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ENNIS LRD

VOLUME I
Non-Technical Summary



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CHAPTER 1 | Introduction

1.1 Introduction

Article 5(1)(e) of the EIA Directive requires the project proponent to include a Non-Technical Summary (NTS) of the Environmental Impact Assessment Report (EIAR) and it is transposed into Irish law under article 94(c) of the Planning and Development Regulations 2001, as amended. The term 'non-technical' indicates that this summary should not include technical terms, detailed data and scientific discussion, that detail is presented in Volume II, the EIAR.

This Non-Technical Summary provides a concise, but comprehensive description of the Project, its existing environment, the effects of the project on the environment, the proposed mitigation measures, and the proposed monitoring arrangements, where relevant. The NTS highlights any significant uncertainties about the project. It explains the development consent process for the Project and the role of the EIA in that process.

It is important to highlight that the assessments that form part of the EIAR were undertaken as an iterative process rather than a one-off, post-design environmental appraisal. Findings from the individual assessments have been fed into the design process, resulting in a project which achieves a 'best fit' within the environment.

A detailed description of the project is provided in Chapter 2. To summarise, the applicant seeks permission for the development comprising a total of 300 no. residential units, a creche, and all associated site development works.

1.2 Site Location and Description

The subject site is located in Ennis, to the west of the Ennis Golf Club and to the east of the N85. An existing housing development, Ballymacaula View, is located to the south of the site, and 6 no. existing detached houses are located along the eastern boundary. The Beechpark Roundabout is located to the south of the site.

The site currently consists of agricultural fields and field boundaries. The existing access to the site is from the R474 road to the south.



Figure 1.1 Site Location

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1.3 Report Structure

This EIAR is prepared according to the ‘Grouped Format Structure’ as described in the Guidelines on information to be contained in Environmental Impact Statements (EPA, 2022). This means that each topic is considered as a separate section. The advantages of using this format are that it is easy to investigate a single topic and it facilitates easy cross-reference to specialist studies.

The EIAR is sub divided into 3 no. volumes as follows:

- **Volume I** Non-Technical Summary;
- **Volume II** Environmental Impact Assessment Report; and
- **Volume III** Appendices to Environmental Impact Assessment Report.

Volume 1, the Non-Technical Summary (NTS), provides an overview of the project and the EIAR in non-technical terms. The summary is presented similar to the grouped format structure and discusses each environmental topic separately.

Volume 2, the main EIAR, provides the detailed information on the proposed development and the relevant environmental topics, with technical and detailed investigations of the topic areas as appropriate. This volume is prepared in the grouped format structure as it allows specialist studies to be completed for environmental topics in chapters.

Volume 3, the Appendices, contains supporting documentation and information on the EIAR.

Volume II is presented as 18 chapters as follows:

Chapter	Chapter Title	Consultancy
1	Introduction	McCutcheon Halley
2	Project Description	McCutcheon Halley
3	Alternatives	McCutcheon Halley
4	Population & Human Health	McCutcheon Halley
5	Landscape & Visual	Jane McCorkell Design
6	Material Assets: Traffic & Transport	TOBIN
7	Material Assets: Built Services	TOBIN
8	Material Assets: Waste	AWN Consulting
9	Land & Soils	TOBIN
10	Water & Hydrology	TOBIN
11	Biodiversity	Altemar
12	Noise & Vibration	AWN Consulting
13	Air Quality	AWN Consulting
14	Climate	AWN Consulting
15	Cultural Heritage	John Cronin and Associates
16	Risk of Major Accidents and Disasters	AWN Consulting
17	Interactions of the Foregoing	McCutcheon Halley
18	Summary of Mitigation Measures	McCutcheon Halley

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1.4 Requirement for Environmental Impact Assessment

Proposed development which falls within one of the categories of development specified in Schedule 5 of the Planning and Development Regulations 2001, as amended, which equals or exceeds, a limit, quantity, or threshold prescribed for that class of development must be accompanied by an EIAR.

The proposed development falls within the classes of development set out in Schedule 5, Part 2, 10(b)(i) and 10(b)(iv):

10. Infrastructure projects

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

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

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

The proposed Large Scale Residential Development (LRD) is for 300 no. residential units on a site area of c. 11.3 hectares. While this does not exceed the threshold of 500 units set out in 10(b)(i), a mandatory EIA is required under the provisions of Part 2, 10(b)(iv) as the proposed development site exceeds the threshold of 10ha within the built-up area of Ennis, Co. Clare.

1.5 Competency

It is a requirement that the EIAR must be prepared by competent experts. For the preparation of this EIAR, the Applicant engaged McCutcheon Halley Chartered Planning Consultants (MH Planning) to direct and coordinate the preparation of the EIAR. A team of qualified specialists were engaged to prepare individual chapters.

The qualifications of consultants responsible for each discipline is provided in the introduction to each chapter.

1.6 Methodology

Each chapter of this EIAR assesses the direct, indirect, cumulative, and residual impact of the proposed development for both the construction and operational stage of the proposed development.

The identified quality, significance, and duration of effects for each aspect is primarily based on the terminology set out in the EPAs Guidelines on the information to be contained in Environmental Impact Assessment Reports (2022) as summarised in the following table:

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Table 1 Impact Rating Terminology

Quality of Effect	
Positive	A change which improves the quality of the environment (for example, by increasing species diversity, or the improving the reproductive capacity of an ecosystem, or by removing nuisances or improving amenities).
Neutral	No effects or effects that are imperceptible, within normal bounds of variation or within the margin of forecasting error.
Negative/ Adverse Effects	A change which reduces the quality of the environment (for example, lessening species diversity or diminishing the reproductive capacity of an ecosystem; or damaging health or property or by causing nuisance).
Significance of Effect	
Imperceptible	An effect capable of measurement but without significant consequences.
Not Significant	An effect which causes noticeable changes in the character of the environment but without significant consequences
Slight Effect	An effect which causes noticeable changes in the character of the environment without affecting its sensitivities.
Moderate Effect	An effect that alters the character of the environment in a manner that is consistent with existing and emerging baseline trends.
Significant Effect	An effect which, by its character, magnitude, duration, or intensity, alters a sensitive aspect of the environment.
Very Significant Effect	An effect which, by its character, magnitude, duration, or intensity, significantly alters most of a sensitive aspect of the environment.
Profound Effect	An effect which obliterates sensitive characteristics.
Duration of Effects	
Momentary	Effects lasting from seconds to minutes
Brief	Effects lasting less than a day
Temporary	Effects lasting less than a year
Short-term	Effects lasting one to seven years
Medium-term	Effects lasting seven to fifteen years
Long-term	Effects lasting fifteen to sixty years
Permanent	Effects lasting over sixty years
Reversible	Effects that can be undone, for example through remediation or restoration
Frequency	Describe how often the effect will occur (once, rarely, occasionally, frequently, constantly – or hourly, daily, weekly, monthly, annually).
Extent and Context of Effects	
Extent	Describe the size of the area, the number of sites and the proportion of a population affected by an effect.
Context	Describe whether the extent, duration, or frequency will conform or contrast with established (baseline) conditions (is it the biggest, longest effect ever?).
Probability of Effects	
Likely	The effects that can reasonably be expected to occur because of the planned project if all mitigation measures are properly implemented.
Unlikely	The effects that can reasonably be expected not to occur because of the planned project if all mitigation measures are properly implemented.

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Type of Effects	
Indirect (Secondary or Off-site)	Effects on the environment, which are not a direct result of the project, often produced away from the project site or because of a complex pathway.
Cumulative	The addition of many minor or insignificant effects, including effects of other projects, to create larger, more significant effects.
Do-Nothing	The environment as it would be in the future should the subject project not be carried out.
Worst-Case	The effects arising from a project in the case where mitigation measures substantially fail.
Indeterminable	When the full consequences of a change in the environment cannot be described.
Irreversible	When the character, distinctiveness, diversity or reproductive capacity of an environment is permanently lost.
Residual	The degree of environmental change that will occur after the proposed mitigation measures have taken effect.
Synergistic	Where the resultant effect is of greater significance than the sum of its constituents, (e.g. combination of SO _x and NO _x to produce smog).

1.7 Consultation

The following prescribed bodies have been consulted in relation to the general scope of the EIAR.

- Department of Housing, Local Government, and Heritage
- Department of Tourism, Culture, Arts, Gaeltacht, Sport & Media
- Department of Education
- Geological Survey Ireland (Department of the Environment, Climate and Communications)
- The Heritage Council
- Office of Public Works (OPW)
- Transport Infrastructure Ireland (TII)
- The National Transport Authority (NTA)
- The Health and Safety Authority (HSA)
- The Health Service Executive (HSE)
- Inland Fisheries Ireland
- Bat Conservation Ireland
- Uisce Éireann
- An Taisce
- Bord Gais
- ESB
- Environmental Protection Agency
- Fáilte Ireland

Responses received are presented in Appendix 1.1

CHAPTER 2 | Project Description

2.1 Introduction

The EIA Directive requires that an EIAR includes a description of the project comprising information on the site, design, size and other relevant features of the project. Recital 22 of the 2014 Directive requires that

“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”.

This chapter satisfies the requirements of the EIA Directive, providing detail on the location, size and characteristics of the proposed project.

2.2 Description of Existing Environment

The subject site of c. 11.3ha is located west of Ennis town centre and occupies a green field site beside the N85 National Road. In the immediate context of the site is Ennis Golf Club to the east and a recently completed development to the southwest of the subject site. The site is located near a variety of facilities in Ennis town within a 20-minute walking distance.

The site is bounded on the western side by the N85 national road, and a series of bungalows are situated to the east, with the land to the north designated as zoned open space.

The site itself is made up of a group of greenfields subdivided by a variety of hedgerows. These native hedgerows define the existing field boundaries and are part of the local green infrastructure network. There are several mature tree species contained within the hedgerows with prominent high value trees retained within the open spaces.

2.3 Description of Proposed Development

The proposed Large Scale Residential Development comprises the construction of 300 no. residential units (14 no. 1 beds, 91 no. 2 beds, 164 no. 3 beds, 31 no. 4 beds), a creche, and all associated site development including drainage, landscaping, amenity spaces, car and bike parking, a pumping station, and upgrades to Drumbiggle Road.

The 300 no. residential units includes 9 no. detached houses (3%), 112 no. semi-detached houses (37.3%), 159 no. townhouses (53%), and 20 no. accessible bungalows (6.7%).

The 20 no. bungalows are designed as accessible, step-down units, around a central communal courtyard area.

These houses are organised into 3 no. character areas to provide three distinct areas within the scheme. Each area is distinguished by the design and materials used in the proposed houses.

The proposed creche, located at the entrance to the site, measures 400.7sqm and will provide 80 no. childcare spaces.

Connectivity is one of the central design principles of the proposed scheme. The current layout is therefore crossed by several connections and links which connect to the adjacent areas. Logical movement routes through the new hierarchy of streets and paths assists vital future connections and the integration of the scheme into its context. The positive impact of the improved connectivity provides local residents with new links to take advantage of an existing transport infrastructure.

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A total of 536 no. car parking spaces and 202 no. bike parking spaces are provided within the scheme.

To ensure the visual integration of the site, the proposed development will promote, where possible, the protection and enhancement of natural features on site, including hedgerows and tree lines.

Particular attention was placed in the design of the public open spaces to create a strong and well-connected network of usable and enjoyable green areas, cycle and pedestrian paths, plazas and shared surfaces. These features will enhance/contribute to a sense of place.

A 30m buffer is provided around the two badger setts identified to the east of the site boundary. Any planting proposed in this buffer area will be completed by hand to minimise any potential disturbance to the badger setts.

The proposal incorporates a Sustainable Urban Drainage Systems, (SuDS) approach to storm water management throughout the site.

There will be 3 no. new substations constructed to support the proposed development.

Construction of the residential development will take place over 3 phases, and it is estimated to take 36 months to complete.

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CHAPTER 3 | Alternatives Considered

3.1 Introduction

This chapter of the EIAR provides details on the evolution of the scheme design through the reasonable alternatives examined and provides an outline of the main alternatives considered and justification for the final proposed development.

The chapter has been prepared by McCutcheon Halley Planning Consultancy and Deady Gahan Architects

3.2 Do Nothing Scenario

Under a 'do-nothing' scenario, the subject site would remain in its current condition as a greenfield site, and it would not fulfil its residential zoning objective. Accordingly, there would be a negative/adverse effect on population, as this approach would fail to address the shortage of houses in Ennis. This development maximised the efficiency of zoned land and is therefore of critical importance.

3.3 Alternative Locations

The subject site is within the settlement boundary of Ennis and is zoned for low density residential development. Therefore, the subject site was considered an appropriate location for the proposed development and no alternative locations were considered.

3.4 Alternative Layouts

The final layout, presented in the Architectural Drawings and the Design Statement which should be read in conjunction with this chapter of the EIAR, has evolved since the initial design stage subsequent to a number of design team meetings and in response to pre-planning meetings with Clare County Council and the previous planning history on the site.

The scheme has undergone a rigorous appraisal, which has led to a final layout that responds appropriately to the site characteristics, opportunities and constraints. Section 3.4 of Chapter 3 sets out the intermediate design progressions of the scheme, includes figures showing the proposed layout at each stage and outlines the positive and negative characteristics of each layout, until the final scheme

3.5 Iternative Design

The proposal has been designed in accordance with the relevant guidelines and standards and has been informed by the site's context and characteristics. Therefore, the proposed design is considered the optimal design for the subject site.

3.6 Alternative Processes

This is not considered relevant to the EIAR having regard to the nature of the proposed residential development. The proposed construction work comprises relatively of standard building construction processes, as such there are no specific alternative construction processed identified in this EIAR. It is also considered there is no new or technical challenging operational techniques required and no alternative operational process have been considered as part of this development.

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3.7 Cumulative Impact

Each design iteration considered any potential impacts on neighbouring developments (existing, under construction and future), transforming the edges of the scheme to provide an appropriate transition to its direct context and reducing the potential of cumulative impacts

3.8 Mitigation Measures

The mitigation measures outlined throughout the various EIAR chapters are considered appropriate for the proposed development therefore no alternative mitigation measures were considered in the preparation of this chapter.

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CHAPTER 4 | Population and Human Health

4.1 Introduction

This chapter of the EIAR assesses the potential impact of the proposed development on population and human health. Other chapters of the EIAR also deal with likely significant environmental effects on population and human health arising from traffic and transportation, air quality and climate, noise and vibration, landscape and visual, material assets: utilities and the risk of major accidents and/or disasters and those chapters should be referenced in conjunction with this chapter of the EIAR.

4.2 Baseline Environment

The identified study area had a population of 24,714 no. persons in 2022 census. 6.2% of the population was aged 0-4, with 10.8% of primary school age, and 8.1% of the population of post-primary school age.

The average household size was 2.5 no. persons per household with 57% of the households were just one or two person households.

There are 7 no. primary schools, 4 no. post primary schools, and 2 no. special schools in Ennis. In addition to the two special schools, four of the primary schools had a special class in 2023/24.

There are a total of 13 no. existing childcare facilities within 2km of the site and an additional 4 no. facilities just over 2km from the site.

There are 56 no. health and medical facilities in Ennis including 2 hospitals, 1 no. nursing home, 15 no. medical/primary care centres, 4 no. dental practices, and 13 no. pharmacies.

There is a wide sports and recreational facilities in the area.

4.3 Impact Assessment

4.3.1 Construction Phase

The construction phase is likely to result in a short term boost to the local economy as workers employed at the site can be expected to make use of local retail facilities and other services.

As with any construction site, there will be potential risks to the health and safety in terms of injury or death of construction personnel.

The construction phase has the potential to result in dust and noise emissions that could impact the amenity of the nearby residential dwellings.

4.3.2 Operational Phase

The proposed development will replace the existing fields with a residential development, in line with the land use zoning and national objectives for compact growth and increased densities. The provision of the additional homes in Ennis is expected to have a permanent, positive impact on the town.

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Based on the local household size (2.5 no. persons), the proposed 300 no. houses will increase the local population by 750 no. persons.

Based on the 2022 population, the proposal will likely result in c. 46 no. children aged 0-4, c. 81 no. primary school aged children, and c. 60 no. post primary school aged children.

The projections for primary and post primary school enrolment suggests that there will be sufficient capacity to cater for the increase in primary and post primary school aged children in the area.

The proposed development includes a creche to cater for the increase in childcare demand from the proposal.

The expected increase in traffic will result in an increase in the associated greenhouse gas emissions, which can in turn decrease the local air quality and impact on human health. This is assessed in Chapter 13 Air Quality.

4.4 Residual Impact Assessment

Following the implementation of the appropriate mitigation measures, the construction phase is expected to have a short term slight positive impact with a benefit to the local economy.

During the operational phase, the proposed development is expected to have a moderate positive impact with overall economic and social benefits for the local community and the wider Ennis area. The delivery of much needed housing will realise a likely significant positive effect for the local area.

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CHAPTER 5 | Landscape and Visual

5.1 Introduction

This Landscape and Visual Impact Assessment (LVIA) has been prepared by Jane McCorkell Design Ltd. Its objective is to evaluate how the proposed development will affect the existing landscape character of the site, as well as the potential visual impact on nearby residents and the broader public.

The subject site is situated on the outskirts of Ennis, within a transitional area between undeveloped rural land and the established residential zones of the town. The LVIA considers both on-site features and the broader landscape setting, referencing the current County Clare Development Plan. This includes an analysis of designated views and prospects, landscape character areas, and the presence of any National Monuments. The assessment also examines how the site fits within its setting in relation to existing neighbouring housing and how the proposed development may influence the existing landscape features.

The lands in question lie approximately 1.5 kilometres southwest of Ennis town centre, positioned between the N85 and R474 roads and adjacent to Ennis Golf Club. The area comprises several fields used for rough grazing, separated by now overgrown hedgerows. The topography is gently undulating, with the land sloping from the southeast towards the northwest and the Claureen River. To the south, the site adjoins the recently constructed Ballymacaula housing development, while established housing along the R474 borders it to the east. The golf club also shares a portion of the eastern boundary. The N85 road, which runs along the western edge of the site in a sunken cutting, further defines the landscape context.

The proposed residential development will result in some alteration to the existing landscape, including the removal of certain hedgerows of lower landscape value and ground works for the construction of roads and buildings. However, sections of hedgerow identified as having higher ecological value are to be retained and integrated into the design of landscaped open space areas. Additionally, the proposal includes extensive new tree planting and biodiverse landscaping throughout the site to help visually integrate the development into its setting and to create a rich and appealing natural environment for future residents.

Given the site's agricultural use and its location on the town's periphery, along with its undulating nature, it is anticipated that the development will result in some degree of visual impact. A field study was conducted to assess the visibility and prominence of the proposed scheme, identifying ten publicly accessible viewpoints around the site. Photomontages were created from these locations to illustrate and evaluate the potential visual changes introduced by the development.

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CHAPTER 6 | Material Assets: Traffic and Transport

6.1 Introduction

The full assessment of Material Assets: Traffic and Transport is contained within Chapter 6 of Volume II of the EIA. This NTS provides a summary of the issues and impacts relating to the material assets of traffic and transport in respect of the subject lands.

6.2 Summary

The proposed development is bounded to the West by the N85 Road, to the South by a residential housing estate, and to the East by the R474 Circular Road. An assessment of the traffic impact on the existing road network by the proposed development in Ennis Co. Clare was undertaken. The site is forecast to generate 203 vehicle movements during the AM peak and 153 movements during the PM peak times. An allowance was made in the Traffic and Transport Assessment for trip generation of committed development in the area. The development was scoped with Clare County Council with the following junctions selected for analysis:

- Junction 1: Roundabout Junction (Beechpark) N85 / R474
- Junction 2: Priority Junction R474 / Drumbiggle Road
- Junction 3: Roundabout Junction R474 / Cloughleigh Rd / Davitt Terrace
- Junction 4: Priority Junction R474 / R458
- Junction 5: Priority Junction Proposed Access / R474

A Stage 1 Road Safety Audit has been carried out for the proposed development during the planning stage and considered various aspects such as, junction design, provision for pedestrians, provisions for cyclists and road signage, marking and lighting. Recommendations noted from the independent company undertaking the road safety audit, CST Group Chartered Consulting Engineers, have been taken into account and the concerns raised have either been designed out or will be considered and suitable measures put in place during the detailed design stage.

The proposed development has integrated a number of measures in line with the relevant standards and guidelines, such as Design Manual for Urban Roads and Streets, 2019 and the Cycle Design Manual, which promotes the use of sustainable travel to and from the site. Mitigation measures are to be implemented to promote and encourage more sustainable transport modes. Footpaths on the R474 Circular Road will encourage pedestrians to walk to the Ennis Town Bus Stops which are 1.5km away from the site. The proximity of the Bus Stops and Train Station will encourage pedestrians to utilise the higher frequency Public Transport options. The proposed development is located close to a number of amenities such as local shops to the east of the proposed development, some 19 minutes walking (approx. 1.6km).

6.3 Conclusion

Based on this assessment it is considered that in general, the traffic generated by the proposed development in Ennis, Co. Clare will be adequately accommodated on the local highway network in the vicinity, which will result in a long term imperceptible negative cumulative impact on local traffic. The junctions are predicted to operate below capacity without the development traffic in the future design years. The analysis predicts that the inclusion of the development traffic will result in a slight increase in the degree of saturation for the junctions, with all junctions forecast to continue to operate below capacity.

With the implementation of the Operational Phase mitigation measures, such as the pedestrian, public transport and cycling mobility management measures, a shift in the modal split can be accomplished resulting in a reduction in the impact on the junction capacities overall.

CHAPTER 7 | Material Assets: Built Services

7.1 Introduction

The full assessment of Material Assets: Built Services is contained within Chapter 7 of the EIAR. This NTS provides a summary of the issues and impacts relating to the material assets of surface water drainage, foul water drainage, water supply and utilities in respect of the subject lands.

7.2 Surface Water Drainage

There is no existing surface water network within the existing development site. The rainwater falling onsite naturally percolates directly to groundwater.

The proposed storm sewer collection system consists of a 100 mm diameter pipe collection network around each house in accordance with TGD part H discharging to 225mm diameter uPVC sewer pipes or larger under the estate streets. The surface water network layout and typical details are shown in the following drawings: (Drawing numbers TBC)

- Drainage Layout Sheet 1 of 3 (11269-2201),
- Drainage Layout Sheet 2 of 3 (11269-2202),
- Drainage Layout Sheet 3 of 3 (11269-2203),
- Drainage Layout Sheet 4 of 4 (11269-2204),
- Typical Attenuation/Soakaway Unit and Cross Section Detail (11269-2225)
- Standard Manhole Details Sheet 1 of 2 (11269-2227),
- Standard Manhole Details Sheet 2 of 2 (11269-2228),
- Standard Pipe Bedding Details (11269-2229),

It is proposed to approach the management of surface water drainage for the development using the principles of nature-based Sustainable Urban Drainage Systems (SuDS). The overall strategy aims to provide an effective system to mitigate the adverse effects of urban surface water runoff on the environment by reducing rainfall runoff rates to equal greenfield runoff, reducing the overall volume leaving the site and reducing pollutant concentrations in the surface water. The proposed nature-based SuDS features in the development are modular permeable paving on driveways, EcoCell underground attenuation/soakaway units, petrol interceptors, Hydrobrake flow controls, Tree Pits, Rain Gardens, Infiltration Trenches and an infiltration basin discharging to a bio-swale.

The proposed surface water drainage networks will run to underground soakaway cells or an infiltration basin, from which the water will be contained until it naturally flows through the soil beneath the cells/infiltration basin and into the water table below ground level. Surface water from the infiltration basin will run through a hydro brake manhole, which controls the discharge rate of the water, and then onto a bio-swale before discharging to the Claureen River.

Possible negative effects from this drainage proposal include flooding of the area, however, the design of the drainage system minimises this. Another possible negative effect is the release of pollutants from the water in the system entering a natural watercourse. But this is eliminated by oil/petrol interceptors and the aforementioned nature-based SuDS measures which treat the water for pollutants before it is discharged.

7.3 Wastewater Drainage

The layout of the proposed wastewater drainage network for the development and its typical details are shown on the following drawings: (Drawing numbers TBC)

- Drainage Layout Sheet 1 of 3 (11269-2201),

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- Drainage Layout Sheet 2 of 3 (11269-2202),
- Drainage Layout Sheet 3 of 3 (11269-2203),
- Standard Manhole Details Sheet 1 of 2 (11269-2227),
- Standard Manhole Details Sheet 2 of 2 (11269-2228),
- Standard Pipe Bedding Details (11269-2229),

The network is a conventional piped, gravity sewer flowing to a wastewater pumping station in the North and lowest lying area of the site from where it is proposed to pump the wastewater, via a rising main, to the existing public wastewater sewer in the Cahercalla Road to the East of the site.

The proposed wastewater network has been designed in accordance with Uisce Éireann specifications and a pre-connection enquiry was submitted to Uisce Éireann. Uisce Éireann has confirmed in consultations that connection of the proposed network is feasible with minor upgrades to the local wastewater treatment plant and has accepted the wastewater design submitted. See Appendix 7.3 for Uisce Éireann correspondence. Any Uisce Éireann correspondence will also form part of this application as an appendix of the Civil Works Report.

The laying/construction of the foul network will be a standard trench excavation and kept as shallow as possible, adhering to Uisce Éireann's Codes of Practice. All wastewater designs will be fully vetted by Uisce Éireann prior to receiving an offer to connect to their existing network.

Traffic will be affected during the construction phase when connecting the proposed wastewater network to the existing network. The connection location to the existing wastewater network is circa 350m away from the site entrance. Therefore, will consist of a rising main being constructed on the public road to this network.

These works will have a significant effect on traffic as a section of the road will need to be closed during the works until completion. Traffic movements associated with the proposed development are addressed within Chapter 6 Material Assets – Traffic & Transport of this EIAR, this chapter specifically deals with traffic and the impact of the development on road infrastructure. A construction traffic management plan (CTMP) has been prepared by TOBIN to help reduce the impact of traffic during the works period. No long-term impacts are envisaged on the existing wastewater network from the construction stage.

7.4 Watermain Design

It is proposed to connect the watermain for the development to an existing watermain that runs past the proposed entrance in the Circular Road. Uisce Éireann has confirmed that this connection is feasible without upgrade to the local water supply infrastructure.

A 150mm diameter watermain is proposed to supply water to the proposed development, while a 100mm diameter PE watermain will breach off this spine main to service the clusters of houses/Cul-de-sacs as per the following accompanying drawings: (Drawing numbers TBC)

- Proposed Watermain Layout Sheet 1 of 3 (11269 - 2209),
- Proposed Watermain Layout Sheet 2 of 3 (11269 - 2210),
- Proposed Watermain Layout Sheet 3 of 3 (11269 - 2211),

The watermain will be metered in accordance with Uisce Éireann requirements at the entrance to the proposed development to monitor bulk water usage.

There will be some disruption to the existing watermain whilst making the connection, but the works will be brief and any potential temporary shutdowns to water supply will be agreed with Uisce Éireann in advance. Residents that will be affected will be advised in advance of the short-term impacts that they may experience.

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See Appendix 7.3 for Uisce Éireann correspondence. Any Uisce Éireann correspondence will also form part of this application as an appendix of the Civil Works Report.

7.5 Electricity Supply

There are existing power lines running along the eastern boundary of the site, this development proposes to underground the power line. There is a 10kV line running from south to north through the site that will also need to be underground. There will be 3 No. new substations constructed. One at the rear of the creche located near the entry to the estate and the other located in the centre of the eastern boundary. The proposed substations will provide power to several mini pillars which will provide power to the residential dwellings.

It is proposed to underground the existing power lines that are currently overhead from the southern boundary to the ESB distribution facility to the west of the site.

When the structures, ducting and new cabling is in place and ready for connection there will need to be a short-scheduled outage of power supply to the local area as the overhead cables are shut down and the underground cables become live. This outage will be agreed with the ESB, local residents and businesses and they will be warned and the impact from the construction phase of the proposed development on the local electrical supply network is likely to be brief and imperceptible.

7.6 Communications

Telecoms ducting and cables will be laid within the development site during the construction stage. Prior to the operational phase of the development this internal network will be connected to the local infrastructure of one or more of the telecoms providers in the area.

The potential impact from the construction phase of the proposed development on the local telecoms network is likely to be brief, neutral and imperceptible.

7.7 Gas

No Gas is proposed for the development and no works are envisaged to the local gas network.

7.8 Earthworks

The development of the subject site will require the stripping of top and sub soils and the excavation or fill of ground to formation level. Estimates of the earthwork cut and fill volumes are described in Chapter 7 – Soils and Geology of this EIAR and a prepared Preliminary Construction Waste Management Plan, accompanying this application.

Construction activities and vehicle movements shall be in accordance with the Construction Environmental Management Plan, Construction Waste Management Plan and the Construction Traffic Management Plan, all formulated by the appointed Main Contractor and overseen by their Construction and Demolition Waste Manager in order to minimise any impact on the existing environment and the surrounding area.

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CHAPTER 8 | Material Assets: Waste

8.1 Introduction

AWN Consulting undertook the waste management assessment. The receiving environment is largely defined by Clare County Council (CCC) as the local authority responsible for setting and administering waste management activities in the area through regional and development zone specific policies and regulations.

There will be waste materials generated from site clearance works, excavations, construction of the new development and from the operation of the new development. There is currently no waste generated at the proposed development site.

8.2 Potential Impacts and Mitigation Measures of the Proposed Development

Construction Phase

During the construction phase the mismanagement of waste, including the inadequate storage of waste, inadequate handling of hazardous waste, the use of inappropriate or insufficient segregation techniques, and the use of non-permitted waste contractors, would likely lead to negative impacts such as waste unnecessarily being diverted to landfill, litter pollution which may lead to vermin, runoff pollution from waste, fly tipping and illegal dumping of waste. In the absence of mitigation, the effect on the local and regional environment is likely to be **indirect, long-term, significant** and **negative**.

Operational Phase

The potential impacts on the environment during the operational phase of the proposed development would be caused by improper, or lack of waste management. In the absence of mitigation, the effect on the local and regional environment is likely to be **indirect, long-term, significant** and **negative**.

8.3 Residual Effect of the Proposed Development

Construction Phase

During the construction phase, typical construction waste materials will be generated which will be source segregated on-site into appropriate skips/containers, within designated waste storage areas and removed from site by suitably permitted waste contractors as required, to authorised waste facilities, by appropriately licensed waste contractors. While the accurate keeping of waste records will be undertaken. All waste leaving the site will be recorded and copies of relevant documentation maintained.

This will all be overseen by the main contractor, who will appoint a construction phase Resource Manager to ensure effective management of waste during the excavation and construction works. All construction staff will be provided with training regarding the waste management procedures on site.

A carefully planned approach to waste management and adherence to the site-specific Resource and Waste Management Plan (Appendix 8.1) and Chapter 8 during the construction phase, this will ensure that the effect on the environment will be **short-term, neutral** and **imperceptible**.

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Operational Phase

During the operational phase, waste will be generated by the residents and the crèche. A dedicated waste storage area (WSA) has been allocated in the development for the use by the crèche staff. The WSA has been appropriately sized to accommodate the estimated waste arising from the crèche. The WSA has been allocated to ensure a convenient and efficient management strategy with source segregation a priority. Residential units will have their own individual WSAs allocated at the rear of their home where external access to the rear yard is possible. When external access to the rear of the property is unavailable, bins will be stored at the front of the unit, shielded from view of the road.

Waste will be collected from the residential and crèche WSAs by permitted waste contractors, and removed off-site for re-use, recycling, recovery and/or disposal. An Operational Waste Management Plan has been prepared and included as part of this submission as Appendix 8.2. This OWMP provides a strategy for segregation (at source), storage and collection of wastes generated within the development during the operational phase including dry mixed recyclables, organic waste, glass, mixed non-recyclables, garden/green waste, batteries, waste electrical equipment, printer cartridges, chemicals, lightbulbs, textiles, cooking oil, furniture and abandoned bicycles. This plan/strategy will be supplemented, as required, with any new information on waste segregation, storage, reuse and recycling initiatives that are subsequently introduced. [Corrected from 'permitted waste contractors and removed off-site' to 'permitted waste contractors, and removed off-site'].

Provided the mitigation measures outlined in Chapter 8 are implemented and a high rate of reuse, recycling and recovery is achieved, the predicted effect of the operational phase on the environment will be **long-term, neutral** and **imperceptible**.

8.4 Cumulative Impact of the Proposed Development

Construction Phase

There are existing residential and commercial developments nearby. Due to the high number of waste contractors in the CCC region, as provided from the National Waste Collection Permit Office and the EPA, there would be sufficient contractors available to handle waste generated from these sites simultaneously, as required. Similar waste materials would be generated by all of the developments.

Other developments in the area will be required to manage waste in compliance with national and local legislation, policies and plans which will mitigate against any potential cumulative effects associated with waste generation and waste management. As such the cumulative effect will be **short-term, imperceptible** and **neutral**.

Operational Phase

There are existing residential and commercial developments nearby. All of the current and any potential developments will generate similar waste types during their operational phases. Authorised waste contractors will be required to collect waste materials segregated, at a minimum, into recyclables, organic waste and non-recyclables. An increased density of development in the area is likely improve the efficiencies of waste collections in the area.

Other developments in the area will be required to manage waste in compliance with national and local legislation, policies and plans which will mitigate against any potential cumulative impacts associated with waste generation and waste management. As such the cumulative effect will be a long-term, imperceptible and neutral.

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CHAPTER 9 | Land & Soils

9.1 Introduction

The Proposed Project is described in detail in Chapter 2 'Project Description'. The site of the proposed development is currently a greenfield site, predominantly in agricultural use, except for a few residential properties along its boundaries. It is located adjacent to Ennis Golf Club to the north/northeast, bounded by the N85 Ennis Bypass/Western Relief Road to the west, and by the R474 Regional Road (Circular Road) to the east.

There are seven private residential homes located between the eastern boundary of the site and the R474, and a small, newly built residential estate lies along the southern boundary. The development will also include ancillary public open space and residential parking spaces.

Infill material will be imported to the site. This material will consist of:

- Quarried products from facilities with valid planning permission.
- Greenfield/inert soil imported under a Waste Permit issued by the local authority.
- Or materials approved as by-products by the Environmental Protection Agency (EPA), in accordance with Article 27(1) of the European Communities (Waste Directive) Regulations 2011.

According to EPA data (2022), there are no licensed waste or industrial activities within or directly adjacent to the site.

The impact of the proposed development on land, soils, geology and hydrogeology has been assessed. The objectives of the assessment were to:

- Establish a baseline study of the existing environment.
- Identify likely significant effects during both construction and operational phases.
- Identify mitigation measures to avoid, reduce, or remediate significant impacts.
- Assess residual and cumulative effects of the proposed development in combination with other nearby developments.

9.2 Construction Phase

Earthworks will be required to re-profile the site to match the proposed design levels. It is intended to maintain a cut-fill balance, with all excavated soils reused on-site. Mitigation measures are proposed to manage potential impacts on land, soils, and geology during the construction phase.

9.3 Potential Impacts

9.3.1 Operational Phase

The operational phase will involve typical residential activity and will not result in significant additional disturbance to land, soils, or geology.

9.3.2 Cumulative Impact

An assessment of cumulative impacts with other nearby developments has been carried out. No significant cumulative impacts on land, soils, or geology are anticipated because of the proposed development.

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9.4 Mitigation Measures

- Topsoil stockpiles will be protected, located away from surface water drains, and positioned to avoid double handling.
- Runoff from exposed subsoil areas will be directed to on-site settlement ponds, where sediment will be managed prior to controlled discharge.
- Only the minimum amount of fill material required for immediate works will be stored on site.
- Temporary stockpiles will be protected to prevent sediment-laden runoff.
- Haul routes will be pre-determined to minimise widespread soil compaction.
- All stripped topsoil is expected to be reused within the development area, primarily in landscaping of back gardens and public open spaces.

9.5 Conclusion

With the implementation of the identified mitigation measures, the proposed development will have a long-term, not-significant negative effect on land, soil, and the geological/hydrogeological environment. Impacts will be effectively managed through best practice construction methods and responsible environmental management.

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CHAPTER 10 | Water and Hydrology

10.1 Introduction

The impact of the proposed development on water and hydrology has been assessed. The objectives of the assessment were to:

- Produce a baseline study of the existing environment.
- Identify likely significant effects of the proposed development during the construction and operational phases.
- Identify mitigation measures to avoid, remediate, or reduce significant effects.
- Assess significant residual and cumulative effects of each aspect of the proposed project, both cumulatively and in combination with other developments.

The site is gently undulating and comprises open fields with encroaching scrub from overgrown/rank hedgerows. Surface water drainage is primarily via the Claureen River, which runs northwest of the northern development boundary and flows in a northeast direction. The Claureen River, also known as the Inch River, converges with the River Fergus farther to the northeast, which ultimately discharges into the Fergus and Shannon Estuary. Regional and local hydrology is closely connected to the hydrogeological setting of the wider development area.

10.2 Potential Impact

10.2.1 Construction Phase

The risk of impact to the Claureen River during construction is temporary and can be managed by implementing suitable water management and sediment control practices. Earthworks will be carried out to reprofile the site to the proposed design levels. It is proposed to keep all soils on site to achieve an earthworks balance. Mitigation measures have been proposed to manage the impact on surface water.

10.2.2 Operational Phase

The developable area and open attenuation pond are located outside the predicted flood extents of the Claureen River. All works within the floodplain will be drainage-related and will not impact existing ground levels, fluvial flow routes, or floodplain storage. The operational phase of the residential development involves typical residential activities and will not cause significant disturbance to the water environment. However, storm drainage from the site during operation may release sediment and potential pollutants into local drainage channels.

10.3 Mitigation Measures

The use of plant and machinery during construction requires the storage and use of fuels and oils. Any vehicle servicing on-site will be confined to designated areas. Spill kits will be kept on-site to ensure immediate response to any spillages or leakages, and staff will be trained in their proper use. Fuel storage tanks for plant and machinery will be self-contained, bunded, and double-walled. Refuelling will be conducted from these tanks or delivery vehicles at designated areas. The design of all bunds will comply with EPA bunding specifications. Details of spill protection measures and emergency spill response procedures will be included in a Construction and Environmental Management Plan (CEMP).

Earthworks will be scheduled to avoid severe (wet) weather conditions. If such weather is forecast, suitable measures will be taken to secure the works.

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Following the Site-Specific Flood Risk Assessment, the site/zoned developable area is located within Flood Zone C, as defined by the Guidelines. No proposed dwellings are located within Flood Zones A or B. Surface water runoff from the site will be attenuated to the greenfield runoff rate. Surface water discharge rates will be controlled by a Hydrobrake-type vortex control device combined with below-ground attenuation storage. Sustainable Urban Drainage Systems (SuDS) will be implemented for the proposed development.

10.4 Cumulative Impact

The cumulative impact of adjacent developments has been assessed. No significant cumulative impacts on land, soil, and geology are expected due to the proposed development.

10.5 Conclusion

The project will have a not-significant negative long-term effect on the land, soil, geological, and hydrogeological environment, due to the implementation of identified mitigation measures and appropriate development management.

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CHAPTER 11 | Biodiversity

11.1 Introduction

The assessment of Biodiversity is contained within Chapter 11 of Volume II. The chapter assesses the potential significant effects of the proposed development on the ecology of the surrounding area and within the potential zone of influence (ZOI).

11.2 Existing Environment

The site consists primarily of agricultural grassland, hedgerows and scrub. The proposed development is located 932 meters from the nearest Natura 2000 site (Lower River Shannon SAC) and has an indirect hydrological link to several protected areas via surface water and groundwater. In the absence of mitigation there is potential for pollutants to affect these sites during construction, including impacts on water quality and habitats. Additionally, the site lies within the foraging range of the protected Lesser Horseshoe Bat, associated with nearby SACs.

11.2.1 Do Nothing Scenario

Due to the zoning of the subject site, it would be expected that in the absence of this subject proposal a development of similar scale and nature would be progressed. Under this scenario, in the absence of specific development details, it is likely that the effect would be similar to this proposal as outlined below. However, in the absence of any development on the site it would be expected that the hedgerow, scrub and treeline habitats would continue to be utilised by local bird, mammal and bat populations.

11.3 Impacts

11.3.1 Construction Phase

In the absence of mitigation, the proposed development is likely to result in direct negative impacts on existing habitats, flora, and fauna, primarily due to the removal of vegetation and disturbance from construction activities such as site clearance and re-profiling. The site supports dense scrub and hedgerows that offer valuable nesting and foraging resources for birds and bats. The site lies within the 2.5 km foraging range of the Lesser Horseshoe Bat (*Rhinolophus hipposideros*) populations associated within nearby SACs, a species of conservation importance listed under Annex II of the Habitats Directive, and the loss of vegetation and increased lighting could potentially impact this light-sensitive species. The site is also hydrologically and hydrogeologically connected to several European sites (SACs and SPAs) within a 15 km radius, including the Lower River Shannon SAC and River Fergus Estuaries SPA, creating potential for pollutants to affect sensitive downstream habitats. Evidence of badger activity on site and otters using the nearby Claureen River further highlights the ecological value of the area. In the absence of appropriate mitigation, the impacts are considered moderate adverse, mostly local and short-term, but with potential for significant effects on protected species and designated sites.

11.3.2 Operational Phase

Once constructed, the site would be seen as a stable ecological environment. Surface water from the site will ultimately discharge to the Claureen River, with potential for silt, pollutants, and petrochemical contaminants to impact aquatic ecology; however, these impacts are assessed as minor adverse, local, long-term, and not significant with standard mitigation in place. The site lies within the 2.5 km foraging range of Lesser Horseshoe Bats associated with nearby SACs, and the removal of vegetation, along with artificial lighting, may impact on bat foraging and commuting activity. As

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a result, sensitive lighting strategy, including 2700K LED luminaires with full cut-off optics and avoidance of light spill into adjacent habitats, extensive woodland planting and roost construction will be implemented to minimise impacts. The development may also result in increased disturbance to birds and protected terrestrial mammals such as badgers and otters, though impacts are considered not significant with appropriate mitigation. Landscaping and compensatory habitat creation, including linear woodland planting, are expected to mitigate impacts over time.

11.3.3 Cumulative Impact

An assessment of cumulative impacts with other nearby developments has been carried out. It is considered that in combination effects with other existing and proposed developments in proximity to the application area would be unlikely, neutral, not significant and localised. It is concluded that no significant effects on European sites will be seen as a result of the proposed development alone or combination with other projects.

11.4 Mitigation

11.4.1 Incorporated Design

The project will retain 401 linear metres of native hedgerows within the site and preserve additional native hedgerows along the western and eastern boundaries outside the site. Approximately 344 trees—including oak, ash, and beech—will be planted in structured treelines and woodland areas as part of the landscape design to enhance and support bat foraging habitat.

11.4.2 Construction Phase

During the construction phase, a series of biodiversity protection measures will be implemented alongside those outlined elsewhere in the EIAR. A pre-construction survey for bats and terrestrial mammals will be carried out. A 30m exclusion zone will be maintained around an active badger sett, and an Ecological Clerk of Works (ECoW) will oversee compliance with Habitats Directive, Wildlife Acts and Water Pollution Acts legislation. Tree and scrub removal will adhere to legal protections for nesting birds and roosting bats, with specific seasonal restrictions. Lighting during construction will be carefully managed to avoid disturbing sensitive species and habitats, with particular attention to bats, including the lesser horseshoe bat, and lighting of boundary vegetation will be avoided. Works near the Claureen River will be strictly managed to prevent contamination and potential impacts on downstream Natura 2000 sites, with specific mitigation measures in place.

11.4.3 Operational Phase

The biodiversity value of the site is expected to improve as landscaping matures, supported by a sustainable drainage and detailed landscape strategy, with operational mitigation measures including inspection of drainage connections and installation of 30 bird boxes. Specific bat conservation measures will be implemented, such as sensitive lighting design to reduce ecological impact, installation of bat boxes on mature trees, and creation of a Lesser Horseshoe Bat conservation zone along the Claureen River, featuring a Day Roost structure, hedgerow planting, and a dark, unlit corridor to support commuting routes. The landscape design emphasizes native species and night-scented plants like honeysuckle to enhance bat foraging areas, while maintaining the boundary with Ennis Golf Course to preserve ecological corridors, with added compensatory woodland planting and treelines to improve habitat connectivity and reduce light spill.

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11.5 Residual Impact Assessment

11.5.1 Construction Phase

Based on the successful implementation of the construction phase controls and the works to be carried out in accordance with this EIAR and the accompanying AA Screening/NIS, it is likely that there will be no significant ecological impact arising from construction works proposed for the proposed project. Designated conservation sites will not be impacted by the proposed development during construction. The mitigation measures incorporate a variety of standard and project-specific control measures designed to prevent adverse effects on protected species, important habitats, and watercourses throughout construction. These controls will prevent downstream ecological degradation via sedimentation or pollution pathways.

Effects: Moderate / National / Negative effect / Not significant /short term/likely. Standard mitigation and enhanced planting of linear woodlands will be in place on site.

11.5.2 Operational Phase

With effective implementation of operational phase controls in line with the EIAR and AA/NIS, the proposed development is unlikely to cause significant ecological impacts during operation, with no effects anticipated on designated conservation sites. Operational measures are designed to protect species, habitats, watercourses, and particularly the Inch/Claureen River, downstream Natura 2000 sites, and Lesser Horseshoe Bats. Although some light spill will occur, it has been minimized through careful design to avoid significant long-term impacts on biodiversity, especially Lesser Horseshoe Bats, provided mitigation measures are followed.

11.6 Monitoring

As outlined in Chapter 11, during the construction phase, a project ecologist will oversee site works and conduct pre-construction surveys for terrestrial mammals and bats. In the operational phase, post-construction bat monitoring will be carried out, including annual inspections of bat boxes for at least two years, detailed monitoring of the Day Roost through internal inspections, static surveillance over 10 summer days, and temperature data logging over two years. All bat mitigation measures will be evaluated for effectiveness, with a full summer bat survey recommended post-construction. Additionally, lighting will be monitored to ensure levels remain below 1 Lux along the site boundaries to minimize disturbance.

CHAPTER 12 | Noise and Vibration

12.1 Introduction

The assessment of Noise & Vibration is contained within Chapter 12 of Volume II. The chapter provides information on the assessment of noise and vibration impacts on the surrounding environment during the construction and operational phases of the project.

12.2 Existing Environment

The existing and future noise and vibration environments across the development site and in the vicinity of the nearest existing noise sensitive locations (NSLs) are dictated by transportation sources from the surrounding road network.

12.3 Impact Assessment

12.3.1 Do Nothing Scenario

The Do Nothing scenario includes retention of the current site without the proposed or cumulative development in place. In this scenario, noise levels at the site 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).

12.3.2 Construction Phase

The construction phase will involve rock excavation, site clearance, bulk excavation, road works, building construction works and landscaping. The assessment has determined that whilst there will be increased construction related noise at the closest noise sensitive locations to the proposed development, the majority of works can be controlled to within the adopted construction noise thresholds. The exceptions to this statement are during high noise level activities such as site clearance, bulk excavation, foundations and road works when works are within 60m of the closest noise sensitive locations and during superstructure, compounds and landscaping works which are within 25m of the closest noise sensitive locations in the absence of noise mitigation measures.

There are no construction vibration sources that will give rise to any significant vibration impacts.

12.3.3 Operational Phase

Once operational there are no noise sources associated with the proposed development that will give rise to any significant noise impacts. Operational activities are those which form part of the existing surrounding environment at neighbouring residential areas (estate vehicle movements, children playing etc.) and hence no significant impact is expected from this area of the development site.

Additional Traffic on Public Roads

During the operational phase, the predicted change in noise levels associated with additional traffic in the surrounding area is **neutral to negative, imperceptible to not significant and long-term.**

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Building Services Plant

Once the relevant noise criteria are not exceeded within the Proposed Development, the related noise impact to existing noise sensitive locations offsite will be **negative, not significant and long-term**.

Creche Playground

Considering the distance and screening from existing boundary treatments, activities from the crèche will be well below the range of baseline noise levels recorded to the east of the site. The resultant noise impact is therefore **neutral, not significant and long-term**.

12.3.4 Cumulative Impact

Cumulative Construction Noise Assessment

Cumulative noise levels associated with the cumulative construction phase of the proposed development have been considered. In the event that the proposed development phases of works are under construction at the same time, at the nearest noise sensitive location there is potential for elevated construction noise emissions due to cumulative noise as well as a potential increase in the length of time that the receptor will be exposed to construction noise. In a highly conservative cumulative assessment of construction noise, which is unlikely to occur, the significance of effects is expected to be negative, significant to very significant and temporary if the noisiest work activities were to occur simultaneously at the closest distances to the east of the site, if at all.

Cumulative noise levels associated with the construction phase of the proposed development and the external developments have also been considered. As the closest external project is at 1.5km distance, there is no cumulative impact from the construction of the sites and the proposed development will remain the dominant noise source at the closest noise sensitive locations surrounding the site.

Cumulative Construction Vibration

Any construction activities undertaken on the site will be required to operate below the recommended vibration criteria set out in Chapter 12. There are no significant cumulative vibration effects on buildings. The predicted cumulative vibration impact during the construction phase is **negative, slight to moderate and temporary** impact at the closest human receptors within 50m of the site boundaries.

12.4 Mitigation

12.4.1 Incorporated Design

The following mitigation measures are outlined for further review at the detailed design stage of the project:

The closest noise sensitive receptors to the operational building services and plant are within the development itself (i.e. they are much closer than off-site sensitive receptors). Therefore once the relevant internal noise criteria is achieved within the development at the detailed design stage, there are no additional mitigation requirements to control at off-site noise sensitive locations.

An assessment of inward noise levels from existing road traffic surrounding the proposed development has been undertaken. The building facades are expected achieve suitable internal noise levels with standard double glazing and therefore no mitigation measures are required.

12.4.2 Construction Phases

During the demolition and construction phases of the Proposed Development, the use of best practice noise control measures, hours of operation, scheduling of works within appropriate time periods, strict construction noise limits will ensure impacts are controlled to within the adopted criteria. Similarly, vibration impacts during the construction phase will be well controlled through the use of low vibration generating equipment as standard for residential construction sites.

12.4.3 Operational Phase

During the operational phase of the development, noise mitigation measures with respect to the impact of traffic from the development are not deemed necessary.

12.5 Residual Impact Assessment

During the construction phase, the residual construction noise impact is **negative, not significant to moderate and temporary to short-term**. The human perception of vibration effects is **negative, not significant to moderate and temporary to short-term**.

During the operational phase, the predicted change in noise levels associated with additional traffic in the surrounding area is **neutral to negative, imperceptible to moderate and long-term**. The predicted change in noise levels associated with buildings services in the surrounding area is **negative, not significant and long-term**.

The resultant residual inward noise effect will be of **neutral, not significant and long term**.

Once cumulative construction noise impacts are considered and managed during the construction phase potential cumulative impacts on nearby sensitive receptors can operate within five decibels above the construction noise thresholds adopted. The residual significance of effects are **negative, moderate and temporary to short-term** at the closest noise sensitive locations to the east.

The human perception of cumulative vibration effects is **negative, not significant to moderate and temporary to short-term**.

Overall, no significant noise and vibration impacts are predicted during the construction or operational phases of the proposed development or cumulative development.

12.6 Monitoring

As outlined in Chapter 12, during the construction phase, the appointed contractor will be required to carry out noise and vibration monitoring at site boundaries to the south and east of the site. These monitors will be set up where is the potential to exceed the construction noise thresholds i.e. when works are occurring within 60m of the site boundary and within 50m of vibration sensitive locations for human perception to noise, rather than cosmetic damage for buildings.

CHAPTER 13 | Air Quality

The assessment of Air Quality is contained within Chapter 13. The air quality assessment has focussed on:

- Potential construction dust emissions and impacts to nearby sensitive receptors such as residential properties, schools, hospitals, etc.
- Potential vehicle emissions from traffic accessing the site for construction works and during operation.

13.1 Existing Environment

Baseline data and data available from similar environments indicates that levels of nitrogen dioxide (NO₂), particulate matter less than 10 microns (PM₁₀) and particulate matter less than 2.5 microns (PM_{2.5}) and are generally well below the current National and European Union (EU) ambient air quality standards.

13.2 Impact Assessment

13.2.1 Do Nothing Scenario

In the Do Nothing scenario, the site will remain unchanged, and air quality will follow existing trends. These trends may be influenced by nearby developments and traffic. Since the site is zoned for development, a similar project is likely to be built in the future. As a result, air quality impacts are expected, even without the proposed development.

13.2.2 Construction Phase

An assessment of the potential dust impacts as a result of the construction phase of the proposed development was carried out based on the UK Institute for Air Quality Management 2024 guidance document '*Guidance on the Assessment of Dust from Demolition and Construction*'. This established the sensitivity of the area to impacts from construction dust in terms of dust soiling of property and human health effects. The surrounding area was assessed as being of high sensitivity to dust soiling and of low sensitivity to dust-related human health effects.

The sensitivity of the area was combined with the dust emission magnitude for the site under three distinct categories: earthworks, construction and trackout (movement of vehicles) to determine the mitigation measures necessary to avoid significant dust impacts. It was determined that there is a high risk of dust related impacts associated with the proposed development. In the absence of mitigation there is the potential for **direct, short-term, negative** and **slight** impacts to air quality, which is an overall **not significant** impact in EIA terms.

In addition, construction phase traffic emissions have the potential to impact air quality, particularly due to the increase in the number of HGVs accessing the site. Construction stage traffic did not meet the scoping criteria for a detailed modelling assessment outlined in Transport Infrastructure Ireland's 2022 guidance document '*Air Quality Assessment of Specified Infrastructure Projects – PE-ENV-01106*'. As a result a detailed air assessment of construction stage traffic emissions has been scoped out and the construction stage traffic emissions will have a **short-term, neutral** and **imperceptible** impact on air quality, which is an overall **not significant** impact in EIA terms.

13.2.3 Operational Phase

Operational phase traffic has the potential to impact air quality due to vehicle exhaust emissions as a result of the increased number of vehicles accessing the site. The change in traffic associated with the operational phase of the proposed development did not meet the PE-ENV-01106 criteria requiring a detailed air dispersion modelling assessment. Therefore, it can be determined that during the operational phase, the proposed development will have a **long-term, neutral, imperceptible** and **not significant** impact on air quality.

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13.2.4 Cumulative Impact

There is the potential for cumulative impacts to air quality should the construction phase of the proposed development coincide with that of other developments within 500 m of the site. A review of proposed/permitted developments in the vicinity of the site was undertaken. There were no permitted projects within 500 m of the proposed development site and therefore, there is no potential for cumulative construction dust impacts to nearby sensitive receptors.

The dust mitigation measures outlined in Section 13.9.2 of Chapter 13 will be applied during the construction phase which will avoid significant cumulative impacts on air quality. With appropriate mitigation measures in place, the predicted cumulative impacts on air quality associated with the construction phase of the proposed development is deemed **direct, short-term, negative** and **not significant**.

Operational phase direct impacts on air quality associated with the proposed development are predicted to be **direct, long-term, negative** and **imperceptible**.

Overall no significant cumulative impacts to air quality are predicted during the construction or operational phases of the proposed development.

13.3 Mitigation

13.3.1 Incorporated Design Mitigation

There is no incorporated design mitigation required for the development in relation to air quality.

13.3.2 Construction Phase

Detailed dust mitigation measures are outlined within Section 13.9.2 of Chapter 13 to ensure that no significant nuisance as a result of construction dust emissions occurs at nearby sensitive receptors. Once these best practice mitigation measures, derived from the Institute for Air Quality Management 2024 guidance 'Guidance on the Assessment of Dust from Demolition and Construction' as well as other relevant dust management guidance, are implemented the impacts to air quality during the construction of the proposed development are considered, **short-term, direct, negative** and **imperceptible**, which is overall **not significant** in EIA terms, posing no nuisance at nearby sensitive receptors (such as local residences).

13.3.3 Operational Phase

No site-specific mitigation measures are proposed for the operational phase. The impact to air quality has been assessed as **long-term, neutral, imperceptible** and **not significant**.

13.4 Residual Impact Assessment

When the dust mitigation measures are implemented, the residual effect of fugitive emissions of dust and particulate matter from the site will be **short-term, direct, localised, negative** and **not significant**.

The impact to air quality during the operational phase of the proposed development as a result of emissions from vehicles accessing the site have been assessed as having a **short-term, direct, localised, neutral** and **not significant**.

13.5 Monitoring

Monitoring of the dust mitigation measures will be required as set out in Section 13.14.1 of Chapter 13 and the Construction Environmental Management Plan. The monitoring requirements will ensure that the dust mitigation measures are working satisfactorily.

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CHAPTER 14 | Climate

The assessment of Climate is contained within Chapter 14 of Volume II. The climate assessment has incorporated the following assessments:

- The potential greenhouse gas emissions during the construction and operational phases of the development.
- The vulnerability of the project to climate change, including considerations for increased rainfall and other projected climate impacts.
- The design measures to enhance the project's resilience to future climate risks, such as incorporating drainage systems for increased rainfall.

14.1 Existing Environment

The existing climate baseline can be determined by reference to data from the EPA on Ireland's total greenhouse gas (GHG) emissions and alignment with Ireland's 2030 sectoral emissions ceilings and carbon budgets. The EPA state that Ireland had total GHG emissions of 58.8 Mt CO₂e in 2023. This is 2.22 Mt CO₂e higher than Ireland's annual target for emissions in 2023. EPA projections indicate that Ireland has used 63.9% of the 295 Mt CO₂e Carbon Budget for the five-year period 2021-2025. Further reduction measures are required to stay within the budget requirements.

14.2 Impact Assessment

The potential impacts on climate have been assessed in two distinct ways – a greenhouse gas assessment (GHGA) and a climate change risk assessment (CCRA). The GHGA quantifies the GHG emissions from a project over its lifetime and compares these emissions to relevant carbon budgets, targets and policy to contextualise magnitude. The CCRA considers a project's vulnerability to climate change and identifies adaptation measures to increase project resilience.

The impact of the construction and operation of the proposed development on Ireland's total national greenhouse gas emission is compared to Ireland's 2023 total greenhouse gas emissions, the relevant sectoral emissions ceilings and 2030 carbon budgets. Any adverse impacts are predicted to primarily occur during the construction phase, with the dominant sources of greenhouse gas emissions as a result of the development due to the embodied carbon associated with the building materials for the proposed development.

14.2.1 Do Nothing Scenario

In the Do-Nothing scenario, 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).

As the site is zoned for development, it is likely that in the absence of the proposed development a development of a similar nature would occur. Therefore, the predicted climate impacts within this report are likely to occur even in the absence of the proposed development.

14.2.2 Greenhouse Gas Assessment

14.2.2.1 Construction Phase

Calculation of the GHG emissions associated with the construction of the proposed development was calculated using information on the lifecycle assessment completed by the project developer on their typical house builds and the online Transport Infrastructure Ireland Carbon Assessment Tool. The GHG emissions associated with the proposed development are predicted to be a minor fraction of Ireland's 2030 carbon budget of 27.7 MtCO₂e. The proposed development will

incorporate a number of mitigation measures as well as sustainable policy measures from the project developer, the proposed development is aligned with Ireland's GHG trajectory to net zero by 2050.

14.2.2.2 Operational Phase

GHG emissions during the operational phase due to operational energy usage. A number of measures have been incorporated into the design to ensure the operational phase emissions are minimised. Operational phase traffic emissions of CO₂e are not predicted to be significant due to the low level changes in traffic associated with the proposed development.

14.2.2.3 Climate Change Risk Assessment

A CCRA was conducted to consider the vulnerability of the proposed development to climate change, as per the TII 2022 PE-ENV-01104 guidance. This involves an analysis of the sensitivity and exposure of the development to future climate hazards which together provide a measure of vulnerability. The hazards assessed included flooding (coastal, pluvial, fluvial); extreme heat; extreme cold; drought; extreme wind; lightning, hail and fog; wildfire and landslides. The proposed development is predicted to have at most low vulnerabilities to the various climate hazards and therefore climate change risk is considered **direct, long-term, negative** and **imperceptible**, which is considered overall **not significant** with regard to the construction and operational phase.

Overall, no significant impacts to climate are predicted during the construction or operational phases of the proposed development.

14.2.4 Cumulative Impact

With respect to the requirement for a cumulative assessment PE-ENV-01104 states that *"the identified receptor for the GHG Assessment is the global climate and impacts on the receptor from a project are not geographically constrained, the normal approach for cumulative assessment in EIA is not considered applicable. By presenting the GHG impact of a project in the context of its alignment to Ireland's trajectory of net zero and any sectoral carbon budgets, this assessment will demonstrate the potential for the project to affect Ireland's ability to meet its national carbon reduction target. This assessment approach is considered to be inherently cumulative"*.

As a result, the cumulative impact of the proposed development in relation to GHG emissions is considered **direct, long-term, negative** and **slight**, which is overall **not significant** in EIA terms.

14.3 Mitigation

14.3.1 Incorporated Design

A number of mitigation measures have been incorporated into the design of the proposed development. The development will be in compliance with the requirements of the Near Zero Energy Building (NZEB) Standards and will achieve a Building Energy Rating (BER) in line with the NZEB requirements. Additionally, other measures have also been incorporated into the design of the proposed development to mitigate the impacts of future climate change. To address future climate change risks, the design includes mitigation measures such as adequate drainage systems to manage a 20% increase in rainfall, consistent with the 'Medium Risk' RCP4.5 scenario (2021-2050).

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14.3.2 Construction Phase

A number of best practice mitigation measures are proposed for the construction phase of the proposed development to ensure that impacts to climate are minimised. The project developer, Glenveagh Properties, has committed to achieving Net Zero by 2050 across its whole business. Therefore, the proposed development will be built with carbon reduction and sustainability in mind and will include reductions of embodied emissions during the construction phase.

14.3.3 Operational Phase

During the operational phase the primary focus will be on operational energy usage and outlined through the incorporated design mitigation. Sustainable travel modes will be encouraged through support facilities for cycling, and infrastructure for electrical vehicle charging points.

14.4 Residual Impact Assessment

The impact to climate as a result of a proposed development must be assessed as a whole for all phases. The proposed development will result in some impacts to climate through the release of GHGs. TII PE-ENV-01104 guidance references the IEMA guidance which states that the crux of assessing significance is *“not whether a project emits GHG emissions, nor even the magnitude of GHG emissions alone, but whether it contributes to reducing GHG emissions relative to a comparable baseline consistent with a trajectory towards net zero by 2050”*. The proposed development has proposed some best practice mitigation measures and is committing to reducing climate impacts where feasible. Once mitigation measures are put in place, the effect of the proposed development in relation to GHG emissions is considered **direct, long-term, negative** and **slight**, which is overall **not significant** in EIA terms.

In relation to climate change vulnerability, it has been assessed that there are no significant risks to the proposed development as a result of climate change. The residual effect of climate change on the proposed development is considered **direct, long-term, negative** and **imperceptible**, which is overall **not significant** in EIA terms.

14.5 Monitoring

There is no monitoring proposed during the construction or operational phase in relation to climate.

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CHAPTER 15 | Cultural Heritage

15.1 Introduction

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

The assessment was based on a programme of desktop research combined with a number of field surveys of the proposed development site. The primary sources reviewed for 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. Clare County Council's current Record of Protected Structures (RPS) and structures listed in the National Inventory of Architectural Heritage (NIAH) were reviewed in order to assess the designated architectural heritage resource. The desktop study also included reviews of historic mapping, publications and various online heritage sources.

The results of the field survey are described within the chapter and extracts from the photographic record compiled during the survey are presented in Appendix 15.1 of the EIAR.

15.2 Receiving Environment

There are no recorded archaeological sites located within the proposed development site while there are 15 examples within the surrounding 1km study area. One of these (CL033-170----) is located in close proximity to the western boundary of the proposed development site. This comprised a 19th-century lime kiln which was excavated in 2004 in advance of the construction of the N85 Ennis bypass and no longer remains at this location. There are no other recorded archaeological sites located within 300m of the boundary of the proposed development. A review of the current SMR database revealed that it contains no records for the presence of any unlocated archaeological sites within the two townlands that extend into the proposed development site (Keelty and Ballymacaula).

The Database of Irish Excavation Reports does not contain any entries for archaeological investigations within the proposed development site but does contain entries for investigations within surrounding townlands. A number of these were carried out in advance of the construction of the N85 Ennis bypass and identified sub-surface archaeological remains, including the lime kiln (CL033-170----) outside the west end of the proposed development site. A pre-construction programme of archaeological test trenching was carried out at the location of the housing estate directly outside the south end of the proposed development and nothing of archaeological significance was identified in this area.

The RPS and NIAH for County Clare do not list any designated architectural heritage structures within the proposed development site or its close environs. There are two country houses (Cahercalla House: RPS 045 and the Hermitage: RPS 850) listed in the Record of Protected Structures located within the surrounding 1km study and neither of these are located within 300m of the boundary of the proposed development. A review of historic cartographical sources revealed that there are no demesne lands or curtilage features associated within these two houses located within the proposed development site or its close environs. The proposed development site is not located within an Architectural Conservation Area, and none extend into the surrounding 1km study area. There are no extant structures of any date within the site boundary and the existing built environment within its immediate surrounds is uniformly modern in date. The cartographic sources examined for the study area comprised the first edition 6-inch Ordnance Survey (OS) map (published 1841) and the 25-inch OS map (published 1897) which depict the proposed development site as an area of

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vacant farmland. A review of aerial, satellite and LiDAR sources published online did not reveal any traces of potential unrecorded archaeological sites within the proposed development site.

The field survey of the proposed development site revealed that it comprises an area of vacant, overgrown pasture fields within undulating terrain containing areas of natural bedrock outcrops. There are no buildings of any date located within the site and no surface traces of any potential unrecorded archaeological sites were noted during the inspection. The townland boundary between Keelty and Ballymaculla extends in a northwest to southeast orientation through the southern half of the site and comprises an overgrown field boundary.

15.3 Impact Assessment

There are no extant recorded archaeological sites located in the proposed development site or within its close environs. The construction phase of the proposed development will, therefore, have no predicted impacts on the known archaeological resource. While there was no evidence for the presence of unrecorded archaeological features within the proposed development site identified during the desktop study and field inspection, the potential for the survival of unrecorded, sub-surface archaeological features within its boundary cannot be discounted. As the existence, nature and extent of any unrecorded archaeological features or artefacts within the proposed development site are unknown; the significance of potential construction phase impacts cannot be quantified but ground works during the construction phase will have the potential to result in permanent, direct, negative effects on any such remains and this will require mitigation.

There are no designated architectural heritage structures located within the proposed development lands or within 300m of its boundary and it contains no undesignated structures of architectural heritage interest. In addition, the proposed development site is not located within an Architectural Conservation Areas. The construction phase of the proposed development will, therefore, result in no predicted impacts on the architectural heritage resource.

A section of the townland boundary between Keelty and Ballymacaula extends through the interior of the proposed development site and continues outside its boundary. The construction phase of the proposed development will result in a direct, permanent, slight, negative impact on this element of the undesignated cultural heritage resource.

There are no recorded archaeological sites within the proposed development site and no extant examples are located within 300m of its boundary. The proposed development will, therefore, have no predicted impacts on the settings of any recorded archaeological sites during the operational phase. Following the successful implementation of archaeological mitigation measures presented in Section 15.7 of the chapter, it is predicted that no impacts will arise in relation to the potential archaeological resource within the proposed development site during the operational phase.

There are no designated architectural heritage structures located within the proposed development lands or within 300m of its boundary, it is not located within an Architectural Conservation Area and it contains no undesignated structures of architectural heritage interest. The proposed development will, therefore, have no predicted impacts on the architectural heritage resource during the operational phase.

No cumulative impacts on the setting of the cultural heritage assets within the wider landscape are predicted.

15.4 Mitigation

A pre-development geophysical survey of the proposed development site, under licence by the National Monuments Service (NMS), will be carried out following the clearance of vegetation overgrowth. A programme of targeted test trenching will then be carried out and will include targeted test trenching of any geophysical anomalies of archaeological potential and test trenching of the section of the townland boundary between Keelty and Ballymacaula within the proposed development site. In the event that any sub-surface archaeological features are identified during these site

investigations, their locations will be recorded and securely cordoned off while the NMS are notified of the discovery and consulted to determine further mitigation measures, which may entail preservation in situ by avoidance or preservation by record through a systematic archaeological excavation. All required cultural heritage mitigation measures will be enacted prior to and during the construction phase and, therefore, no mitigation measures during the operational phase are envisioned. The obligatory application and reporting processes required as part of licence applications to the NMS will allow for monitoring of the successful implementation of the mitigation measures.

15.5 Residual Impacts

The proposed development site and its close environs do not contain any extant recorded archaeological sites or designated architectural heritage structures and no residual impacts on these elements of the cultural heritage resource are predicted. The mitigation measures presented in Section 15.7 of the chapter will provide for either the preservation *in situ* of any unknown archaeological features within the proposed development site or the proper and adequate recording of such features by full archaeological excavation. Preservation *in situ* shall allow for a negligible magnitude of impact resulting in a potential not significant/imperceptible significance of effect in the context of residual impact on the unrecorded archaeological resource. Preservation by record shall allow for a high magnitude of impact, albeit ameliorated by the creation of a full and detailed archaeological record, the results of which shall be publicly disseminated. This shall result in a potential slight/moderate range of significance of effect in the context of residual impacts on the unrecorded archaeological resource.

CHAPTER 16 | Risk of Major Accidents and Disasters

16.1 Introduction

This assessment is a review of major accident hazards and disasters based on the engineering design, drawings and documentation.

16.2 Methodology

Alongside the legislation, policy, and guidance outlined in Chapter 1, the following relevant legislation, policy, and guidance has informed the preparation of this chapter:

- EPA 'Guidelines on the Information to be contained in Environmental Impact Assessment Reports' (2022),
- EPA 'Advice Notes on Current Practice in the Preparation of Environmental Impact Statements' (2018),
- Health and Safety Authority Guidance on Technical Land-Use Planning Advice, for planning authorities and COMAH establishment operators (2023)
- Chemicals Act (Control of Major Accident Hazards Involving Dangerous Substances) Regulations 2015
- HSA Guide to the COMAH Regulations 2015 (S.I. No. 209 of 2015)
- Building Regulations (Part A Amendment) Regulations 2012 (as amended) (SI No. 138 of 2012)
- Safety, Health and Welfare at Work (Construction) Regulations 2013 (as amended) (hereafter referred to as the Safety, Health and Welfare (Construction) Regulations) (S.I. No. 291 of 2013)
- A Framework for Major Emergency Management. Guidance Document 10 (DECLG 2015)

16.3 Baseline Environment

16.3.1 Seveso Establishments

There are no Seveso establishments within 10km of the Proposed Development; therefore, there are no constraints to the Proposed Development at this location from nearby Seveso establishments.

16.3.2 Flood Risk

Based on the results of the Drainage impact Assessment the developable area is located outside the predicted flood extents of the Claureen River and the proposed drainage is considered 'appropriate' in line with the PSFRM and SuDS Guidelines. It is concluded that the risk of flooding to the proposed development will be minimal; therefore, the likelihood of a flood impacting the Proposed Development is unlikely and not significant.

16.3.3 Seismic Activity

There is no significant seismic activity recorded in the vicinity of the Proposed Development. Therefore, the likelihood of seismic activity impacting the Proposed Development is unlikely and not significant.

16.3.4 Landslides

The Proposed Development and the surrounding area have a low susceptibility of landslides. Therefore, the likelihood of a landslide impacting the Proposed Development is unlikely and not significant.

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16.4 Characteristics of the Proposed Development

The Proposed Development is a non-COMAH site and the Chemicals Act (Control of Major Accident Hazards Involving Dangerous Substances) Regulations, 2015 (COMAH Regulations 2015) does not apply.

16.5 Predicted Impacts

The potential impacts of the construction and operational phases of the Proposed Development are outlined below.

16.5.1 Do Nothing Scenario

Under a 'do-nothing' scenario there is no known or anticipated change to the Major Accidents and Disasters risk at the Proposed Development site.

16.5.2 Construction Phase

General construction activities will include ground preparation, excavation, construction of structures. These activities will require the use of vehicles and tools. The hazards associated with activities include the potential for vehicle impact, particularly during reversing and vehicle overturning. The controls around this work will be managed by appropriate risk assessments to control the risks to people, the environment and also to the existing operational areas.

The following scenarios have been identified that could impact the construction phase of the project:

- Extreme heat or cold weather resulting in result structural damage and/or pollution to soils, groundwater, or surface waters.
- Compressed Gas Cylinder release
- Storm events resulting in structural damage and/or pollution to groundwater and surface waters.
- Flooding

The impact and likelihood of these scenarios have been assessed. It is concluded that there are no likely impacts to the Proposed Development or to off-site receptors during the construction phase in relation to major accidents and disasters.

16.5.3 Operational Phase

In the scoping phase for this EIAR the potential for impacts to human health and impacts to the environment were assessed.

The following scenarios have been identified that could impact the operational phase of the project:

- Extreme heat or cold weather resulting in result structural damage and/or pollution to soils, groundwater, or surface waters.
- Compressed Gas Cylinder release
- Storm events resulting in structural damage and/or pollution to groundwater and surface waters.
- Flooding

The impact and likelihood of these scenarios have been assessed. It is concluded that there are no likely impacts to the Proposed Development or to off-site receptors during the operational phase in relation to major accidents and disasters.

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16.5.4 Demolition

There will be no demolition as part of the proposed development.

16.5.5 Cumulative Effects

There are no expected impacts from developments in the vicinity of the Proposed Development, from a major accidents and disasters perspective, as such, there are no significant cumulative effects with the Proposed Development from a major accidents and disasters perspective.

16.6 Mitigation Measures

The Proposed Development has been designed in line with good industry practice, and, as such, mitigation against the risk of major accidents and/or disasters is embedded through the design and in accordance with planning and legislative requirements. As no likely significant effects were identified, no additional mitigation measures are proposed.

16.7 Residual Impacts

The residual effects are the final predicted or intended effects which occur after the proposed mitigation measures have been implemented. As no likely significant effects were identified, no additional mitigation measures are proposed. Therefore, residual effects are not relevant for this assessment.

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CHAPTER 17 | Interactions

The construction, operational and cumulative impacts of the proposed development have been assessed within each chapter of the EIAR. This chapter provides a summary of the significant interactions of impacts identified in the previous chapters.

All potential inter-relationships impact between the various areas covered in the EIAR are listed and the key interactions and interrelationships are summarised. Mitigation measures outlined where required.

With mitigation measures in place, no significant residual negative impacts are predicted.

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CHAPTER 18 | Summary of Mitigation Measures

Chapter 18 provides a consolidated summary of the proposed mitigation and monitoring measures identified across all environmental disciplines throughout the EIAR. These measures are designed to avoid, reduce, or offset any likely significant adverse impacts associated with the proposed development.

Each specialist chapter has identified specific measures tailored to their area of assessment, including but not limited to population and human health, land and soils, water, biodiversity, noise and vibration, and traffic and transport. These measures have been integrated into the project design or will be implemented during construction and operation as appropriate.

Some disciplines have also recommended monitoring following the implementation of mitigation. Monitoring will take place post-consent to verify that the development performs as predicted and that mitigation measures function effectively. This monitoring will help ensure compliance with consent conditions and performance standards and will provide early detection of any unexpected impacts or mitigation failures.

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