Habitats & Flora

15.2.7.2.1 Construction Phase

- No removal/damage of habitats or movement of construction machinery will occur outside of the development works area/footprint during the construction phase, where the development site works area/footprint will be clearly marked for associated site staff.
- The final landscape plan will incorporate a native/non-native pollinator friendly dominant tree/shrub and ground flora planting scheme (in line with All Ireland Pollinator Plan recommendations and associated guidance such as NBDC 2016) that will result in a net gain of native tree/hedge/shrub planting.
- A site assessment will be undertaken by a suitably qualified/experienced Ecologist or Invasive Plant Specialist prior to enabling/construction activities to assess the most up-to-date status of invasive plants at the site relative to the works area. The Invasive Plants Survey and Management Plan that has been developed in relation to the Third Schedule species for the study site will be implemented (see IPS 2021 in Appendix 9-3). All other non-native plant species that are not listed on the Third Schedule will also be managed/eradicated in line with current guidelines where available (e.g. NRA 2010) under the advice/ supervision of a suitably qualified/experienced Ecologist or Invasive Plant Specialist.
- Existing trees/hedgerow being retained at/close to the development area will be protected in line with tree protection recommendations where relevant.
- All other measures summarised in Chapter 9, regarding potential surface-water related impacts and associated effects will be implemented to ensure protection of downstream water-features in the wider area.

15.2.7.2.2 Operational Phase

Ongoing maintenance and management of habitats/landscaped areas associated with the development will include wildlife considerations such as pollinators that will be implemented through a Habitats & Landscape Wildlife Management Plan under the advice/supervision of a suitably qualified Ecologist or similar specialist.

Surface-water drainage network (including hydrocarbon interceptors etc.) will be maintained on a regular basis in accordance with established guidelines

15.2.7.3 Fauna: Birds, Non-volant Mammals, Bats, Other Taxa & Aquatic

15.2.7.3.1 Construction Phase

- Subject to other environmental concerns (e.g. soil and water management) and as far as is reasonable, the removal of woody vegetation (scrub, hedgerow, trees) during site enabling/clearance/construction activities will not be undertaken during the bird nesting season (currently defined by the Irish Wildlife Acts 1976 – 2018 as March 1st to August 31st inclusive);
- In tandem with study site enabling/clearance/construction activities, a suitably qualified/experienced Ecologist will supervise/check areas where woody vegetation removal is due (e.g. hedgerow, scrub, woodland undergrowth) to identify potential unforeseen wildlife issues (e.g. unknown badger sett) so that appropriate measures can be undertaken in accordance with best practice guidelines and in consultation with NPWS where relevant.

- All trees due for felling that have been identified with potential to support bat roosts, or were inaccessible for visual assessment as part of this EIAR study will be assessed in advance of felling by a suitably qualified/experienced Ecologist in accordance with best practice guidelines.
- Where the removal of the unoccupied building will occur during the months of April to October inclusive, the building will be reassessed for bat roosting activity in advance of removal works by a suitably qualified/experienced Ecologist in accordance with best practice guidelines.
- Where a fauna species is found actively using the development footprint for breeding/resting (e.g. bird nest, bat roosting, hedgehog) during site enabling/clearance/construction activities, relevant works will cease immediately and the area will be cordoned off until advice is sought from a suitably qualified/ experienced Ecologist.
- Construction operations during the hours of darkness will be kept to a minimum; this will minimise disturbance to species that are roosting/resting or active at night.
- Where open excavations must be left in-situ overnight during the construction phase, measures will be taken to ensure that fauna such as mammals do not become inadvertently trapped and potentially injured within such open excavations.
- The construction phase lighting scheme will be designed to minimise light spillage nuisance at retained/new woody vegetation features of the study site.
- The final landscape plan will incorporate a native/non-native pollinator friendly dominant tree/shrub and ground flora planting scheme.
- Measures summarised in EIAR Chapter 9, regarding potential surface-water related impacts and associated effects will be implemented to ensure protection of downstream water-features in the wider area.

15.2.7.3.2 Operational Phase

Ongoing maintenance and management of habitats/landscaped areas associated with the development will include wildlife considerations such as pollinators that will be implemented through a Habitats & Landscape Wildlife Management Plan under the advice/supervision of a suitably qualified Ecologist or similar specialist.

The operational phase lighting scheme will be designed to minimise light spillage nuisance at retained/new woody features.

the surface-water drainage network (including hydrocarbon interceptors etc.) will be maintained on a regular basis in accordance with established guidelines.

Mammal access to the study site will be maintained.

15.2.7.4 Construction Phase Monitoring

A suitably qualified/experienced Ecologist will be engaged in the role of Ecological Clerk of Works (ECoW) for the construction phase of the project, whose role will include the following monitoring in relation to relevant proposed mitigation measures.

15.2.7.5 Operational Phase Monitoring

Ongoing maintenance and management of habitats/landscaped areas associated with the development will include wildlife considerations such as pollinators that will be implemented through a Habitats & Landscape Wildlife Management Plan under the advice/supervision of a suitably qualified/experienced Ecologist or similar specialist.

The surface-water drainage network (including hydrocarbon interceptors etc.) will be maintained on a regular basis in accordance with established guidelines.

15.2.8 Noise & Vibration

15.2.8.1 Construction Phase

Mitigation measures that will be employed in order to control construction noise at its source include the following:

- Avoid unnecessary revving of engines and switch off equipment when not required;
- Keep internal haul routes well maintained and avoid steep gradients;
- Use rubber linings in, for example, chutes and dumpers to reduce impact noise
- Minimise drop height of materials;
- Start up plant and vehicles sequentially rather than all together;
- The normal operating hours of the site will be adhered to. This also applies to the movement of plant onto and around the site;
- The plant and activities chosen to carry out the construction work will be the quietest available means of achieving the required purpose;
- Modifications may be made to plant and equipment, if appropriate, for noise attenuation purposes, provided the manufacturer has been consulted. For example, a more effective exhaust silencer may be fitted to a diesel engine;
- As far as is reasonably practicable, sources of significant noise will be enclosed provided that ventilation and potential hazards to operators have been considered;
- Plant and noisy activities will be located away from noise-sensitive areas where practicable and sources of directional noise should be oriented away from noise-sensitive areas;
- All plant and equipment will be regularly maintained (increases in plant noise are often indicative of future mechanical failure).

Mitigation measures that will be employed in order to control the spread of construction noise include the following:

- The distance between noise sources and noise-sensitive areas will be increased as much as is reasonably practicable;
- Where noise control at source is insufficient and the distance between source and receiver is restricted, screening will be implemented. Barriers will be located either close to the source of noise (as with stationary plant) or close to the listener.

Mitigation measures that will be employed in order to control vibration from construction works include.

- The plant and activities chosen to carry out the construction work will be chosen to cause as little vibration as possible while achieving the required purpose;
- All plant and equipment will be regularly maintained to reduce unnecessary vibration;
- Activities causing significant vibration will be located away from sensitive areas and/or isolated using resilient mountings where practicable;

- A vibration threshold of 3 mm/s PPV recommended in BS 7385 and BS 5228 applies to it (Refer to Section 10.3 of this EIAR). There is potential for this threshold to be exceeded during the construction phase of the apartment block due to necessary rock breaking works. Therefore, it will be necessary to carry out vibration monitoring during this phase to ensure that the threshold of 3 mm/s PPV is not exceeded. Vibration monitoring will be carried out at the grotto site located to the north-east of the apartment block (southern end of the site) to ensure the applied threshold is not exceeded since the grotto has been identified as a vulnerable structure.

15.2.8.2 Operational Phase

At the detailed design stage, best practice measures relating to building services plant will be taken to ensure there is no significant noise impact on noise-sensitive locations. Best practice measures in this context include the following:

- Where ventilation is required for plant rooms, consideration will be given to acoustic louvers or attenuated acoustic vents, where required, to reduce noise breakout;
- Ventilation plant serving plant rooms and car parks will be fitted with effective acoustic attenuators to reduce noise emissions to the external environment;
- The use of perimeter plant screens will be used, where required, for roof-top plant areas to screen noise sources;
- The use of attenuators or silencers will be installed on external air-handling plant;
- All mechanical plant items, e.g. fans, pumps etc., shall be regularly maintained to ensure that excessive noise generated by worn or rattling components is minimised;
- Any new or replacement mechanical plant items, including plant located inside new or existing buildings, shall be designed so that all noise emissions from site do not exceed the noise limits outlined in this document;
- Installed plant will have no tonal or impulsive characteristics when in operation.

15.2.9 Cultural Heritage

A programme of archaeological investigations, to comprise a geophysical survey of such areas followed by targeted archaeological test trenching, will be undertaken prior to the commencement of the construction phase.

All vegetation clearance and ground works within this area will be, therefore, subject to constant archaeological monitoring during the construction phase. These works will be carried out by a suitably qualified archaeological specialists under licences issued by the National Monuments Service.

There are a number of obligatory processes to be undertaken as part of archaeological licence applications and these will allow for monitoring of the successful implementation of the archaeological mitigation measures. Method statements detailing the proposed strategy for site investigations will submitted for approval to the National Monuments Service as part of the licence applications.

A report will be compiled on all site investigations which will clearly present the results in written, drawn and photographic formats. Copies of these reports will be submitted to the National Monuments Service, Cork County Council and the National Museum of Ireland.

The locations of the remnant boundary features associated with the former Anne Mount House property, which now form garden boundaries of modern detached houses adjoining the north end of the proposed development will be cordoned off for the duration of the construction phase.

Implementation of all mitigation and monitoring measures identified in the CEMP, OCEMP, and Outline Conservation Method Statement (Appendix 11.3) to ensure the protection of the extant grotto feature within the southern end of the proposed development.

15.2.10 Air Quality & Climate

15.2.10.1 Incorporated Design Mitigation

The proposed development has been designed so as to reduce the impact on climate as much as possible during operation. The accompanying Energy Statement (Appendix 12-4) details a number of design measures that have been considered in order to reduce the impact on climate wherever possible.

15.2.10.2 Construction Phase

15.2.10.2.1 Air Quality

The pro-active control of fugitive dust will ensure the prevention of significant emissions, rather than an inefficient attempt to control them once they have been released. A dust management plan will be implemented onsite. The main contractor will be responsible for the coordination and ongoing monitoring of the dust management plan (Appendix 12-3).

15.2.10.2.2 Climate

Impacts to climate during the construction stage are predicted to be imperceptible however, good practice measures can be incorporated to ensure potential impacts are lessened. These include:

- Prevention of on-site or delivery vehicles from leaving engines idling, even over short periods.
- Ensure all plant and machinery are well maintained and inspected regularly.
- Minimising waste of materials due to poor timing or over ordering on site will aid to minimise the embodied carbon footprint of the site.

15.2.10.3 Construction Phase – Monitoring Measures

Monitoring of construction dust deposition at locations along the site boundary close to the nearby sensitive receptors during the construction phase of the proposed development is recommended to ensure mitigation measures are working satisfactorily.

15.2.10.4 Operational Phase – Mitigation Measures

The impact of the proposed development on air quality and climate is predicted to be imperceptible with respect to the operational phase in the long term. Therefore, no additional site-specific mitigation measures are required.

15.2.10.5 Operational Phase – Monitoring Measures

There is no monitoring recommended for the operational phase of the development as impacts to air quality and climate are predicted to be imperceptible.