

CHAPTER FOUR PROJECT SCOPING & CONSULTATION

4.1 INTRODUCTION

The EPA Guidelines state that 'Scoping' is a process of deciding what information should be contained in an EIAR and what methods should be used to gather and assess that information. It is defined in the EC (2001) guidance as: *'determining the content and extent of the matters which should be covered in the environmental information to be submitted in the EIAR'*.

The EIAR will be prepared to address those aspects identified in Article 5 and Annex IV of the EIA Directive and Schedule 6 of the Regulations. The EIAR will also be prepared in the context of Section 4 of the Draft Guidelines on the Information to be Contained in the Environmental Impact Assessment Reports, prepared by EPA (2017).

4.2 SCOPING

4.2.1 Scoping Approach

Mandatory scoping is not a requirement under the European Union (Planning and Development) (Environmental Impact Assessment) Regulations 2018, although provision is made for formal scoping with the planning authority under S.173(2) of the Planning & Development Act 2000 – 2018. Formal scoping with the planning authority under S.173(2) of the Act was not undertaken, given the nature of the development.

The project was initially scoped with the applicant and within the design team based on the expertise and past experience of the EIAR contributors for similar projects. Existing activities and features on site and similar developments in other locations also informed the process, including previous and current planning applications adjacent to the subject site and within the overall masterplan site.

The scope of the EIAR, conducted in respect of the proposed development, has had regard to the following statutory and guidance documents:

- Statutory requirements of the Planning and Development Act 2000, as amended and the Planning and Development Regulations 2001 - 2022;
- Environmental Impact Assessment of Projects: Guidance on Scoping, European Commission, 2017
- Guidelines on the Information to be contained in Environmental Impact Statements and Advice Notes on Current Practice in the Preparation of an EIS both published by the Environmental Protection Agency 2003;
- Guidelines on the Information to be Contained in Environmental Impact Assessment Reports, August 2022;
- Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment August 2018, Department of Housing Planning & Local Government
- The requirements of Limerick City & County Council as detailed in the Limerick Development Plan 2022 – 2028; and
- The likely concerns of third parties.

4.2.2 Scoping Findings

Table 4.1 below documents the scoping exercise undertaken in respect of this EIAR

Environmental Aspect	Detailed Assessment	Justification
Population & Human Health	Yes	The proposed development has the potential to impact on population and human health, employment, local community and amenity uses, during the construction and operational phases.
Biodiversity	Yes	The subject lands are not located within any Natura 2000 or nationally designated conservation sites but is located within 15km of a number of designated sites. There are a number of habitats that have been recorded on site. The proposed development therefore has potential to impact on biodiversity
Land & Soils, Geology & Hydrogeology	Yes	The proposed development includes a cut and fill exercise that involves the movement and deposition of soil. The impacts on geology and hydrogeology should therefore be assessed in terms of the groundworks, construction and operational phase of the proposed development.
Hydrology – Surface Water & Flooding	Yes	The proposed development does have the potential to impact on water (including flood risk, hydrology and drainage) as there will be ground disturbance associated with the proposed development.
Air Quality & Climate	Yes	Construction and operational phases will have the potential to give rise to air quality impacts, principally relating to traffic associated with the proposed development.
Noise & Vibration	Yes	Construction and operational phases will have the potential to give rise to impacts relating to noise and vibration. A baseline noise survey has been undertaken to determine the prevailing noise level representative of the site and nearest noise sensitive locations.
Material Assets - Traffic & Transport	Yes	The transportation chapter of the EIAR is required to present an assessment of the potential traffic and transport impacts of the proposed development. The assessment will be influenced by the requirements set out within Traffic and Transport Assessment Guidelines TII, 2017.
Material Assets – Built Services	Yes	The Material Assets section of the EIAR will examine the likely significant effects of the construction and operation of the proposed development on intrinsic and valuable assets of material value.
Material Assets – Waste Management	Yes	The proposed development may generate waste arisings that will require management during construction and operation.
Cultural Heritage - Archaeology	Yes	The masterplan site is The Zone of Notification (ZoN) for one recorded archaeological site (as recorded by the Archaeological Survey of Ireland (ASI)) is located within the masterplan

		site - Children's burial ground. Further, given the largely undeveloped nature of the lands, an assessment is considered necessary.
The Landscape – LVIA	Yes	Given the scale of the buildings proposed when compared to the existing undeveloped nature of the subject lands, the LVIA will consider effects on the landscape character of the existing setting (i.e. as a result of the construction and existence of the proposed development) and visual impacts (i.e. the extent to which the proposed development when built will affect the landscape)
Daylight and Sunlight	No	The scale of the development at only two and three stories is reflective of the scale of development in the general area. Accordingly, it is considered that the scale of the development will not result in adverse impacts from a daylight, sunlight and / or overshadowing perspective.
Major Accidents and Disasters	No	The subject site is not located within any consultation distances of any Serveso II sites. As a result, there is no expected impact arising from major accidents or disasters in respect of the proposed development.
Interactions	Yes	There is the potential for multiple direct or indirect effects (from various environmental aspects) to result in an accumulation or magnified effects from the proposed development.
Cumulative Impacts	Yes	The proposed development will be in proximity to other permitted and proposed development and thus has the potential to exacerbate or create larger, more significant effects

Scoping is considered to be an iterative process and is ongoing throughout the development and preparation of the EIAR. In practice, it was undertaken on a continuous basis upon review of draft EIAR chapters and at fortnightly design team meetings.

4.3 CONSULTATION

Prior to lodging this application, the required information has been issued for the Department of Housing, Planning and Local Government's EIA Portal. The purpose of this tool is to inform the public, in a timely manner, of applications that are accompanied by an EIAR. The portal provides a URL link.

4.4 PRE – PLANNING MEETING

A pre-planning meeting was held with Limerick City & County Council on the 06th June 2021 and again on the 02nd June 2022 in respect of the proposed development for the entire masterplan site. Representatives from the Planning Department were present. The nature and extent of the proposed development in the context of the overall masterplan was presented at the meeting.

A number of issues were raised and discussed with the planning authority in respect of the proposed development. In summary the points discussed were as follows:

- Adjoining residential development needs to be considered and their amenities respected;
- The different phases of development need to be connected, visually and physically;
- Need for a greater mix of housing types;
- Delivery of services including the creche and local centre to be considered at an early stage, in tandem with the delivery of housing units;
- The design is to take into account DMURS standards and is to take account of the principles of safety, accessibility and sustainability; and
- Access to the development is to be designed around the proposed Coonagh – Knockalisheen Distributor Road network, including the section of the existing local road network which is currently being upgraded.

The issues raised by Limerick City & County Council have informed the overall design and have been comprehensively accommodated within the overall masterplan. The design rationale seeks to create a sustainable and successful development, providing a new sense of place with new services and facilities, but all within easy distance of the city centre. The development seeks to make the most efficient use of new road infrastructure in the area which has been delivered to facilitate development and open up lands for development purposes.

CHAPTER FIVE EXAMINATION OF ALTERNATIVES

5.1 INTRODUCTION

The presentation and consideration of various alternatives investigated by the project design team is an important requirement of the EIA process. This section of the EIAR document provides an outline of the main alternatives examined throughout the design and consultation process. This serves to indicate the main reasons for choosing the development proposed, taking into account and providing a comparison of the environmental effects.

This chapter should be read in conjunction with Chapter 3.0 'Spatial Planning Policy' as this provides the statutory and non-statutory support for residential development on the subject site, having regard to national, regional and local policy and objectives.

The Environmental Protection Agency's Advice Notes on Current Practice (in the preparation of Environmental Impact Statements) and, the Guidelines on the Information to be Contained in Environmental Impact Assessment Reports (EPA, 2022) suggests that 'alternatives' to the main reasons for choosing the proposed development, may be described at a number of levels including inter-alia; alternative locations, design/layout, processes and mitigation. The EPA Guidelines states:

"The objective is for the developer to present a representative range of the practicable alternatives considered. The alternatives should be described with 'an indication of the main reasons for selecting the chosen option'. It is generally sufficient to provide a broad description of each main alternative and the key issues associated with each, showing how environmental considerations were taken into account in deciding on the selected option. A detailed assessment (or 'mini-EIA') of each alternative is not required."

5.2 RATIONALE FOR THE PROPOSED DEVELOPMENT

The proposed development of 98 no. units is a logical extension to an area of the site which was recently granted planning permission for 99 no. residential units under P21/1800. This decision is currently on appeal to An Bord Pleanála by a third party. The rationale for the proposed development is to provide a residential development with ancillary facilities in a landscaped setting, in proximity to services and facilities in the western environs of Limerick City. The proposal is predicated on the zoning of the site as a residential development area in the Limerick Development Plan 2022 – 2028 whereby new residential development is envisaged. It is within this statutory planning policy context that all alternatives have been considered.

In order to meaningfully consider alternatives relating to the proposed development of 98 no. units, consideration must be given to the evolution of the overall masterplan for the site. Once this has been considered then the logic for the development proposal becomes obvious, as it is just part of an overall intended scheme of development.

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

- The need to achieve sustainable densities in accordance with national guidelines Sustainable Residential Development in Urban Areas and the policies of the Limerick Development Plan 2022 - 2028, given the location of the subject site in proximity to services and facilities but also having regard to the existing public transport network on the Old Cratloe Road, which is due for improvement and upgrade under the Limerick Strategic Metropolitan Area Transport Strategy.
- The topography of the subject site and existing site features, including the Children's Burial Ground (archaeological site), significant hedgerows and neighbouring landuses.
- The need to ensure any residential development provides a good mix of housing types which meet current market demands and which are deliverable in the short to medium term.
- The need to provide for high quality open space.
- Protection of existing trees and hedgerows where possible to enhance the amenity and biodiversity of the area.
- The quality of the urban environment to be delivered and the associated impact on human health.
- Access, permeability and connectivity with surrounding areas and land uses.
- The need for an overall balance in biodiversity such that there is no net loss and a net gain where possible on the site.

Notwithstanding the above, pursuant to Section 3.4.1 of the EPA Guidelines, the consideration of alternatives also needs to be cognisant of the fact that *"in some instances some of the alternatives described below will not be applicable – e.g. there may be no relevant 'alternative location'..."* The Guidelines are also instructive in stating: *"Analysis of high level or sectoral strategic alternatives cannot reasonably be expected within a project level EIAR... It should be borne in mind that the amended Directive refers to 'reasonable alternatives... which are relevant to the proposed project and its specific characteristics'"*.

5.3 ALTERNATIVE LOCATIONS

Riverpoint Construction Limited (the 'Applicant') acquired the site due to its established and long-term residential zoning under the Limerick City Development Plan 2010-2016. The zoning was recently carried forward into the newly adopted Limerick Development Plan 2022 - 2028 which was itself subject to the Strategic Environmental Assessment (SEA) process.

The Applicant considered the subject land to represent a suitable site for development, being primarily zoned for 'new residential' use. It is an objective of the Development Plan to provide for new residential development and other services associated with residential development. While housing is the primary use in this zone, recreation, education, crèche/playschool, sheltered housing and small corner shops are also envisaged, subject to the preservation of neighbouring residential amenity.

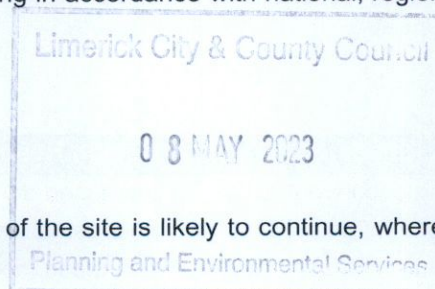
Prior to the acquisition, the site's ability to satisfy environmental criteria was considered by the applicant and it was found to offer the following attributes;

- The subject site offered the opportunity to bring a vacant greenfield site adjoined by existing residential development and educational uses into productive use, thus promoting the principles of compact growth.
- The site's location within a 6 minute walking distance of a bus stop on bus route No.302 on the Old Cratloe Road, along with its proximity to the Technological University Shannon (TUS) which has the potential to promote a modal shift from the private car to more sustainable forms of transport. This in turn would assist with achieving overarching environmental objectives such as improved air quality (CO₂, NO₂ and particulate emissions) and a reduction in noise pollution.
- The proximity of the site to significant employment nodes such as TUS, Thomond Park, Coonagh Cross, and Clondrinagh Industrial Estate would facilitate sustainable living in proximity to the workplace.
- The site is not subject to any statutory nature conservation designation and although there is a hydrological pathway via a drainage ditch which feeds into the flow network to a Designated European Site (Lower River Shannon SAC and River Shannon and River Fergus Estuaries SPA, any potential impacts can be mitigated through appropriate design measures.
- Given the site is zoned for development, and adjoins existing urban development to the east, including new road infrastructure, its capacity to absorb development without significantly effecting the existing landscape and visual characteristics of the surrounding area is high.
- The site is not located within an area identified as susceptible to flooding.

In light of the foregoing and following consideration of environmental and planning factors at a high level, it is considered that the masterplan site and proposed development is an appropriate location for residential development from an environmental perspective. The proposal adopts a plan led approach to development and seeks to deliver much needed housing in accordance with national, regional and local policy and guidance documents.

5.4 "DO NOTHING" ALTERNATIVE

In the event of the 'do-nothing' scenario, the current use of the site is likely to continue, whereby the majority of the lands would remain in agricultural use.



Having regard to the quantity of residential units proposed on the overall masterplan site and within the proposed development, with particular regard to the quantity and location of other zoned land in Limerick City, it is likely that in the event of a 'do-nothing' scenario, the core strategy and the requirement for an additional 11,054 households over the plan period would not be satisfied. This would likely have significant implications from a population and human health perspective.

The additional pedestrian and vehicular traffic movement that would be generated by the proposed project would not require to be catered for on the local network in a 'do nothing scenario'. Similarly, the additional demand / support for local infrastructure, services, and businesses would not be generated by any new population on site; nor would local housing demand be catered for.

A 'do-nothing' scenario was considered to represent an inappropriate, unsustainable and inefficient use of these strategically located residential zoned lands; particularly having regard to the opportunity to provide much needed housing in Limerick City.

As a result of the zoning of the lands and the specific reference to the strategic importance of the site from a residential capacity perspective contained within the Development Plan, together with consideration of the proximity of the lands and accessibility to Limerick City, the 'do-nothing scenario' was discounted.

5.5 ALTERNATIVE DESIGNS

5.5.1 Masterplan Approach

The design approach for the proposed development is presented in the Architectural Design Statement prepared by the project architects, Fewer Harrington Architects and it should be read in conjunction with this chapter of the EIAR.

In summary, the proposed masterplan layout is designed to function as a sustainable and successful residential neighbourhood and accommodate a thriving sustainable community. The design of the scheme adopts an urban form with residential buildings arranged around a series of pocket green spaces, generally characterised as tree-lined lawns similar to a village green. The proposed development has sufficient variety in scale and form to respond to the scale of neighbouring two and three storey developments. In this regard the proposed development generally maintains the existing building scale.

A pre-planning meeting was held with Limerick City & County Council on the 06th June 2021 and again on the 02nd June 2022 and a number of matters were raised regarding the overall masterplan layout. Issues highlighted that are relevant to the environmental performance of the scheme are set out in the Table 5.1 below.

Issues Raised	Design Response	Environmental Improvements
Massing and layout of development needed reconsideration as it was based on a low density housing scheme	Increased density in line with national guidelines and enhanced mix of typologies to meet the needs of different demographics and tenure typologies.	<p>Population & Human Health</p> <p>The design amendments resulted in;</p> <ul style="list-style-type: none"> ✓ greater diversity of tenure mix, integrated development and more sustainable compact growth. <p>Climate Change</p> <ul style="list-style-type: none"> ✓ greater density results in greater landuse efficiencies in line with the core strategy and an overall reduction in greenfield landtake.
Redesign of residential blocks to provide for a streetscape along the	Change in design approach to provide a continuous frontage along the central	<p>Population & Human Health</p> <p>The design amendments resulted in;</p>

central access road and to address public safety concerns and visual impact considerations	access spine, thereby facilitating a strong urban edge to the public realm, creating more human scale boundary conditions, and active frontage.	<ul style="list-style-type: none"> ✓ increased passive surveillance of the adjacent public roads which in turn creates a sense of security for future occupants and the public. ✓ enhanced quality of place and animation of the public realm and open space. ✓ Natural overlooking of green spaces and public roads thereby creating safe, healthy and useable areas. <p>Landscape & Visual</p> <p>The reorientation of buildings contributes to;</p> <ul style="list-style-type: none"> ✓ a positive streetscape character, with building frontages and entries onto the surrounding road network. ✓ Allows the creation of local green spaces and neighbourhood clusters thereby enhancing the overall visual quality of the scheme.
Reorientation and increased separation distances between blocks to allow for optimum sunlight penetration into communal spaces, particularly within the local neighbourhood centre.	The units are orientated in a manner which provides maximum daylight during the course of the day and reducing the effect of over-shadowing on nearby buildings	<p>Climate Change</p> <ul style="list-style-type: none"> ✓ The incorporated design amendment improves solar gain within the proposed scheme. This in turn improves the energy efficiency of the development thus minimising energy use and in turn decreasing Greenhouse Gas Emissions associated with the combustion of fossil fuels.
Reorientation of the houses on the southern boundary to overlook the Children's Burial Ground and to facilitate linkages.	Amended linkages internally within the development proposal.	<p>Human Health</p> <ul style="list-style-type: none"> ✓ Improved linkages and increased permeability promote walking and cycling. <p>Climate Change/Air Quality</p> <ul style="list-style-type: none"> ✓ Increased connectivity allows for greater access to alternative modes of transport including cycling and walking thus reducing the need for trips by car which in turn reduces emissions and benefits local air quality.
Reconsideration of the street hierarchy and building massing to provide an urban neighbourhood with good legibility	Whilst 6 no. different areas of open space are proposed within the masterplan area, there is a larger area of open space provided centrally	<p>Population & Human Health</p> <ul style="list-style-type: none"> ✓ The inclusion of well considered public open space will contribute to a sense of identity and place in the

	<p>within Phase 1. Larger 4 bed semi-detached units 'book-end' the rows of housing thereby accommodating legibility within the site and contributing towards enhanced urban design within the overall scheme.</p>	<p>proposed scheme thereby enhancing quality of life for future users.</p> <p>✓ The inclusion of a network of pedestrian routes through the scheme and connecting with the wider area will have direct public health benefits.</p> <p>Biodiversity</p> <p>✓ The inclusion of extensive tree planting within the open space and the retention of hedgerows on the boundary of the masterplan site will provide a habitat for wildlife and will enhance biodiversity within the proposed development.</p>
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Table 5.1 Design Amendments & Environmental Improvements

On foot of the pre planning meeting, the masterplan scheme was revised. Further, the masterplan has responded to issues raised in individual planning applications as they have been assessed and developments approved.

In summary, the scheme has evolved from its original form and the consideration of alternative designs has resulted in significant environmental improvements in terms of the landscape and visual contribution that the proposed development will contribute to this area of Castletroy.

The comprehensive landscape plan will contribute to improved biodiversity and mitigates against the effects of climate change. Human health will benefit from the prioritisation of pedestrian and cycle linkages to the wider area and the Urban Greenway and this will in turn promote a modal shift and reduce the need to travel by car.

5.5.2 Proposed Development

The proposed development has evolved from the masterplan concept agreed with the planning authority. The development has been revised on foot of a further information request from the planning authority (P22/959), has been influenced from feedback provided at pre-planning stage.. This iterative process inter alia highlighted environmental matters that informed the consideration of alternative layouts and designs including; open space provision, addressing the issues of population and human health in a city environment, biodiversity, and transportation.

5.6 ALTERNATIVE PROCESSES

This is not considered relevant to this EIAR having regard to the residential nature of the proposed development.

5.7 ALTERNATIVE MITIGATION MEASURES

The mitigation measures outlined in the various chapters are considered appropriate to the location, nature and extent of the project and its potential impacts. As such, no alternative mitigation measures were considered.

5.8 CONCLUSION

Having examined various reasonable alternative designs, it is considered that the proposed design is a preferable option in terms of the sustainable development of the subject site insofar as the overall masterplan achieves circa 448 no. residential units with associated infrastructure. The net residential density achieved within the overall masterplan is 37.3 units per hectare.

The proposed creche and local neighbourhood centre, both the subject of separate planning applications and phases of development (P22/790 & P22/917), will assist in the place-making of the proposal and will contribute to fostering strong connections between the new population on site and the wider community. The current design of the application proposal achieves a strong mix of housing types, sizes, and designs and the introduction of apartment units in Phase 1 addressing the Children's Burial Ground within the overall masterplan development proposal has resolved the difficulty of achieving a critical mass of housing and presents a strong urban form.

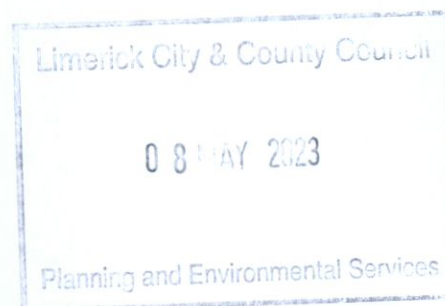
5.9 REFERENCES

National Planning Framework

Limerick Development Plan 2022 - 2028

Environmental Protection Agency's Advice Notes on Current Practice (in the preparation of Environmental Impact Statements)

Guidelines on the Information to be Contained in Environmental Impact Assessment Reports (EPA, 2022)



CHAPTER SIX POPULATION & HUMAN HEALTH

6.1 INTRODUCTION

There are a wide range of issues which may impact on population and health. The purpose of this assessment is to identify and assess the potential health and wellbeing effects of the proposed development on the surrounding population, and to deliver evidence-based recommendations that maximise health benefits and reduce or remove potentially negative impacts.

The Guidelines on the Information to be Contained in Environmental Impact Assessment Reports (EPA, 2022) suggests that; *“the assessment of impacts on population and human health should refer to the assessments of those factors under which human health effects might occur, as addressed elsewhere in this EIAR e.g. under the environmental factors of air, water, soil etc.”*

In the application of this approach, consideration of the potential impacts of the proposed development on population and human health might therefore arise from a number of variables. For example; traffic and transportation, townscape and visual (landscape), water quality and biodiversity. These aspects are dealt with in the specific chapters in this EIAR which are dedicated to those topics. This Chapter refers to the findings of those assessments included elsewhere in this EIAR which human health effects might occur.

In addition to human health considerations, this chapter will assess the impacts the proposed developments will have on; (i) Demographics, (ii) Employment, and (iii) Community, with specific regard to economic activity, social considerations, land-use and health & safety.

The principal receptors that may be impacted by the proposed development include residential receptors; direct and indirect economic receptors; social and community facilities; and the transient population.

6.2 ASSESSMENT METHODOLOGY

The baseline information was gathered using desk top analysis of available mapping and aerial images; visits to the site and the surrounding area; analysis of census of population data; review of relevant documents; and a review of comments from statutory bodies during the scoping process.

A desk top analysis of current census data from the Central Statistics Office (CSO) and other national databases (see Section 6.9 for references) was undertaken including an assessment of demographic and employment figures.

The preparation of this Chapter was also informed by desktop studies of relevant policy documents and data sources including:

- Central Statistics Office (2021) – Census 2016, Census 2011, Census 2006
- Central Statistics Office (2021) – CSO PxStat
- ESRI (2021) - Quarterly Economic Commentary, Winter 2020

- DoHPLG (2017) - Rebuilding Ireland – Action Plan for Housing and Homelessness
- Childcare Act (1991) - (Early Years Services) Regulations 2016
- Tusla Early Years Inspectorate Reports (2021) – Registered Childcare Facilities
- Department of Health (2021) – Health in Ireland, 2019
- Health Safety Authority (2021) – www.hsa.ie
- HSE Service Records (2021) – www.hse.ie
- ECAD (2021) – Eircode Address Database
- Google Maps and Places (2021)

In order to assess the likely significant impacts of the proposed development on population and human health, an analysis of recent Census data was undertaken relating to the economic, demographic and social characteristics of the study area. For the purposes of this demographic analysis, the study area comprises 2 No. distinct enumeration areas identified by the Central Statistics Office (CSO) of relevance to the subject development, as follows:

1. The local Electoral Division (ED) study area to which the subject site belongs, comprised of 10 No. ED's on the northern side of the river including Ballynanty, Kileely A, Kileely B, Castle A, Castle B, Castle C, Castle D, Coolrairie, Limerick North Rural and Farranshone; and
2. The larger combined Limerick City and County Local Authority (LA) administrative boundary.

These enumeration areas are identified in Figure 6.1 and provide demographic information for the local and regional populations which are likely to be impacted by the subject development. Where relevant, information with relation to the national averages in each demographic area is also provided.



Figure 6.1 Extent of CSO enumeration areas utilised in demographic analysis. Subject Site identified by red dot.

A land use analysis informed the location of potential receptors, whilst a practical understanding of the design, construction and operation of residential projects by the study team contributed to an understanding of the potential risks associated with the proposed development.

6.3 RECEIVING ENVIRONMENT

This section provides an overview of existing demographics, health status of the area, and the location of potential receptors. It should be noted that the description of the baseline environment of those factors under which human health effects might occur has been addressed elsewhere in this EIAR, under the environmental factors of traffic and transportation, townscape and visual (landscape), water quality and biodiversity.

6.3.1 Economic and Employment Activity

6.3.1.1 National Outlook

The CSO's Quarterly Labour Force Survey (which has now replaced the Quarterly Household Survey) for Q3 2022, indicated that there was an annual increase in full-time employment, bringing total employment in the State to 2,554,300 (50%) an increase on Q3 2021 figures of 3.4%. In December 2022 the seasonally adjusted unemployment rate was 4.3% down from 5.1% in DDecember 2021.

The ESRI Quarterly Economic Commentary for Autumn 2022 states that while the pace of consumption growth is moderating significantly, the domestic economy is still expected to grow robustly this year. Modified domestic demand (MDD) is now forecast to grow by 7.5 per cent in 2022. Furthermore, the unemployment rate is set to fall to 4.1 per cent by the end of the year.

The above sources demonstrate that the national economy and employment levels are expected to sustain growth into 2023. High on the agenda is the supply of residential dwellings to feed the increased need for residential dwellings particularly in urban areas.

6.3.1.2 Local Outlook

To understand employment and economic activity at a local level, reference is made to the Small Area Population (SAPs) figures within the Census of Population 2016 (CSO) encompassing the 10 no. ED's as detailed in Figure 6.1. The ED Study area had a population of 19,440 persons in 2016.

At the local level, some 35.2% of the population was in employment, which is well below the 50% national average, whilst 13% were unemployed or unable to work due to sickness. Some 15% of the population was retired. This local outlook is in significant contrast to the national population and reflects the high levels of unemployment in the area.

Of those that do work a high proportion work within the city of Limerick. This assumption is supported by the travel to work / school / college data by people aged 5 years and over living in the study area. According to the 2016 Census of Population, 32% of the population have a travel time of between 15 – 30 minutes minutes, whilst 18% have a travel time of under 15 minutes, which is significantly below the national average. Overall, it highlights that a significant proportion of people can secure education and

employment within a short commute of where they live and indicates significant provision of employment and services in the area.

There is a strong preference (33%) towards the use of the private car for travel to work, school or college in the area which is followed by travel on foot which stands at a mere 7%. Figures for the rest of Limerick City and County indicated a similar profile of private car users (64%), followed by pedestrians (14%) and bus/coach passengers (7%) respectively.

6.3.2 Health & Social Patterns

6.3.2.1 National Outlook

The Preliminary CSO data illustrates that the population of the Irish State increased between 2016 and 2022 by 7.6%, bringing the total population of the Irish State to 5,123,536 persons. The rate of growth is significant as previous growth rates between 2011 and 2016 stood at 3.8%. The largest single contributor is net migration, although the economy has recovered in recent years with consequent population growth predominantly attributed to natural increase, greater economic activity and increased job opportunities.

The OECD published the Economic Survey of Ireland 2022 and highlights that the health of people in Ireland has improved significantly over the last twenty years with life expectancy now one of the highest in OECD.

6.3.2.2 Local Outlook

The total population of the study area according to the 2016 census is 19,440. The 15 – 19 age cohort and the 20 – 24 age group comprise 15% of the overall population. The next largest age group at 6% is those that fall within the 55 – 59 year age group. 20% of the overall population falls within the 30 – 44 year age group. This is significant in terms of service provision and has significant implications for housing provision and demand.

The Pobal Deprivation Index is Ireland's most widely used social gradient metric, which scores each small area (50 – 200 households) in terms of affluence or disadvantage. The index uses information from Ireland's census, such as employment, age profile and educational attainment to calculate this score. Whilst the subject site, located in Limerick North Rural ED is described as being 'marginally below average', the general study area also encompasses a 'very disadvantaged area' (Ballynanty) and also an 'Affluent area' (Farranshone).

6.3.3 Housing Stock & Structure

6.3.3.1 National Outlook

The National Residential Property Price Index (RPPI) increased by 8.6% in the 12 months to November 2022, with prices in Dublin rising by 7% and prices outside Dublin up by 9.8%. The median price of a dwelling purchased in the twelve months to November 2022 was €300,000.

There were 29,851 new dwelling completions in the whole of 2022, an increase of 45.2% from 2021 and 41.3% up from 2019, pre-pandemic. The average new dwelling size is continuing to gradually fall

year on year. The average new dwelling size index for 2022 is at 75, three-quarters of the 2016 base index of 100.

Across different types of dwelling, the divergence in growth rates between house prices and apartments had somewhat narrowed. The CSO confirms that there was a 29.6% increase in apartments completed in Q4 2022 compared with Q4 2021, up from 2,152 to 2,789. For the whole of 2022, there were 50.8% scheme completions with 30.7% apartments and 18.5% single dwellings.

Housing for All - a New Housing Plan for Ireland' is the government's housing plan to 2030. It is estimated that Ireland will need an average of 33,000 new homes to be provided each year from 2021 to 2030. Housing output in Ireland to date, has not reached the required targets.

6.3.3.2 Local Outlook

Within Limerick City & Suburbs, there has been a forecasted need for 11,054 households between 2022 – 2028, to facilitate a total population of 123,242 in 2028. Accordingly, 259 hectares of land is zoned to accommodate housing growth, including the subject land.

The Limerick City North Electoral Area, in which the subject site is located, had only 102 no. dwelling completions in 2022. This is in contrast to the 246 no. dwelling completions in Limerick City East and the 165 no. in Limerick City West.

Low levels of household growth, coupled with continued population growth has resulted in an increase in the average household size across the State, where growth in average household size has increased from 2.73 persons to 2.75 persons. The average household size in the study area remains at 2.73 persons,

The number of vacant households in the study area stood at 607 no. units in 2016 excluding holiday homes and those that were temporarily absent. This represents 8.5% of the total number of households in the study area. The figure is significantly below that of the State-wide figure, which stood at 10.8% in 2016.

Of the 7,097 households in the study area, 83.7 per cent comprise a house / bungalow with only 13.2 per cent comprising a flat / apartment. This is significant in the context of the proposed development, which seeks to primarily deliver housing in the area thereby satisfying demand, with limited apartment provision throughout the development.

6.3.4 Social Services & Infrastructure

A social infrastructure audit was undertaken for the proposed development site within the study area. The study identified infrastructure facilities in the vicinity of the subject proposal including education and training facilities, childcare services, community and cultural facilities, religious and burial sites, healthcare services, open space and recreation facilities and retail centres.



Figure 6.2 General Overview of Services Relative to the site

6.3.4.1 Recreational & Sporting Facilities

In proximity to the subject site there are an array of sports facilities and open space. The TUS University provides extensive sporting facilities and although they primarily service the university itself, they are available to local sporting organisations on a pre-arranged basis. Many clubs have facilities in the area including Thomond Rugby Club, Na Piarisigh GAA club grounds, Shelbourne Football Club and the Limerick Lawn Tennis Club.

There are also many open green areas serving housing developments which can be used on an informal basis for active recreational use. The closest park to the subject site is Shelbourne Park and the Moyross Sports Field. Notwithstanding a lack of parkland in the vicinity of the site, it is noted that significant land has been zoned for open space & recreation purposes, neighbouring the subject land, in the recently adopted Limerick Development Plan 2022 – 2028.

6.3.4.2 Health Facilities

There are five health care / medical centres within the study area (excluding dentists, pharmacies and physiotherapists). These include the Laya Health & Wellbeing Clinic; the Meadow Springs Medical Centre, Treaty Medical Centre, Ennis Road Medical Centre and Ballynanty Medical Centre. The Milford Care Centre on Plassey Park Road offers specialist hospice facilities and a nursing home. There are other family doctor practices at intermittent locations throughout the study area.

Figure 6.3 identifies the general location of 2 no. public hospitals in proximity to the site along with the closest health centre and pharmacy.

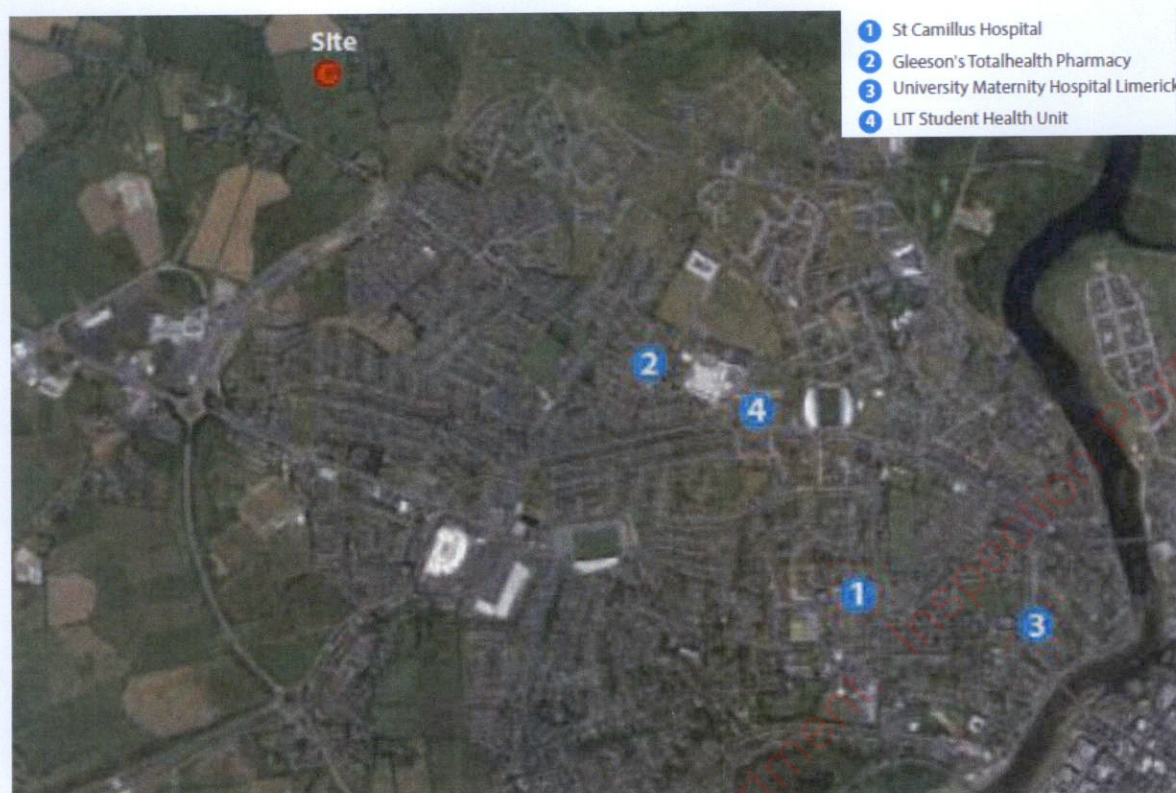


Figure 6.3 Healthcare Facilities

6.3.4.3 Childcare Facilities

The subject site is proximate to three existing childcare facilities in the area as detailed in Figure 6.4, including Naionra na nOg (pre school); Learning for Life Limited (montessori & after school) and Kids Inc MQI (after school care). These facilities are within walking distance of the subject site. The Naionara na nOG childcare facility located at the Shannonvale Complex on the Cratloe Road is a substantial facility. At the last Tusla Inspection in 2020, the facility had capacity for 100 no. children in the morning and 55 no. children in the afternoon.

This facility, associated with the other two smaller facilities, provides for childcare capacity services in the area and would be adequate to accommodate some housing (Residential Phase I) within the masterplan site.

Irrespective of existing childcare facilities in the area, the overall masterplan for the site proposes a creche facility with capacity for 107 no. children & 8 no. staff. This facility is proposed as Phase 2 of the overall development as per planning reference P22/790 and will be provided in advance of the proposed development (Phase 3). The creche was recently granted permission by Limerick City & County Council and has been sized to accommodate the totality of housing proposed within the masterplan site. Using the childcare provision guidelines of 20 child places per 75 no. dwellings, a childcare facility with capacity to accommodate 26 no. children is required for the proposed development of 98 no. dwelling units.



Figure 6.4 Location of Surrounding Registered Childcare Facilities. Source Pobal Childcare Services

6.3.4.4 Educational Provision

There are five primary schools, two secondary schools and a University on the northside of Limerick and in proximity to the site. Enrolment figures for 2022/23 indicate that 1,460 no. children attend the five primary schools of Scoil Christ Ri, John F. Kennedy Memorial School, Thomond National School, Gaelscoil Sairseal and Corpus Christ Catholic School. This represents an increase of 46 no. students on the 1,414 enrolment figure the previous year. See Table 6.1 with breakdown of enrolment figures for 2020/21:

Name	Enrolled 2022/23	Enrolled 2021/22
Scoil Chrost Ri	302	306
John F. Kennedy Memorial School	250	250
Thomond National School	216	215
Gaelscoil Sairseal	309	276
Corpus Christ Catholic School	383	367

Table 6.1 Primary Schools and Enrolment Figures (Source: Department of Education & Skills website, 2022/23).

Within the secondary school of Ard Scoil Ris and Thomond Community College, enrolment figures for 2022/2023 indicate that 1,349 students attended both schools, which is a lower figure than the 1,323 pupils that were enrolled in 2021 / 22. This demonstrates some capacity on the system to accommodate additional pupils in the future. However, enrolment numbers in secondary schools are more based on choice than locational circumstances with secondary school student travelling further to avail of a particular school.



Figure 6.5 Primary and post primary schools in the vicinity of the site

6.3.4.5 Community Services Provision

Caherdavin Community Centre, Moyross Community Centre and St Munchins Community Centre all provide services in the area. Whilst there is no post office in proximity to the site, post offices located at the Jetland Centre in Caherdavin south east of the site and in Ballynanty north east of the site, provide local services.

The closest public library is the city library located in Limerick city centre. However, this facility can be easily accessed by bus from the subject site.

The Limerick Baptist Church off the Old Cratloe Road is closest to the site. Mayorstone Park Garda Station is located in proximity to Thomond Park, an 8 minute walk from the site.

6.3.4.6 Retail & Commercial Services

The Jetland Centre in Caherdavin is accessible from the subject site, whilst a number of smaller facilities operate in proximity to the site on the Cratloe Road including a Spar and a Centra in the Woodview Shopping Centre. The proposed development includes provision for a Neighbourhood Centre (Delivery 4), which is intended to be delivered in advance of the proposed development (Delivery 5). A new Aldi supermarket was recently granted planning permission to the north east of the site on the Knockalisheen Road which will be directly accessible once the new road adjoining the site is constructed.

6.3.4.7 Transport Services

East of the site on the Cratloe Road there is a bus stop which gives access to the city via Bus route no. 302. The proposed development has taken the provisions of the Limerick Shannon Metropolitan Area Transport Strategy (LSMATS) into consideration. Under the strategy, a bus corridor is to extend along the Old Cratloe Road beyond the application site, effectively providing connectivity between the site and the city centre. Further, cycling infrastructure will be accommodated within and adjoining the proposed development as per the 'Proposed Limerick Cycle Network Map' detailed in LSMATS, in particular the proposed 'Green Route' on the old, realigned section of the Meelick Road as it approaches the Old Cratloe Road.



Figure 16.6 Location of Bus Stops in Proximity to the Site

6.3.5 Landuse & Settlement Pattern

6.3.5.1 Settlement Pattern

The general area comprising the masterplan site has a rural feel, notwithstanding significant residential and educational developments immediately to the east. The majority of site is surrounded by green fields apart from low density dwellings and Willow Grove development to the north and west, and the county club bar on the Old Cratloe Road - Pass Road junction. Further to the east, developments such as Thomond Village, Clonile and Shannonvale lie next to the site and mark the edge of the built up area of the Limerick suburbs.

A growing and developing suburban area to the north west of Limerick City, the character of the area is dominated by mid – low density residential development with clusters of commercial development interspersed at nodal locations. The settlement pattern is varied, dominated by individual 'housing estates' with little permeability and connectivity.

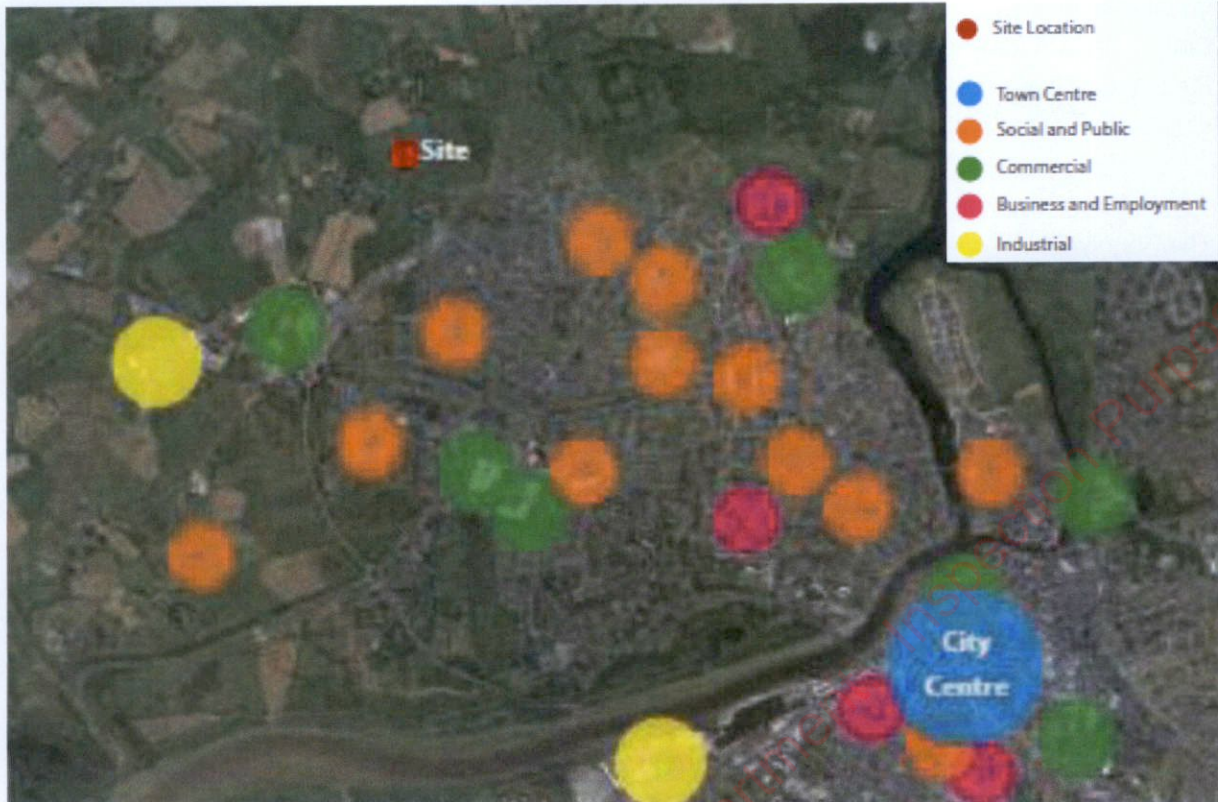


Figure 6.7 Typologies & Landuse

6.3.5.2 Potential Receptors

Key potential receptors, to be assessed in this chapter, include residential, commercial, community and recreational receptors.

Residential Receptors

A row of 11 no. one off dwellings front onto the Meelick Road and adjoin the masterplan site. A total of 6 no. of these dwellings directly back onto the site to the north east. These are likely to be the most directly affected dwellings in the area, as the development extends immediately to their rear.

There are a further 8 no. detached houses located fronting onto the Old Cratloe Road adjoining the masterplan site to the west. Although slightly removed from the site, the houses immediately adjoining the masterplan site will be most directly affected.

There are a number of houses situated opposite the southern side of the Cratloe Road with 3 no. one off houses backing onto the masterplan site and specifically the proposed Phase 5 residential development. To the west, is the Willow Grove residential development, also located on the southern side of the Cratloe Road and slightly removed from the masterplan site and the proposed development.

Further to the east, located closer to TUS University are residential developments including Thomond Village, Clonile and Shannonvale. These mark the edge of the built up area of the Limerick suburbs and are effectively separated from the masterplan site by the proposed Coonagh – Knockalisheen Road which is currently under construction.

Within the masterplan site itself planning permission has already been granted by Limerick City & County Council for Phase 1 residential development (P21/1800) but is currently on appeal to An Bord Pleanála. These 99 no. residential units are planned to be developed and occupied prior to the construction of the proposed development (Phase 3 residential).

Commercial Receptors

The County Club Bar & Lounge is located to the south east of the site, situated in between the realigned Meelick Road to the west, the proposed Phase 2 residential development and old Meelick Road to the east and the proposed creche to the north.

There are no other commercial receptors in the area save for local shops and services, located further removed from the site to the east on the Old Cratloe Road.

A number of indirect economic receptors have also been identified to include suppliers of construction materials required to complete the proposed development. It is not possible to identify these suppliers at planning stage as use of these suppliers will be dependent on detailed construction drawings and requirements.

Community & Recreation Receptors

The closest community & recreation receptor to the site is the TUS University Moylish Campus situated further to the east along the Old Cratloe Road.

Future Receptors

To identify potential future receptors a review was undertaken of permitted development in and around the area over the last five years (including extension of duration of previous permissions). There are no significant planning permissions permitted adjoining or in proximity to the site, which could be affected by the proposed development, save for those phases of development already permitted within the masterplan site as detailed in Table 6.2.

Delivery	Development	Gross Site Area	Status	Plan Ref. No.
Delivery 1	Phase 1 - 99 residential units	3.31 ha.	Planning permission granted. Subject to third party appeal	P21/1800
Delivery 2	Childcare Facility.	0.43 ha.	Granted	P22/790
Delivery 3	Phase 2 - 86 residential units	2.19 ha.	Further Information Response Submitted	P22/817
Delivery 4	12 residential units & neighbourhood facility	1.40 ha.	Further Information Response Submitted	P22/917
Delivery 5	Phase 3 - 98 residential units	9.45 ha.	Subject Development	P22/959
Delivery 6	Phase 4 - 54 residential units	2.55 ha.	Further Information Request	P22/1114
Delivery 7	Phase 5 - 99 residential units	2.87 ha.	Future development	

Figure 6.2 Developments Permitted within Masterplan Site & at Advanced Stage of Consent Process

6.3.6 Health & Safety

The surrounding context consists of a mix of residential, transport, recreational and amenity related land uses. It does not include any man-made industrial processes (including SEVESO II Directive sites (96/82/EC & 2003/105/EC) which would be likely to result in a risk to human health and safety.

There is little health information available at county level and so there is a reliance on information at national level to inform on the general health of the wider Limerick area.

The Department of Health's report '*Health in Ireland, Key Trends 2019*' (Department of Health, 2019) provides summary statistics on health and health care in Ireland over the past ten years. According to the key trends, in Ireland male life expectancy has increased by 3 years and female life expectancy has increased by 2 years since 2007 and is now above the average for the EU. The greatest gains in life expectancy have been achieved in the older age groups reflecting decreasing mortality rates from major diseases. The proportion of life expectancy at age 65 to be lived in good health is higher for both men and women in Ireland compared with the EU-28 average. In recent decades, Ireland has consistently recorded high rates of self-evaluated good health. Population health at the national level presents a clear picture of rapid decreases in mortality rates accompanied by a rapid rise in life expectancy during the past ten years. This has a knock-on impact on housing demand and need and will influence future housing mix and structures.

At county level, the creation of County Health Profiles is one of the key actions from the Healthy Ireland strategy which is our national framework for action to improve the health and wellbeing of the people of Ireland. The County Health Profile for Limerick City confirms that Limerick City is the most deprived Local Authority in Ireland, with 36.8 per cent of the population either very disadvantaged or disadvantaged. It further states that Limerick City has above average levels of those who stated they had bad or very bad health of (2.6% compared to 1.5% nationally) and those with a disability of 18.2 per cent.

6.3.7 Risk of Major Accidents and Disasters

The EIA Guidelines 2022 state that an EIAR must include the expected effects arising from the vulnerability of the project to risks of major accidents and/or disasters that are relevant to the project. In this respect, taking cognisance of the other chapters contained within this EIAR document, it is not considered that the proposed development site presents risks of major accidents or disasters, either caused by the scheme itself or from external man made or natural disasters.

6.4 DESCRIPTION OF EFFECTS

This section provides an assessment of all of the potential and predicted impacts of the proposed development on population and human health. As outlined in Section 6.1, in accordance with the EPA Guidelines 2022, the assessment of impacts on population and human health refer to the assessments of those factors under which human health effects might occur, as addressed elsewhere in this EIAR.

A number of the likely impacts have already been 'designed out' of the development proposal. These measures have been dealt with comprehensively in respective chapters including Chapter 7.0 Biodiversity; Chapter 9.0 Water Hydrology – Surface Water & Flooding; Chapter 11.0 Noise & Vibration; Chapter 16.0 The Landscape; and Chapter 12.0 Material Assets: Traffic & Transport.

Seven different 'Delivery Phases' of development, as detailed in Table 6.2, are proposed to effectively deliver the overall indicative masterplan. This application relates to Phase 3 (98 no. units) as detailed in Chapter 1.0 and 2.0 of this EIAR. Whilst seven different phases are proposed at this point in time,

the reality is that some of the phases could be fast-tracked such that two phases advance in construction together. This, however, is very much dependent on market conditions and the specific requirements of contractors. In any case, should different phases cumulatively progress together, the overall impacts are unlikely to be different.

In order to ensure an effective and conclusive environmental assessment consistent with best practise, the assessment of potential effects on the environment also examines the collective cumulative effects of the overall development if all seven development phases, as detailed in Chapter 1.0, were implemented. The examination of the 'all phase' development scenario is consistent with best practice in order to examine a 'worst-case' scenario of the project effects.

6.4.1 'Do-Nothing' Scenario

A 'do nothing' impact would result in the subject site remaining in a green-field state and substantially undeveloped. Development to facilitate residential use would likely occur on the lands in a piecemeal manner, as planning permission has already been granted for 99 no. residential units as Phase 1. The effect of this development advancing in isolation from the remainder of the landholding would result in adhoc, piecemeal development. Further, it would result in an underutilisation of the site from a sustainable planning and development perspective, particularly considering the location of the lands in proximity to existing services and facilities and the provision of a new distributor road to the east of the site, Coonagh – Knockalisheen Road) which is intended to open up land for development purposes. The status of the environmental receptors described throughout this EIAR document would be likely to remain unchanged. The potential for any likely and significant adverse environmental impacts arising from both the construction and operational phases of the proposed development would not arise.

In terms of the likely evolution without implementation of the project as regards natural changes from the baseline scenario, it is considered there would be limited change from the baseline scenario in relation to population (human beings) and human health.

However, similarly the potential for any likely and significant positive environmental impacts arising from both the construction and operational phases of the proposed development would also not arise. The site is zoned for residential use purposes within the Limerick Development Plan 2022 -2028, with objectives to ensure a wide range of house types. The proposed use of the site is considered to be in accordance with the proper planning and sustainable development of the area.

The partial development of lands, in accordance with the planning consent for Phase 1 issued to date, which effectively subdivides the masterplan area, in isolation of the masterplan lands, would create a gap / infill site in an urban area next to a new road scheme (currently under construction) and good quality pedestrian and cycling infrastructure. Furthermore, without this development it is likely the critical mass and density potential on the northern side of Limerick city would not be realised.

6.4.2 Construction Impacts

Potential construction impacts arise from a range of issues discussed elsewhere in this EIAR: Traffic & Transport (Chapter 12.0); Noise and Vibration (Chapter 11.0); Air Quality and Climate (Chapter 10.0); and Biodiversity (Chapter 7.0). Construction impacts resulting from the delivery of the overall masterplan site are likely to be of medium effect, adverse and temporary in nature.

The construction phase of the proposed development will primarily consist of site clearance, excavation and construction works. Within the overall masterplan site, these works are likely to take place over seven different phases with a potential completion timeframe of five years. Given the extent of the subject site and the phased approach to development works, direct impacts are most likely to be experienced within the masterplan site itself and within those houses that will be occupied upon completion prior to another phase commencing.

Chapter 11.0 of this EIAR sets out a number of noise mitigation measures. Whilst there is potential for temporary noise impacts on nearby noise sensitive properties due to noise emissions from site activities during construction, the application of binding noise limits and hours of operation, along with implementation of appropriate noise and vibration control measures, will ensure that noise and vibration impact is kept to a minimum as far as practicable. For the duration of the construction period, construction noise impacts will be short-term, negative, slight to significant.

Within the subject site, the works will be undertaken in one phase over a 12 month timeframe. The works will largely be confined to the proposed development site. Notwithstanding the implementation of remedial and mitigation measures there will be some minor temporary residual impacts on population (human beings) and human health most likely with respect to nuisance caused by construction activities, particularly relating to noise and dust. The houses to be constructed immediately to the south east of the site and those existing one off houses adjoining the site on the Meelick Road, will most likely be impacted. For the duration of the 12 month construction period, construction noise impacts will be short-term, negative, slight to significant.

It is anticipated that subject to the careful implementation of the remedial and mitigation measures proposed throughout this EIAR document any adverse likely and significant environmental impacts will be avoided. Positive impacts are likely to arise due to an increase in employment and economic activity associated with the construction of the proposed development, which is likely to have between 50 – 60 workers on site at any one time. As outlined above, the construction phase will have both direct and secondary positive economic impacts in this regard.

Potential impacts could occur as a result of inadequate site management or accidental spillage during construction, which could enter the local drainage ditches which have a hydrological connection with the a drainage ditch in the field (outside of the application site) to the west which connects with the Lower River Shannon Special Area of Conservation (SAC) and River Shannon and River Fergus Estuaries Special Protection Area (SPA) some 1.7km distant from the site. However, the likelihood of this happening is low given the design measures introduced as part of the development and detailed in Chapter 9.0 of this EIAR.

The visual landscape will change once construction commences and it will take time for the proposed landscaping treatment to mature. These impacts further detailed in Chapter 16.0 Landscape, are likely to be moderate and short term in nature.

The overall predicted likely and significant impact of the construction phase for the application site will be short-term, moderate and likely to be neutral. Although the construction timeframe for the overall masterplan will be longer and more likely to be in the region of five years, the construction will be

undertaken on a phased basis such that impacts will continue to be short-term, moderate and neutral in effect.

6.4.3 Operational Impacts

Potential operational impacts arise from a range of issues discussed elsewhere in this EIAR including Landscape & Visual (Chapter 16.0); Traffic & Transport (Chapter 12.0); Noise & Vibration (Chapter 11.0); and Air Quality & Climate (Chapter 10.0).

The proposed development will result in a generally positive alteration to the existing undeveloped site in terms of the provision of residential units, to serve the growing population of the area in accordance with the objectives of the Limerick Development Plan 2022 – 2028, the associated growing population and the evidential need and demand for housing in the area. The proposed creche facility will complement existing creche operators in the area and the proposed local neighbourhood centre will provide local convenience shopping and other services, not only accommodating the proposed development, but also servicing existing residents in the area.

The proposed development will consist of 98 no. residential units/households. Using the average household size of 2.7 the proposed development is likely to result in a projected population of approximately 265 no. persons.

Having regard to the potential of the overall masterplan site to accommodate 448 no. units, including the subject site, the potential is for the masterplan to result in a projected population of approximately 1,210 people. This will result in a sizeable new community within the area. This is considered significant, permanent and positive, particularly in the context of current housing demand, but it will place significant additional strains on existing community facilities and services in the area and in the city. The important consideration is that the potential population generated from the proposed development has already been planned for in the context of the Limerick Development Plan 2022 - 2028 and the projected household growth in Limerick city of an additional 11,054 residential units between 2022 – 2028. The new Limerick Development Plan was adopted in 2022 with adequate planned provision made for supporting services and facilities over the plan period.

Positive impacts on population and human health will include health benefits associated with the provision of a highly permeable layout which encourages walking and cycling, along with amenity and recreational facilities within designated areas of open space.

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

6.4.4 Cumulative Impacts

The potential cumulative impacts of the proposed development on population and human health have been considered in conjunction with the ongoing changes in the surrounding area. A planning history review was undertaken to identify any recently approved or pending developments which may have a cumulative impact with the proposed development. There are no significant developments permitted in

the area, which have not yet been constructed, save for the Masterplan site itself which have been detailed in Table 6.2.

The proposed development does need to be considered in conjunction with the works currently underway, delivering the proposed Coonagh to Knockalisheen Distributor Project. This infrastructure project secured consent from An Bord Pleanála in 2021 and was subject to the preparation of an EIAR and Environmental Impact Assessment. The cumulative impacts associated with noise and dust during construction have been considered in Chapters 10.0 and 11.0 of the EIAR, whilst potential effects arising from increased traffic have also been considered in Chapter 12.0.

With regard to human health, the cumulative impact of the proposed development in conjunction with the proposed new Distributor Road will provide for the introduction of high-quality new neighbourhood in the area with a high level of accessibility and amenity. The overall cumulative impact of the proposed development will therefore be long term and positive with regard to human health.

6.5 LIKELIHOOD OF SIGNIFICANT EFFECTS

6.5.1 Introduction

This section provides a description of the specific, direct and indirect, impacts that the proposed development may have during both the construction and operational phases of the proposed development. Additionally, this section addresses the socio-economic and employment impacts of the proposed development. For a more detailed assessment of potential impacts please refer to specific chapters of the EIAR which assess the environmental topics outlined in the EIA Directive.

6.5.2 Water

Construction Phase

Provision of water infrastructure for the proposed development would involve construction activities within the subject lands and on the adjoining public road to facilitate connections with existing infrastructure.

Construction works mainly involving trench excavations conducted in parallel with the other services. The potential impact on the local water services network would be short term and imperceptible. Therefore, the impact on human health and population in this regard is considered to be insignificant.

During the construction phase there is potential for weathering and erosion of the surface soils from precipitation and run-off and surface water runoff may also contain increased silt levels or pollutants from the construction processes. Within the wider masterplan where works are proposed in proximity to the existing drainage ditch within the site, there is potential for discharge of these contaminants to the Lower River Shannon Special Area of Conservation (SAC) and River Shannon and River Fergus Estuaries Special Protection Area (SPA) which has the potential to cause pollution and consequential impacts to human health and population. A berm shall be constructed at the western boundary of the site to prevent any flow of surface water into the drainage ditch during construction. Further mitigation measures are outlined in Chapter 9.0 – Surface Water & Flooding and Chapter 7.0 Biodiversity.

Operational Phase

The impact of the operational phase of the proposed development on the public water supply will increase the demand on the existing supply. A pre-connection enquiry (Connection Reference No CDS22003876) was lodged with Irish Water who has confirmed that there is adequate capacity within the existing public water services network to facilitate the proposed development and wider masterplan development.

It is proposed to provide watermain around the development to form a fully looped network, ensuring security and quality of supply. The proposed internal water supply network for the development has been designed in accordance with Irish Water Code of Practice July 2020. It is proposed to connect the development to the 250mm diameter main to be installed as part of the Old Cratloe Road upgrade works south of the development. Individual houses will have their own connections to the distribution main via service connections and boundary boxes. As such additional water quantities would need to be treated at the reservoir and supplied through the existing network to the site. This will require extra cost as well as increasing abstraction volumes from the existing source. The impact on human health and population in this regard is considered to be insignificant.

Wastewater will be discharged to the public sewer. Irish Water has confirmed that there is adequate capacity (Connection Reference No. CDS22003876). The impact on human health and population in this regard is considered to be insignificant. It is proposed to provide a single gravity foul sewer system to serve the current proposed development. The foul sewerage from the overall development is planned to discharge to the foul network to be installed as part of the Old Cratloe Road upgrade works south of the development.

Surface water run-off discharge rates from the development sites may be increased because of an increase in impermeable surfaces, shorter flow paths through pipes and reduced roughness co-efficient. However, implementation of SUDs features would aim to maintain runoff rates as close as possible to existing greenfield runoff rates. SUDs will be implemented in accordance with the recommendations of the GDSDS and Limerick County Council requirements. Therefore, the potential impact on population and human health in this regard is considered to be insignificant.

6.5.3 Noise

Construction Phase

During the construction phase there will be extensive site works, involving construction machinery, construction activities on site, and construction traffic, which will all generate noise. The highest noise levels will be generated during the general construction activities. The construction noise levels for this development will occur over an approximate twelve month period for the proposed development while cumulatively it may occur for a five year period having regard to the overall masterplan. Noise levels will only occur during daytime hours which will serve to minimise the noise impacts at local existing receptors over the course of the construction phase.

It is predicted that the construction phases shall result in a short-term increase in noise levels in the area as well as introducing tonal and impulsive noise as a result of construction activities such as pneumatic breaking, cutting, excavating, vehicle movements and general manual construction activities. The predicted noise levels are however expected to occur for only short periods of time at a

limited number of properties, in particular those situate on the Meelick Road and those already constructed within the Masterplan site (Phase 1).

Due to the phased nature of this development (448 units) which will occur over an approximate twelve month period, there will be slight to moderate impacts on existing residents in nearby residential areas and in particular on those residents who will occupy the new units in Phase 1. However, the proposed construction phase noise mitigation measures as detailed in the Noise and Vibration chapter of this EIAR shall ensure that all construction activities are controlled and managed and audited by an independent acoustic consultant to confirm that the mitigation measures are implemented throughout the construction phase.

Operational Phase

The main potential for altering the noise environment once the development is operational, and thus impacting neighbouring residential receptors, is road traffic noise associated with the development.

The UK Design Manual for Roads and Bridges (DMRB, Volume 11, Section 3, Part 7) states that it takes a 25% increase or a 20% decrease in traffic flows in order to get a 1dBA change in traffic noise levels. During the operational phase of the proposed development, there will be an increase in vehicular traffic associated with the site on some surrounding roads but the effect has been determined to be negligible. The traffic figures account for the entire Masterplan of which this development is only a part of, as such it is reasonable to assume that the impact for this development will be even lower. Accordingly, there will be an imperceptible impact on existing ambient noise levels at existing residential development in proximity to the existing roads and junctions within the surrounding area as a result of road traffic alterations associated with the proposed development.

The subject development includes the provision of surface car parking spaces for the residential units. Vehicles using car parking areas generally travel at speeds <20kmph which result in relatively low noise levels. On site car parking within the proposed development will have no impact on adjacent residential developments.

Within the proposed development, sounds generated by everyday domestic activities including waste facilities, pedestrians, children, and use of open spaces, are part of everyday living, and are not considered "noise" in the sense of a potential nuisance. This activity noise would not have any potential for impact beyond the boundaries of the site. In particular, the design of the proposed development has ensured that there will be no impacts on adjacent sensitive receptors.

6.5.4 Air Quality & Climate

Construction Phase

During the construction phase, site clearance and ground excavation works have the potential to generate dust emissions rising from the operation and movement of machinery on site. This has a potential impact on population and human health.

Construction equipment including generators and compressors will also give rise to some exhaust emissions. However, due to the size and nature of construction activities, exhaust emissions during construction will have a negligible impact on local air quality. CO2 will be released into the atmosphere

as a result of the movement of construction vehicles and use of plant. However, emissions associated with such activities will not be significant.

Construction traffic to and from the site shall result in a short-term increase in the volume of diesel fuelled HGV's along the local road network which will generate additional hydrocarbon and particulate emissions from the vehicle exhausts. However, the activities detailed above will result in an imperceptible impact on local air quality and sensitive receptors.

Mitigation measures are outlined in Chapter 10 – Air Quality and Climate including avoiding unnecessary vehicle movements and manoeuvring and limiting speeds on site so as to minimise the generation of airborne dust and spraying surfaces with water and wetting agents to control dust emissions.

Various elements associated with the construction phase of the proposed development have the potential to impact local ambient air quality, however the potential construction phase impacts shall be mitigated as detailed in Chapter 10.0 to ensure there is a minimal impact on ambient air quality for the duration of all construction phase works. It is predicted that the operational phase of the development will not generate air emissions that would have an adverse impact on local ambient air quality or local human health.

It is predicted that the activities detailed above will result in an imperceptible impact on local air quality and sensitive receptors. Therefore, the potential impact on human health and population in this regard is considered negligible.

Operational Phase

The operational phase of the proposed development will result in a slight impact on local air quality primarily as a result of the requirements of new buildings to be heated and with the increased traffic movements associated with the development.

The proposed landscaping scheme include native trees, grasses and shrubs which will also contribute albeit in a minor way to the adsorption of Carbon Dioxide from the atmosphere and the release of oxygen to the atmosphere.

It is predicted that the operational phase of the development will not generate air emissions that would have an adverse impact on local ambient air quality or local human health, as stated in Chapter 10 – Air Quality and Climate.

6.5.5 Landscape and Visual Impact

Construction Phase

The construction phase will have short term landscape and visual impacts. It is envisaged that construction will occur over a twelve month period and cumulatively on site over a five year period. There will be a perceptual and visual change on the landscape as a result of works. However, the landscape has already been disturbed with construction works associated with the Coonagh – Knockalisheen Road and so the baseline is already that of a landscape in transition. These works are temporary in nature and are not considered significant on population and human health.

However, as already detailed in Chapter 16.0 – Landscape and Visual Impact Assessment, in order to ensure that the visual impacts from construction works, as viewed from neighbouring housing is minimised, effective screening shall be provided around the proposed development on site and each subsequent phase of development. Landscaping on site and within each phase of development shall commence within the first planting season after houses have been constructed on site and prior to completion of development.

Operational Phase

The operational phase of the proposed development has the potential to lead to positive impacts on population and human health. The proposed development will overlook pockets of open space whilst the development proposal will directly link with existing pedestrian footpaths on the Old Cratloe Road thereby encouraging walking.

The proposed development will accommodate a high-quality residential environment located close to existing services and amenities. The landscape design rationale for the masterplan site is based on the provision of a hierarchy of open space and play areas within the development. Accordingly, the proposed development is likely to have a positive impact on human beings.

6.5.6 Economic Activity

Construction Phase

The construction phase of the proposed development is likely to result in a positive net improvement in economic activity in the area of the proposed development site particularly in the construction sector and in associated and secondary building services industries.

It is anticipated that between 50 – 60 work personnel will be employed on site during peak construction periods. A considerable amount of the work will be undertaken by sub-contractors who will also work elsewhere on a phased basis over the construction period.

The construction phase will also have secondary and indirect ‘spin-off’ impacts on ancillary support services in the area of the site, such as retail services, together with wider benefits in the aggregate extraction (quarry) sector, building supply services, professional and technical professions etc. These beneficial impacts on economic activity will be largely temporary but will contribute to the overall future viability of the construction sector and related services and professions over the phased construction period.

The proposed development could have a slight negative impact on the surrounding area during construction phase due to traffic and associated nuisance, dust and noise. These issues and appropriate mitigation measures are addressed in Chapters 12.0 and 11.0 of the EIAR, in the Material Assets Traffic and Transport Assessment and the Noise and Vibration Assessment which accompany the application.

Operational Phase

The operational phase of the proposed development will result in the provision of 98 no. residential units and associated open space. This will provide accommodation for approximately 265 no. persons, When the housing that could be generated by the overall masterplan is considered, the masterplan area could effectively house 1,210 no persons.

This increase in occupancy in the area will enhance local spending power and will assist with the delivery of a critical mass of population which will support a wide range of additional local businesses, services, transport infrastructure and employment opportunities. Further, provision of a creche and local neighbourhood centre will provide services to not only the proposed residential development but also to residents living in the area, thereby facilitating the development of a sustainable neighbourhood.

6.5.7 Social Patterns

Construction Phase

The construction phase of the proposed development is unlikely to have any significant impact on social patterns within the surrounding area. Some temporary additional local populations may arise out of construction activity. However, these impacts are imperceptible, temporary in nature and therefore not considered significant.

It is acknowledged that the construction phase of the project may have some short-term negative impacts on local residents. Such impacts are likely to be associated with construction traffic and possible nuisances associated with construction access requirements. These impacts are dealt with separately and assessed elsewhere in the EIAR, including Chapter 2 - Project Description; Chapter 10 - Air Quality and Climate; Chapter 11 - Noise and Vibration and Chapter 12 Material Assets - Traffic and Transport.

Such impacts will be short term and in the longer term, the completed scheme will have beneficial impacts for local businesses, residents and the wider community. Any disturbance is predicted to be commensurate with the normal disturbance associated with the construction industry where a site is efficiently, sensitively and properly managed having regard to neighbouring activities. The construction methods employed, and the hours of construction proposed will be designed to minimise potential impacts to nearby residents.

Operational Phase

The addition of circa 265 no. new residents to the area will have a significant, positive and direct impact on the area. Importantly, the predicted increase in population has been planned in a holistic and co-ordinated manner, under the provisions of the Limerick Development Plan 2022 – 2028 and similar to other developments already granted permission in the locality.

The Social Infrastructure Audit undertaken for the purpose of this EIAR (Section 6.3.4) confirms the proximity of the site to existing community support facilities including local and district shops, health facilities, employment opportunities and schools. These existing facilities within the vicinity of the site have the capacity to be shared and further utilised. They also have the potential to be augmented / expanded with additional facilities and services to serve a growing community.

Enrolment for both primary schools within the area appear to be growing, whilst the last year saw a decline for secondary schools. There are no proposals detailed in the Development Plan to increase primary school capacity in the area, although there are a number of policies which proactively support future growth and expansion.

The subject site is served by public transport with bus links to Limerick City Centre and its range of higher order shops and services. Furthermore, the masterplan site provides for the development of a creche facility (granted permission) and local neighbourhood facilities in advance of the proposed development (Phase 3) thereby ensuring adequate services in the immediate area to serve the development.

6.5.8 Land-Use & Settlement Patterns

Construction Phase

The construction phase of the proposed development will primarily consist of site clearing, excavation and construction works. It is acknowledged that the construction phase of the project may have some short-term negative impacts on local residents. Such impacts are likely to be associated with construction traffic and possible nuisances associated with construction methods and activities. These impacts are dealt with separately and assessed elsewhere in the EIAR, including Chapter 2.0 - Project Description; Chapter 10.0 - Air Quality and Climate; Chapter 11.0 - Noise and Vibration and Chapter 12.0 Material Assets - Traffic and Transport. Construction works are likely to take place on a phased basis, which will moderate the potential impacts on adjoining land use.

As detailed in Chapter 16.0 – Landscape and Visual Impact Assessment, in order to ensure that the visual impacts from construction works, as viewed from neighbouring housing is minimised, effective screening shall be provided around the proposed development on site and each subsequent phase of development. Landscaping on site and within each phase of development shall commence within the first planting season after houses have been constructed on site and prior to completion of development.

Secondary land use impacts include off-site quarry activity and appropriate disposal sites for removed spoil. These facilities would already have gone through the planning consent process and any associated environmental impacts assessed accordingly. Whilst traffic to and from these facilities may marginally increase as a result of the development proposal, the impacts are not likely to be significant and shall be temporary in nature. The locations for these specific activities have not yet been identified and will be identified once a contractor has been appointed on site.

The construction phase may result in a marginally increased population in the wider area due to increased construction employment in the area. However, this would be temporary in nature and the impact would be imperceptible.

Operational Phase

The operational phase of the proposed development will result in the introduction of a residential land use to the subject site which will provide much needed housing for the growing population of the Limerick City and County area in general. The proposed use once constructed will function in synergy with adjoining residential development and other commercial uses in the area. The impact of the development on land use and settlement patterns will be positive having regard to its planned implementation as detailed in the Limerick Development Plan 2022-2028.

6.5.9 Health & Safety

Construction Phase

The construction phase of the proposed development may give rise to short-term impacts associated with construction traffic, migration of surface contaminants, dust, noise and littering. Secondary impacts may include resulting increased traffic arising from hauling building materials to and from the proposed development site which are likely to affect population and human health distant from the proposed development site, including adjacent to aggregate sources and landfill sites. Construction impacts are likely to be short term and are dealt with separately in the relevant chapters of this EIAR document.

The proposed development is designed to best industry standards, with emphasis on the health and safety of occupants, local residents and the community at large. A Project Supervisor, Design Process (PSDP), will be appointed at tender stage to coordinate the design effort and to address and minimise construction risks during the detailed design period. Notification of this appointment will be sent to the HSA by means of their Approved Form 1 (AF1).

As design advances and before construction commences, a Preliminary Health and Safety Plan will be drawn up by the PSDP and reviewed by the project team. This ultimately will be passed on to the appointed Project Supervisor Construction Stage (PSCS) to be developed into a Construction Health and Safety Plan, prior to construction commencing. Notification of this appointment and the commencement date of construction will be sent to the HSA by means of their Approved Form 2 (AF2). Construction on site will be managed through a Construction and Environmental Management Plan to be prepared by the appointed contractor. The construction methods employed, and the hours of construction proposed will be designed to minimise potential impacts. The development will comply with all Health & Safety Regulations during the construction of the project. Where possible, potential risks will be omitted from the design so that the impact on the construction phase will be reduced.

Operational Phase

The operational stage of the development is unlikely to precipitate any significant impacts in terms of health and safety. The design of the proposed development has been formulated to provide for a safe environment for future residents and visitors alike. The paths, roadways and public areas have all been designed in accordance with best practice and the applicable guidelines including DMURS. The proposed residential units along with the creche and local neighbourhood centre, which are part of the overall masterplan, accord with the relevant guidelines and will meet all relevant safety and building standards and regulations. This ensures a development which promotes a high standard of health and safety for all occupants and visitors.

The proposed development will not result in any significant impacts on human health and safety once completed and operational. The proposed development therefore is unlikely to result in negative impacts in relation to population and human health in this regard.

6.5.10 Risk of Major Accidents or Disasters

Construction Phase

Having regard to the topography, geology and location of the subject site, and its low risk of flooding due to its elevation which is well above flood risk zones A and B, it is not considered likely that there

will be any impact related to a major accident or disaster during the construction phase of the proposed development, stemming internally from within the development, or externally.

The works proposed in proximity to roadways will be governed by best practice and appropriate safety procedures, ameliorating any risk of a major accident in those contexts.

Operational Stage

The proposed development will be located on land which is not at any significant risk of flooding. The entrance arrangements have been designed so as to avoid any risk of a major accident associated with the surrounding road network. It is considered that there is no significant risk related to major accidents or disasters, external or internal, man-made or natural in respect of the proposed development.

6.6 REMEDIAL AND MITIGATION MEASURES

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

6.6.1 Construction Phase

A range of construction related remedial and mitigation measures are proposed throughout this EIAR document with reference to the various environmental topics examined and the inter-relationships between each topic. These remedial and mitigation measures are not likely to result in any significant and likely adverse environmental impacts on population and human health during the construction phases being avoided.

6.6.1.1 Mitigation by Avoidance / Design

No mitigation proposed

6.6.1.2 Mitigation by Prevention

POP & HH CONST 1: In order to protect the amenities enjoyed by nearby residents and the adjoining school, a Construction and Environmental Management Plan (including traffic management) shall be prepared by the contractor and implemented during the construction phase.

POP & HH CONST 2: A berm shall be constructed at the western boundary of the site to prevent any flow of surface water into the drainage ditch during construction.

6.6.1.3 Mitigation by Reduction

No mitigation required

6.6.2 Operational Phase

The operation phase is considered to have likely positive impacts on human beings in relation to the provision of additional residential units and high quality open space and pedestrian/cyclist facilities to cater for the demands of a growing population and encourage active travel modes in accordance with the principles of sustainable development and residential zoning objectives pertaining to the site.

6.7 RESIDUAL EFFECTS

The proposed development will provide an overall positive socio-economic benefit through direct and indirect employment opportunities associated with the predicted growth in trade.

No negative residual impacts have been identified as a result of the proposed development.

6.8 MONITORING

In relation to the impact of the development on population and human health it is considered that the monitoring measures outlined in other chapters and relevant to other environmental topics such as water, air quality and climate and noise are sufficient to adequately address monitoring requirements.

6.9 REFERENCES

Guidelines on the Information to be Contained in Environmental Impact Assessment Reports (EPA, 2022)

Environmental Impact Assessment of Projects – Guidance on the preparation of the Environmental Impact Assessment (European Commission, 2017)

Advice Notes on Current Practice in the Preparation of Environmental Impact Statements (EPA, 2003)

Central Statistics Office (CSO) website www.cso.ie

Limerick Development Plan 2022 – 2028

DoHPLG (2017) – Rebuilding Ireland – Action Plan for Housing and Homelessness

Regional Spatial and Economic Strategy for the Southern Region

OECD Economic Survey of Ireland 2022

ESRI (2022) – Quarterly Economic Commentary, Autumn 2022

ESRI (2018) – Ireland's Economic Outlook: Perspectives and Policy Challenges

Childcare Act (1991) – (Early Years Services) Regulations 2016

Health Safety Authority – www.hsa.ie

Department of Education and Skills (DoES) website www.education.ie

CHAPTER SEVEN BIODIVERSITY

7.1 INTRODUCTION

This chapter assesses the potential impacts of the proposed development upon biodiversity. Under the EIA Directive as well as best practice methodology from the EPA, the analysis of impacts to biodiversity is an essential component of the EIA process, and so is a required chapter in any EIAR.

The purpose of this assessment was to:

- Undertake a desktop review of available ecological data for both the receiving environment and greater area, including a review of European sites within 15 km of the project (considered separately as part of the Appropriate Assessment process) and nationally designated sites within 10km;
- Undertake ecological field surveys of the receiving environment;
- Identify flora and fauna present within the footprint of all elements of the project;
- Evaluate the ecological significance of the receiving environment;
- Appraise the potential impacts of the project on the ecology of the receiving environment;
- Consider measures to mitigate the potential negative impact(s) of the project on the ecology of the receiving environment.

7.1.1 Study Area

The proposed development site (Phase 3) is part of a phased development proposal for a large greenfield area or Masterplan Site (MS). This MS is divided into seven different phases of delivery as detailed in Table 1.1 in Chapter 1.0 Introduction. The overall MS layout which illustrates the indicative layout of the subject site and adjoining lands in the ownership of the applicant is displayed on Figure 1.0 in Chapter 1.0 and full details of the proposed development phases are given in Chapter 2.0.

The study area takes a holistic approach and examines the wider MS area whilst focusing on any areas of significance within the proposed development site. The MS is predominantly open farmland and is located approximately 3.5Km from Limerick City centre and is bisected by the L3102, Old Cratloe Road which runs from the Limerick City Centre past Thomond Park Stadium and Limerick Institute of Technology to the north west out of the City towards the N18 road to Ennis. A new road and roundabout have been developed running northeast from the Old Cratloe separating the Neighbourhood Centre, to the west and the Creche to the east.

Whilst the site is rural in character, nearby housing developments and Limerick City are visible. The land slopes from a higher elevation at the east to lower elevations in the west.

The MS area is composed of primarily open grazed farmland. Hedgerows and hedgerow/treeline combinations run along most of the site boundary. However, there is some post and rail fencing in particular where the proposed Neighbourhood Centre section meets the Old Cratloe Road. There are also a number of hedgerows bounding the individual fields within the overall study area.

The majority of the hedgerows are of good quality.

There is a small pool adjacent to a drainage ditch at the western boundary of the site. The drainage channel runs all the way along the western boundary of the site, adjacent to the proposed Phase 4. This drainage ditch flows into the OPW flood relief network which discharges directly into the River Shannon. The portion of the River Shannon where the OPW channels discharge is designated as the Lower River Shannon Special Area of Conservation (SAC) and River Shannon and River Fergus Estuaries Special Protection Area (SPA) (Figure 7.1).

There are also individual mature trees mixed, native and non-native species and in some sections small copses of mature trees.

To the southwest of Old Cratloe Road the fields nearest to the road are relatively dry, but become increasingly wetter to south, outside the overall study area boundary. Adjacent to these fields is a wet grassland habitat.

Running adjacent to the new distributor Coonagh to Knockalisheen road, which is still under construction, is an OPW flood management drainage channel. The flow in this channel is standing water with no flow during dry periods.

The soil type overlying the bedrock geology, is limestone till from the Crosstown Series, which forms well drained grey/brown podzolics and brown earths, both with basic status.



Figure 7.1 Drainage ditch and connection with flow network of European Sites

**Note that a portion of the Lower River Shannon SAC overlaps with the River Shannon and River Fergus Estuaries SPA.*

7.2 ASSESSMENT METHODOLOGY

7.2.1 Relevant Guidance

The methodology for this assessment has been devised in consideration of the following relevant guidance published by the Environmental Protection Agency (EPA) including 'Guidelines on the information to be contained in Environmental Impact Statements (2002)', 'Advice Notes on Current Practice (in the preparation of Environmental Impact Statements)' (2003) reference was also made to the draft (2015 and 2017) guidelines and 'Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment' (DoECLG, 2013).

Additional guidance available from the EU such as 'Guidance on Integrating Climate Change and Biodiversity into Environmental Impact Assessment' (2013) has also been considered. The appraisal also takes account of 'Guidelines for Ecological Impact Assessment in the United Kingdom' (2006), CIEEM (2018) Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater and Coastal, 2nd edition. Chartered Institute of Ecology and Environmental Management, Winchester both published by the Chartered Institute of Ecology and Environmental Management (CIEEM). The Heritage Council publication 'Best Practice Guidance for Habitat Survey & Mapping' (Smith et al., 2011) is also referenced.

Relevant guidance published by the National Roads Authority (NRA) such as 'Guidelines for Assessment of Ecological Impacts of National Road Schemes' (2009a), and 'Guidelines for the Crossing of Watercourses during the Construction of National Road Schemes' (2008) have also been followed.

Documentation and guidance available from Limerick City and County Council (LC&CC) including the Limerick Development Plan 2022-2028 (LC&CC, 2022) have been referred to. The OPW Flood Risk Management Plan for Shannon Upper & Lower (OPW, 2018) was also reviewed.

Relevant guidance published by the National Roads Authority (NRA), and applicable to assessing watercourses in Ireland, was also followed, including 'Guidelines for the Assessment of Ecological Impacts of National Road Schemes – Revision 2' (NRA 2009a), 'Ecological surveying techniques for protected flora and fauna during the planning of National Road Schemes – Version 2' (NRA 2009b), 'Environmental Impact Assessment of National Road Schemes – A practical guide' (NRA 2008a) and 'Guidelines for the Crossing of Watercourses during the Construction of National Road Schemes' (NRA 2008).

7.2.2 Legislative Context

As the Stage 1 Screening Report for Phase 3 (and previously Phase 1, Phase 2 and the Neighbourhood Centre and Crèche) screened in for Lower River Shannon SAC and the River Shannon and River Fergus Estuaries SPA a Stage two Appropriate Assessment Natura Impact Statement (NIS) was also prepared as part of the original planning application. Therefore, because of the hydrological connection with these two European Sites and potential impact the EU Habitats Directive and EU Birds Directive are relevant to this Environmental Impact Assessment Report as detailed below:

Article 6(1) and article 6(2) of Council Directive 92/43/EEC of 21st May 1992 on the conservation of natural habitats and of wild fauna and flora aims to promote the maintenance of biodiversity. It forms the cornerstone of Europe's nature conservation policy with the Birds Directive and establishes the EU wide Natura 2000 ecological network of protected areas, safeguarded against potentially damaging developments." (EEC, 1992). Member States are required to establish necessary conservation measures and appropriate statutory measures to ensure the protection of natural habitat types in Annex I and the species in Annex II present on the sites. This includes the avoiding the deterioration of natural habitats as well as the disturbance of any species included in Annex II (EHLG, 2009, p18).

Both the Lower River Shannon SAC and River Shannon and River Fergus Estuaries SPA sites are European sites and thus Natura 2000 sites (EHLG, 2009, p18).

In addition, flora and fauna, rare at a national level, are protected under the provisions of the Wildlife Act 1976, as amended, and the orders and regulations made thereunder, such as the Flora Protection Order

Section 171 of the Fisheries (Consolidation) Act 1959 creates the offence of throwing, emptying, permitting or causing to fall onto any waters deleterious matter. Deleterious matter is defined as not only as any substance that is liable to injure fish but is also liable to damage their spawning grounds or the food of any fish or to injure fish in their value as human food or to impair the usefulness of the bed and soil of any waters as spawning grounds or other capacity to produce the food of fish.

Under Section 3 of the Local Government (Water Pollution) Act, 1977 (as amended by Sections 3 and 24 of the 1990 Act) it is an offence to cause or permit any polluting matter to enter waters. Suspended solids would be a key parameter here. Likewise, any visual evidence of oil/fuel in water courses would constitute an offence.

The EU Water Framework Directive (2000/60/EC) requires all Member States to protect and improve water quality in all waters so that we achieve good ecological status by 2015 or, at the latest, by 2027. It was given legal effect in Ireland by the European Communities (Water Policy) Regulations 2003 (S.I. No. 722 of 2003). It applies to rivers, lakes, groundwater, and transitional coastal waters. The Directive requires that management plans be prepared on a river basin basis and specifies a structured method for developing these plans.

The river basin for the study area is that of the River Shannon. However, this has a huge catchment area and therefore the waterway corridor as defined for this study is composed of the catchment of streams and OPW channels adjacent to the study area that drain directly into the Shannon River.

7.2.3 Desktop Study

A desk study was carried out to collate and review available information, datasets and documentation sources pertaining to the MS site's natural environment. These sources included:

- OSI Aerial photography and 1:50000 mapping
- National Parks and Wildlife Service (NPWS);
- The Ireland Red List No. 10: Vascular Plants (Wyse et al. 2016);
- Teagasc Soil area maps

- Geological Survey of Ireland
- Bat Conservation Ireland (BCI)
- Geological Survey Ireland (GSI) area maps
- Environmental Protection Agency (EPA) water quality data
- Limerick Development Plan 2022 – 2028
- Limerick Heritage Plan 2017-2030
- Limerick City County Biodiversity Plan
- Limerick Actions for Pollinators

Designated Nature Conservation Sites

Natural Heritage Areas (NHAs) and proposed Natural Heritage Areas (pNHAs) within 10km of the proposed site were identified as part of this ecological appraisal using in-house GIS systems to interrogate datasets obtained from the NPWS at www.npws.ie. These designated sites are described in Table 7.2 of this document.

European (Natura 2000) sites within 15 km of this project, such as Special Areas of Conservation (SACs) and Special Protection Areas for birds (SPAs) were also identified as part of this ecological appraisal and detailed in the Stage 1 Screening Report submitted as part of the planning application for Phase 3.

A separate Appropriate Assessment (AA) screening and Natura Impact Statement was carried out in order to appraise the potential impact on European site specifically for Phase 3 and submitted as part of the initial planning application. The designated sites evaluated are also detailed in Table 7.5 of this document.

Flora and Fauna

A desktop study was undertaken to locate any records of rare or protected flora and fauna that have previously been recorded for the site and surrounding area. Records available on the National Biodiversity Data Centre websites were reviewed, and records of obtained by request from the NPWS were reviewed. Botanical species were assessed in accordance with their occurrence on the Flora Protection Order (2015) and The Ireland Red List No. 10: Vascular Plants (Wyse et al. 2016).

7.2.4 Field Survey

An ecological site walkover was carried out over the 15th November 2021 and 15th June 2022 for the whole MS. Particulars are outlined in Table 7.1 below.

Date	Weather Conditions	Surveyor
15/11/2021	Precipitation: None, Cloud: 4/8-8/8, Visibility: Excellent	JROC
15/06/2022	Precipitation: None, Cloud: 2/8-5/8 Visibility: Excellent	JROC and DOC

Table 7.1 Baseline Field Assessment Details

Habitats

The habitats within the site of the proposed development were identified and classified according to 'A Guide to Habitats in Ireland' (Fossitt, 2000) during walkover surveys of the site on the dates indicated above in Table 7.1. The dominant plant species present in each habitat type were recorded.

Habitats were appraised and evaluated according to their occurrence as protected habitats under Annex I of the EU Habitats Directive (92/43/EEC) and for their capacity to support rare, threatened and endangered species. The methodology used in this report to assess the impact on habitats is based on NRA guidelines (2009). The habitat mapping exercise had regard to the 'Best Practice Guidance for Habitat Survey and Mapping' (Smith et al., 2011) published by the Heritage Council. Scientific and common names for plants follow Parnell and Curtis (2012).

In addition to habitat identification, each habitat was assessed for its ecological significance, based on the National Roads Authority (NRA) Site Evaluation Scheme (NRA, 2009).

Mammals

Mammal observations or signs were recorded during site walkovers on the dates indicated above in Table 7.1. Field boundaries and densely vegetated areas were walked to search for potential badger setts. Evidence of bat roosts was searched for and information on all potential roosts was recorded according to roost identification guidelines, but no roosts were found. 'Bat Survey Guidelines: Traditional Farm Buildings Scheme', Aughney, T., Kelleher, C. & Mullen, D. (2008).

The conservation status of mammals within Ireland and Europe is assessed using one or more of the following documents; Wildlife Acts (1976 - 2010), the Red List of Terrestrial Mammals (Marnell et al., 2009) and NPWS (2013) The Status of EU Protected Habitats and Species in Ireland.

Avifauna

All bird species observed and heard within the study area boundary were noted during the walk over surveys within the site.

Other Fauna

During the course of the walk over surveys at the proposed site, species from other groups of fauna were noted and included in the report.

7.2.5 Evaluation and Impact Assessment

The value of the ecological resources and features or receptors was determined using the ecological evaluation guidance given in the National Roads Authority (NRA) Ecological Assessment Guidelines as outlined in Table 7.2 (NRA, 2009). This evaluation scheme seeks to provide value ratings for ecological receptors, with values ranging from internationally to locally important. Internationally important receptors would include Special Areas of Conservation (SAC) or Special Protected Areas (SPA) while those of national importance would include Natural Heritage Areas (NHA).

This evaluation scheme is aimed at assessing the value of sites (see Table 7.2). It has been adapted here to assess the value of habitats and fauna within one site. The value of habitats is assessed based

on condition, size, rarity, conservation and legal status. The value of fauna is assessed on its biodiversity value, legal status and conservation status. Biodiversity value is based on its national distribution, abundance or rarity, and associated trends.

All Irish bat species are protected under the Wildlife (Amendment) Act 2000 and the EU Habitats Directive. Some of the habitats and species identified were selected as key ecological receptors. The NRA (NRA, 2009) refer to key ecological receptors as those ecological features which are evaluated as Locally Important (higher value) or higher and are likely to be impacted significantly by the proposed development. The features that were evaluated as being of Local Importance (higher value) and higher in this study were selected as key ecological features and the impact significance on each of these features was assessed.

Ecological Resource Evaluation

Ecological resources are evaluated using the criteria outlined in Table 7.2.

Site Rating	Qualifying Criteria
A - International Importance	SAC, SPA or site qualifying as such. Sites containing 'best examples' of Annex I priority habitats (Habitats Directive). Resident or regularly occurring populations of species listed under Annex II (Habitats Directive); Annex I (Birds Directive); the Bonn or Berne Conventions. RAMSAR site; UNESCO biosphere reserve; Designated Salmonid water
B - National Importance	NHA. Statutory Nature Reserves. Refuge for Flora and Fauna. National Park. Resident or regularly occurring populations of species listed in the Wildlife Act or Red Data List 'Viable' examples of habitats listed in Annex I of the Habitats Directive
C - County Importance	Area of Special Amenity, Tree Protection Orders, high amenity (designated under a County Development Plan) Resident or regularly occurring populations (important at a county level, defined as >1% of the county population) of European, Wildlife Act or Red Data Book species Sites containing semi-natural habitat types with high biodiversity in a county context, and a high degree of naturalness, or populations of species that are uncommon in the county
D - Local importance, higher value	Sites containing semi-natural habitat types with high biodiversity in a county context, and a high degree of naturalness, or populations of species that are uncommon in the locality Sites or features containing common or lower value habitats, including naturalised species that are nevertheless essential in maintaining links and ecological corridors between features of higher ecological value.
E - Local importance, lower value	Sites containing small areas of semi-natural habitat that are of some local importance for wildlife; Sites or features containing non-native species that are of some importance in maintaining habitat links.

Table 7.2 Ecological Resource Evaluation Criteria (from NRA, 2009)

Assessing Impact Significance

Once the value of the identified ecological receptors (features and resources) was determined, the next step was to assess the potential effect or impact of the proposed development on the identified key

ecological receptors. This was carried out with regard to the criteria outlined in various impact assessment guidelines (NRA, 2009; CIEEM, 2006, 2016 and 2018). The impacts were assessed under a number of parameters such as magnitude, extent, duration and reversibility.

Where impacts are assessed to be significant, mitigation measures have been incorporated into the project design to remove or reduce these impacts. The residual impacts after mitigation were then assessed.

The cumulative impact of the development was also assessed by discussing the impact of the overall development that have planning permission, that are in the planning process, but not yet received permission or other proposed developments that are in existence in the area.

The cumulative impact of neighbouring developments and agriculture in the greater area are also considered.

7.3 RECEIVING ENVIRONMENT

7.3.1 Field Results

The habitats present within the site were classified based on botanical and physical characteristics according to Fossit's (2000) classification system. Floral and faunal species directly observed were identified, and signs of cryptic and nocturnal mammals and mammal dwellings were searched for. Large mature trees were also assessed in terms of their potential to provide roosting habitat for bats.

The species recorded during field surveys are assessed side by side with those belonging to the same group (i.e. avifauna, mammals) for which records relating to the study area exist.

7.3.2 Desktop Study

As outlined in 7.2.4 above, a desk study was carried out to collate and review available information, datasets and documentation sources pertaining to the MS's natural environment.

Records of invasive plant species, mammals, birds, and other faunal groups, including common, protected, and invasive species within the two 1km grid squares (R54 and R55) overlapping and surrounding the proposed MS were also retrieved from the NBDC website.

These were used both independently, and also in conjunction with field results as described above.

A central element of the desktop study is the collection of data on designated nature conservation sites. Sites of national importance within 10 km of the proposed development site are considered as part of the ecological assessment (within this environmental report). Sites of international importance within 15km of the proposed development site are dealt with separately as part of the Appropriate Assessment (AA) process and discussed in the AA Screening Report and Natura Impact Statement that was submitted as part of the original planning application for Phase 3.

European Sites are included in Table 7.3 and Figure 7.2. Figure 7.3 shows designated nature conservation sites of national importance within 10 km of the proposed development and details of the only Natural Heritage Area within 10km are in Table 7.4.

There were a number of SACs and an SPA within 15km of the proposed development as detailed in Figure 7.2. Natural Heritage (NHA) sites and proposed Natural Heritage Sites (pNHA) sites within a 10Kkm radius have been identified in Figure 7.3

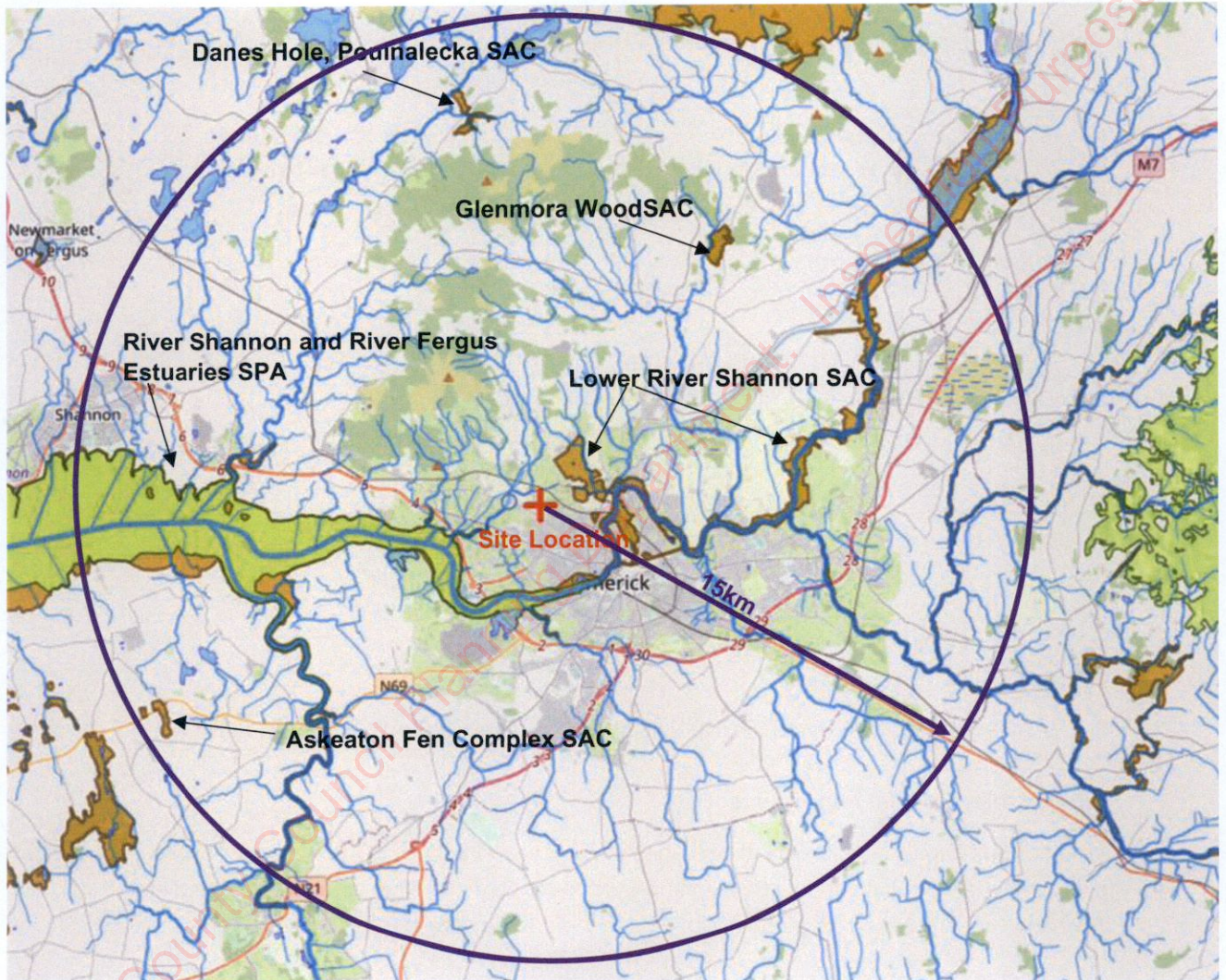


Figure 7.2 Proximity of the development to European Sites within a 15km radius (EPA, 2023).

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08 MAY 2023
Planning and Environmental Services

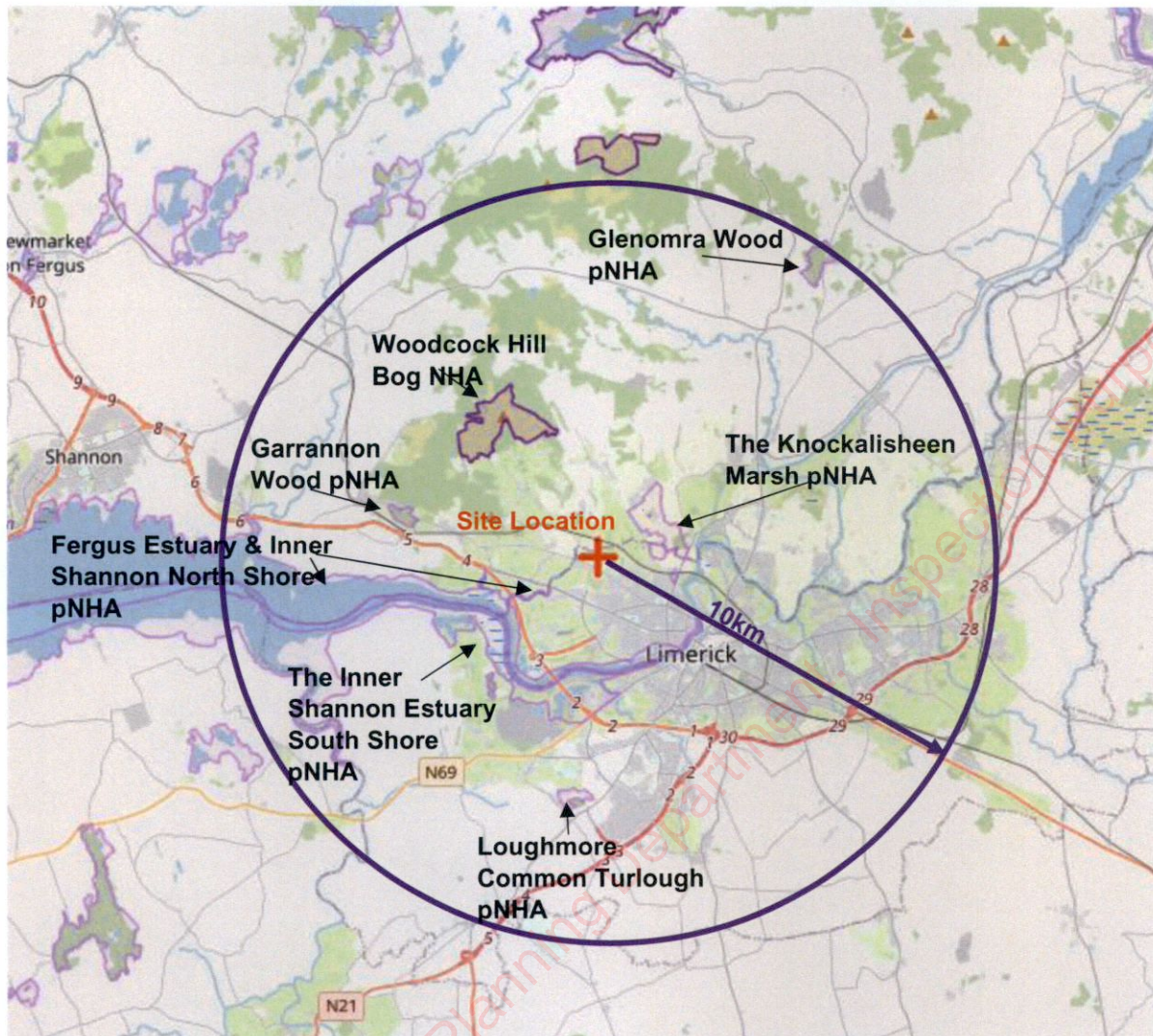


Figure 7.3 Proximity of the development to Natural Heritage Areas within a 10km radius (EPA, 2023)

Sites of International Importance

In accordance with Article 6 of the 'Habitats' Directive (92/43/EEC) the Stage 1 Screening Report evaluated the potential impacts on all of the European Sites identified in Figure 7.2, as detailed in Table 7.3. and was presented for planning for Phase 3 of the development.

The two sites that were screened in were Lower River Shannon SAC 002165 and River Shannon and River Fergus Estuaries SPA 004077.

Name of Site	Site Code	Approximate distance	Direction	Potential Risk
Lower River Shannon SAC	002165	1.14Km and 1.74Km	North, North East and South West respectively	Yes- Potential Hydrological connectivity and therefore potential pathway for impacts
River Shannon and River Fergus Estuaries SPA	004077	1.74Km	South West	Yes - Potential Hydrological connectivity and therefore potential pathway for impacts
Glenomra Wood SAC	001013	9.6km	South west	No, hydrological connectivity and sufficient geographical separation, so no potential pathway for impacts
Askeaton Fen Complex SAC	0002279	13.8km	North east	No, hydrological connectivity and sufficient geographical separation, so no potential pathway for impacts
Danes Hole Poulnalecka SAC	0000030	12.1km	North	No, Sufficient geographical separation, so no potential pathway for impacts

Table 7.3 European Sites within 15km of the proposed development

Sites of National Importance

Sites of National Importance in the Republic of Ireland are termed, Natural Heritage Areas (NHAs) and proposed Natural Heritage Areas (pNHAs). While the Wildlife (Amendment) Act 2000 has been passed into law, pNHAs will not have legal protection until the consultative process with landowners has been completed; this process is currently ongoing. Six pNHAs and one NHAs are present within 10 km of the Study Area (Figure 7.3 and Table 7.4).

Site Name	Site Code	Approximate Distance	Direction	Potential Risk
Woodcock Hill Bog NHA	002402	4.2km	North west	No, hydrological connectivity and sufficient geographical separation, so no potential pathway for impacts
Fergus Estuary & Inner Shannon North Shore pNHA	002048	1.7km	South west	Yes- Potential Hydrological connectivity and therefore potential pathway for impacts
The Inner Shannon Estuary South Shore pNHA	00435	3.4km	South west	Yes- Potential Hydrological connectivity and therefore potential pathway for impacts
Knockalisheen Marsh pNHA	002001	1.4km	North east	No, hydrological connectivity and sufficient geographical separation, so no potential pathway for impacts
Loughmore Common Turlough pNHA	00438	6.5km	South	No, hydrological connectivity and sufficient geographical separation, so no potential pathway for impacts
Glenomra Wood pNHA	001013	9.6km	North, north east	No, hydrological connectivity and sufficient geographical separation, so no potential pathway for impacts

Garrannon Wood pNHA	001012	5.1km	North west	No, hydrological connectivity and sufficient geographical separation, so no potential pathway for impacts
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Table 7.4 National sites within 10km of the proposed development

7.3.3 Flora

Protected or Rare Flora

No rare or protected flora species protected under the Flora Protection Order (2015), listed in Annex II and IV of the EU habitats directive (92/43/ECC), or listed in the Irish Red Data were recorded during the surveys of MS.

Invasive Non-Native Flora

No non-native invasive species were recorded on the MS. A search of the NBDC was conducted to identify any invasive species within R54 and R55 grid squares covering and adjacent to the development site (Table 7.5).

Common Name	Scientific Name	Invasive Impact	Grid Reference	Record Date
Butterfly-bush	<i>Buddleja davidii</i>	Medium	R559552	15/07/22
Japanese knotweed	<i>Fallopia japonica</i>	High	R551590 R542594	12/02/2018 05/06/2018
Indian balsam	<i>Impatiens glandulifera</i>	High	R541594	23/08/2007

Table 7.5 Invasive non-native flora records within 2km (Grids R54 and R55) of the site

7.3.4 Habitats

There are no habitats within the study area that conform to those listed under Annex I of the EU Habitats Directive. The dominant habitats within the site boundary are Improved Agricultural Grassland/ Dry Neutral Grassland Mosaic (GA1/GS1), Improved Agricultural Grassland (GA1), and Hedgerows/Treelines (WL1/WL2).

There are also areas of Scrub/Scattered Trees Mosaic (WS1/WD5) as well as Scattered Trees (WD5), a Drainage Ditch (FW4), a Pool (FL5), an area of Wet Grassland (GS4) and Spoil and Bare Ground (ED2).

Figure 7.4 shows the habitats mapped for the MS.

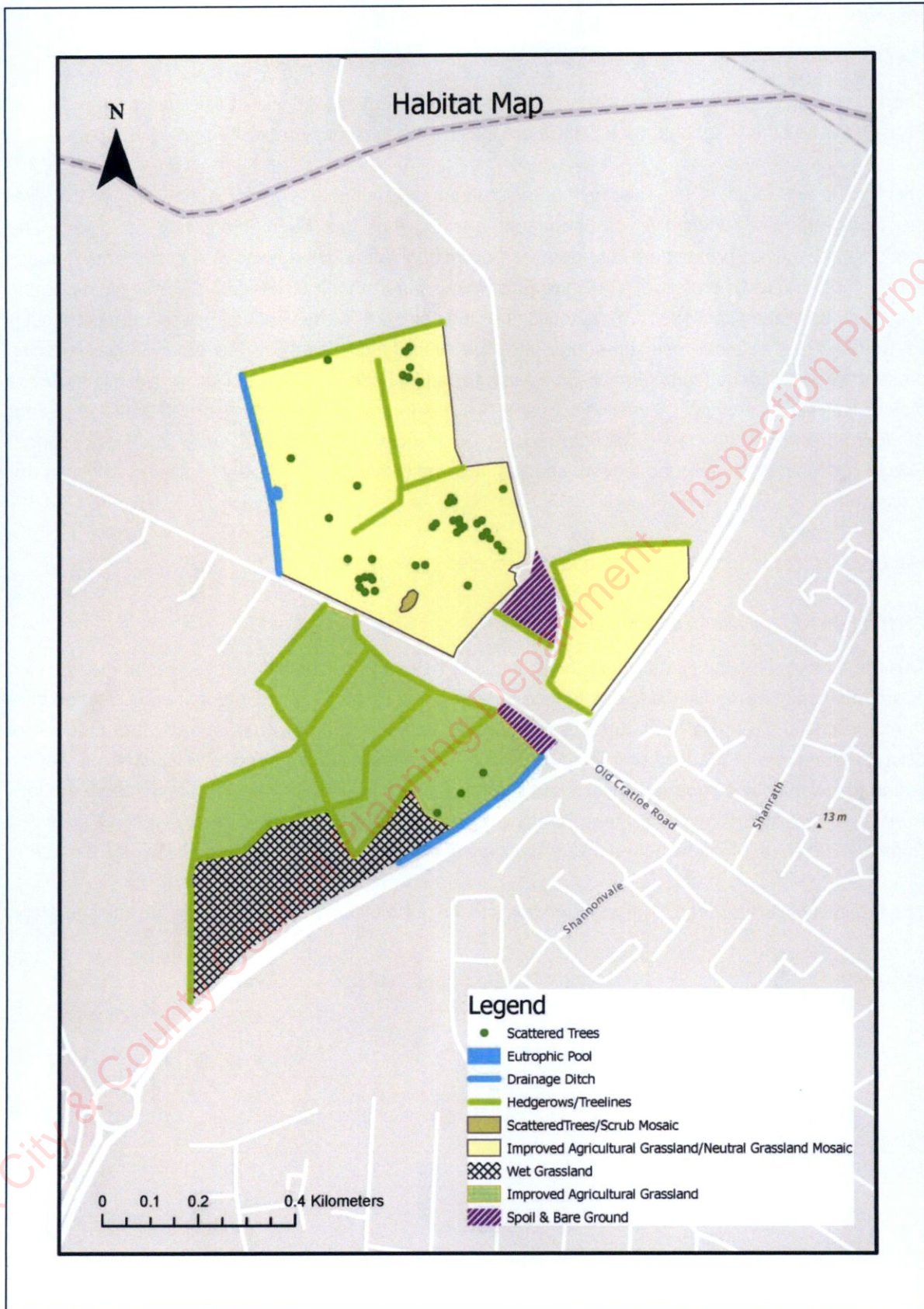


Figure 7.4 Habitat Map of the MS

Habitats within and adjacent to the Proposed Masterplan Site

GA1/ GS1 Improved Agricultural Grassland/Dry Neutral Grassland Mosaic

This type of habitat occupies the majority of the site (Figures 7.5 and 7.6). The fields where the proposed Phases 1-4 and the Neighbourhood Centre are located are currently grazed by horses and ponies.

This habitat type is usually seeded with an agricultural mix, suitable for grazing, however on this site, the fields are more indicative of permanent pasture that has been intensively managed. The predominant species present are Rye-grasses *Lolium spp.*, Meadow-grasses *Poa spp.*, Bents *Agrostis spp.*, Timothy *Phleum pratense*, Yorkshire Fog *Holcus lanatus* with Cocks-foot *Dactylis glomerata*, in uncut or less grazed sections. Where sections of the fields are wetter, rush species are present such as Compact rush *Juncus conglomeratus* and Soft rush *Juncus effuses*. The broad leaved species present are Meadow buttercup *Ranunculus acris*, Creeping buttercup *Ranunculus repens*, Nettle *Urtica dioica*, Ragwort (common) *Senecio jacobaea*, Thistle (marsh) *Cirsium palustre*, Thistle (creeping) *Cirsium arvense*, White clover *Trifolium repens*, Dock (common) *Rumex acetosa* and Dock (curled) *Rumex crispus*. These broad-leaved species are indicative of intensively grazed, species poor grassland.

Figure 7.6 shows a portion of the area to be occupied by Phase 3.

GA1 Improved Agricultural Grassland

This habitat occupies the fields where the proposed Phase 5 and is typical of a re-seeded grass sward of predominantly Perennial rye-grass *Lolium perenne*, other grass species present are Common bent *Agrostis tenuis*, Creeping bent *Agrostis stolonifera*, Yorkshire Fog *Holcus lanatus*, and Cocks-foot *Dactylis glomerata* in the field margins. The predominant broadleaved species present are Creeping buttercup *Ranunculus repens*, White clover *Trifolium repens*, Red clover *Trifolium pratense*, Dock *Rumex acetosa* and Ribwort plantain *Plantago lanceolata*. Where these fields are wetter Silverweed *Potentilla anserine*, Meadow buttercup *Ranunculus acris* and Rush (Hard) *Juncus inflexus* are present.

This habitat type is also present in adjacent fields to the north of the MS outside of the red line boundary.



Figure 7.5 GA1/GS1 Improved Agricultural Grassland/Dry Neutral Grassland Mosaic



Figure 7.6 GA1/GS1 Improved Agricultural Grassland/Dry Neutral Grassland Mosaic

GS4 Wet Grassland

Adjacent to and south of the area where Phase 5 is located but within the red line boundary of the MS, the fields become increasingly wetter and grade into GS4 Wet Grassland. This habitat is also present in the adjoining OPW channel where there is limited standing water. The predominant species present are Meadow foxtail *Alopecurus pratensis*, False oat-grass *Arrhenatherum elatius*, Cocks-foot *Dactylis glomerata*, Yorkshire Fog *Holcus lanatus*, Sweet vernal grass *Anthoxanthum odoratum*, Common reed *Phragmites australis*, Wood club-rush *Scirpus sylvaticus*, Yellow Flag (Iris) *Iris pseudacorus*, Rush (Hard) *Juncus inflexus* Greater birds-foot trefoil *Lotus pedunculatus*, March cinquefoil *Comarum palustre*, Marsh bedstraw *Galium palustre*, Silverweed *Potentilla anserina*, Purple-loosestrife *Lythrum salicaria*, Hoary willowherb *Epilobium parviflorum*, Vetch (Bush) *Vicia sepium*, Sorrel *Rumex acetosa*, Meadow sweet *Filipendula ulmaria*, Common valerian *Valeriana officinalis*, Clovers (red) *Trifolium pratense*, Creeping buttercup *Ranunculus repens* and Grey willow *Salix cinerea* (Figures 7.7 and 7.8).

ED2 Spoil and Bare Ground

Adjacent to the newly constructed road, there are two areas of spoil and bare ground on either side of the road. In places these have become colonised predominantly with Oil seed rape *Brassica napus* and some Dock *Rumex obtusifolius* (Figure 7.9). In addition, there is an area of spoil where the Crèche is to be located and has been partly colonised with similar species.

FW4 Drainage ditch

There is a drainage ditch on the western boundary of the MS, whilst connected to the flow network of the Lower River Shannon SAC and River Shannon and River Fergus SPA, contained no moving water at the time of surveying. In preceding days there had been moderate rainfall. As this ditch is bounded by a hedge bank containing prolific Bramble *Rubus fruticosus agg.*, it was difficult to access full, however Yellow Flag (Iris) *Iris pseudacorus* is present in places where water levels are reduced.

The second drainage ditch is an OPW drainage channel (Figure 7.7), which was partially dry and the species indicative of the adjacent GS4 Wet Grassland, where there was standing water. Common Water-starwort *Callitriche stagnalis*, Yellow Flag (Iris) *Iris pseudacorus*, Common reed *Phragmites australis*, Floating sweet-grass *Glyceria fluitans* and Water-cress *Nasturtium officinale* are present.

FL5 Eutrophic (lakes) pond

A small pond is also positioned adjacent to the western boundary of the MS on the edge of the main field where Phase 4 is to be located, that appears to be rainfall fed, rather than from the drainage ditch (Figure 7.9). The horses and ponies evidently use this pond for drinking, due to the numerous hoof prints present. Species present within this habitat are Grey willow *Salix cinerea*, Yellow Flag (Iris) *Iris pseudacorus*, Purple-loosestrife *Lythrum salicaria*, Bramble *Rubus fruticosus agg.*, Compact rush *Juncus conglomeratus* and Soft rush *Juncus effuses* at the water's edge, with Duckweed (common) *Lemna minor* in the open water. Whether this pond is artificial or natural is unknown. However, in the north-west corner of the site, there is a former artificial pond that is fed by a clay drainage pipe, which is currently dry and contains no water.



Figure 7.7 GS4 Wet Grassland and FW4 Drainage Ditch (OPW channel)



Figure 7.8 GS4 Wet Grassland



Figure 7.9 ED2 Spoil and Bare Ground

WS1/WD5 Scrub/Scattered Trees Mosaic

Within the open grassland area there is small copse/scrub area, which looks as though it may be a remnant of an old hedgerow. The species are a mixture of planted and self-seeded native species, such as Hawthorn *Crataegus monogyna* and Elder *Sambucus nigra*, with planted Black poplar *Populus nigra*. Bramble *Rubus fruticosus* agg. is the other main species present.

WD5 Scattered Trees

Within the GA1/GS1 Improved Agricultural Grassland/Dry Neutral Grassland Mosaic where Phases 1-4 and the Neighbourhood centre are proposed, there are a number of scattered trees and in places these occur in groups. The species are Alder *Alnus glutinosa*, Horse chestnut *Aesculus hippocastanum*, Black poplar *Populus nigra*, Black maple *Acer nigrum* and Spruce species *Picea spp.* and Grey willow *Salix cinerea*.

WL1/WL2 Hedgerows/Treelines

There are boundary hedgerows to the north of the site and perpendicular to these is a hedgerow that partially bisects the field (Figure 7.11). The predominant species in the hedgerows are Hawthorn *Crataegus monogyna*, Blackthorn *Prunus spinosa*, Ash *Fraxinus excelsior*, Elder *Sambucus nigra* and Crab apple *Malus sylvestris*. Other woody species such as Field rose *Rosa arvensis*, Bramble *Rubus fruticosus* agg. and Ivy *Hedera helix* are present.

Where Phase 2 is located there is a one hedgerow that is adjacent to the road where the species present are predominantly Hawthorn *Crataegus monogyna*, Blackthorn *Prunus spinosa* and Ash *Fraxinus excelsior* with some Sycamore *Acer pseudoplatanus* and Spindle *Euonymus europeaus*. Other species present are Bramble *Rubus fruticosus* agg. and Ivy *Hedera helix*. Nettle *Urtica dioica* is abundant indicating nutrient enrichment. There is also a hedge to the north of this portion of the site, which has similar species to that above.



Figure 7.10 FL5 Eutrophic Pool



Figure 7.11 Partial WL1/WL2 Hedgerow/Treeline bisecting the field where the proposed Phase 3 is located.

Habitat	Evaluation	Rationale	Selection as a key ecological receptor
GA1/ GS1 Improved Agricultural Grassland/Dry Neutral Grassland Mosaic	Local Importance (lower value)	Highly modified habitat, but potential for a range of wildlife	Yes
GA1 Improved Agricultural Grassland	Local Importance (lower value)	Highly modified habitat, but potential for a range of wildlife	Yes
GS4 Wet Grassland	Local Importance (higher value)	Semi-natural habitat; potential for a range of wildlife; outside the development footprint, but within the red line boundary.	No
ED2 Spoil and Bare Ground	Local Importance (lower value)	Highly modified habitat, but potential for a range of wildlife	Yes
FW4 Drainage ditch FW4 OPW Drainage ditch	Local Importance (higher value) Local importance (lower value)	Semi-natural habitat; potential for a range of wildlife Man-made feature with runoff from road. Outside of MS.	Yes Yes
FL5 Eutrophic (lakes) pond	Local Importance (lower value)	Semi-natural habitat; potential for a range of wildlife. However, nutrient	Yes

		enriched from horse manure.	
WS1/WD5 Scrub/Scattered Trees Mosaic	Local Importance (lower value)	Semi-natural/modified habitat; potential for a range of wildlife, but remnant of earlier hedgerow	Yes
WD5 Scattered Trees (non-native)	Local Importance (lower value)	Mixture of native and non-native species, habitat; potential for a range of wildlife	Yes
WD5 Scattered Trees (native)	Local importance (lower value)		
WL1/WL2 Hedgerows/Treelines	Local Importance (higher value)	Semi-natural habitat; potential for bat roosts in trees with thick growths of ivy; proximity to development footprint;	Yes

Table 7.6 Evaluation of habitats within the study area (NRA, 2009)

7.3.5 Fauna

Birds

During the walkover surveys on the 15th November 2021 and 15th June 2022 a number of bird species were observed or heard as detailed in Table 7.7.

The hedgerows, blocks of woodland, and scrub within and bounding the site are likely to be used by Robin and other species for nesting. Robin and other species are also likely to forage within these areas. Robin may also forage within the fields themselves. Starling may forage within fields within the proposed development site, favouring grassland habitats. They may use crevices and cracks within trees along the field boundaries and woodlands within and bounding the site to breed. Swallow and House Martin may forage on the wing over the open grassland habitats within the proposed development site boundary. However, there is no potential breeding habitat for either of these species within the proposed development site.

No overwintering waterfowl species were identified on the site.

No rare or species of conservation concern were recorded on the site at the time of surveying. (Kingston, 2012).

Common Name	Scientific Name	Status BOCCI
Blackbird	<i>Turdus merula</i>	
Blue tit	<i>Parus caeruleus</i>	
Bulfinch	<i>Pyrrhula pyrrhula</i>	
Carrion crow	<i>Covus corone corone</i>	
Chaffinch	<i>Fringilla coelebs</i>	
Field fare	<i>Turdus pilaris</i>	
Goldfinch	<i>Carduelis carduelis</i>	

Great tit	<i>Parus major</i>	
House sparrow	<i>Passer domesticus</i>	Amber
Robin	<i>Erithacus rubecula</i>	
Starling	<i>Sturnus vulgaris</i>	Amber
Wren	<i>Troglodytes troglodytes</i>	

Table 7.7 Birds identified during the walkover surveys and their status in terms of the Birds of Conservation Concern in Ireland

Mammals

There was evidence of possibly a Fox *Vulpes vulpes* burrow that is not currently in use as well as tracks in various locations within the study area.

There was no evidence of Otter *Lutra lutra* the study area. However, recorded on the NBDC, the most recent records were in Grids R575576 and R575573, which are within a 5km of the study area, recorded as part of the Mammals of Ireland Survey 2016-25 (Biodiversity Ireland, 2023).

No dawn or dusk survey for bats has been completed on the site. However, trees within the copses and hedgerows were checked for likely roosts, and none were identified during the walkover surveys. There were no derelict or unoccupied buildings within the overall study area that would provide suitable bat roosting sites.

A range of bat species records were retrieved from the NBDC within the 2km grid square of the development site as detailed in Table 7.8.

Species Name	Common	Scientific Name	Grid	Date
Soprano pipistrelle bat		<i>Pipistrellus pygmaeus</i>	R568563	07/06/2007
			R540560	01/06/2005
			R568563	07/06/2007
			R530560	01/06/2005
Daubenton's bat		<i>Myotis daubentonii</i>	R540560	01/06/2005
			R530560	01/06/2005
			R530550	01/06/2005
			R540550	01/06/2005

Table 7.8 Bat species recorded within 2km of the development site (Biodiversity Ireland, 2023)

Irish Hare could potentially use the site's hedgerows and would favour grassland habitats, although there are no records in the vicinity of the development site.

While Badger is recorded within the local area (in Grid R545574 in 2010 and Grid R534587 in 2009) and could potentially forage within and commute through the proposed development site, no Badger signs such as snuffles, latrines, or droppings were observed within the site, and no setts were present in densely vegetated areas within and in the vicinity of the site.

Hedgehog could potentially be present within the site; they are known to nest in hedgerows. As such, there is potential for this species to forage, nest and/or hibernate within and in areas bounding the proposed development site.

Irish stoat are known to predate on a variety of prey, including Rabbits, and birds and their eggs, and also to utilise a variety of den sites, including those excavated by other mammal species and accumulations of stones. As such, there is potential for this species to forage and breed within and in areas bounding the proposed development site. However, there are no records for stoat in the vicinity of the development site.

There are also no records of the high-impact invasive mammal species American Mink *Mustela vison* within the two 2km grid square or of Brown Rat *Rattus norvegicus*.

Other Fauna

Common frog *Rana temporaria* were not recorded on site during the walkover surveys and as both the drainage ditches contain standing water, together with the small pool, there is a likelihood that frogs could spawn in these habitats and therefore a further survey should be completed in March prior to construction. According to the NBDC records, Common frog was recorded in Grid 567510 on the 01/03/202. Smooth newt *Lissotriton vulgaris* was recorded in Grid 515545 on 04/04/2020, but not recorded on the site during the walk over surveys. Similarly, these were not done at the optimum time for surveying the aquatic habitats and as for the Common frog, surveys should be completed in March for these species and other amphibians.

Emerald damselfly *Lestes sponsa*, Speckled wood butterfly *Pararge aegeria* and Cabbage white butterfly *Pieris rapae* were recorded on the development site during the walk over survey on 15th June 2021.

7.4 DESCRIPTION OF EFFECTS

7.4.1 'Do-Nothing' Scenario

If the proposed development was not to proceed on the subject site and on the overall Masterplan site, the existing biodiversity would be left undisturbed and no likely effects would occur.

Most of the habitats to be affected have been significantly modified from their natural state by human activity. Formally disturbed areas and areas that have been left unmanaged are being recolonised by vegetation. The general pattern of succession from recolonising bare ground to patches of grassland to woodland would be expected to continue.

In the event that the proposed development does not proceed then the lands will likely continue in agricultural use.

7.4.2 Construction Effects

Of principal concern is the Lower River Shannon SAC and River Shannon and River Fergus Estuaries SPA and the hydrological connectivity of these habitats with the development site. Also of concern are the Fergus Estuary & Inner Shannon North Shore pNHA and The Inner Shannon Estuary South Shore pNHA, which overlap with the two European Sites. As detailed in the Stage 1 Appropriate Assessment Screening report accompanying the planning application, the potential significant effects on the



Qualifying Interests of the European Sites and thus National Sites, is principally in the form of emissions to surface water during the construction phase.

Within the MS site and the proposed Phase 3 development, the major concern is that of habitat loss. Other concerns on habitats and their species that are being retained within the development site and in the surrounding area, would be pollution, emissions to surface water as well as noise and dust.

7.4.3 Operational Effects

Encroachment by development and increased human disturbance of birds and other wildlife are areas where the potential for impacts exists.

The potential for hydrological impacts resulting from the proposed development can be expected to be as a result of surface water draining and storm water drainage. However, a range of Sustainable Drainage Solutions (SuDs) have been designed to intercept the surface water and storm water to prevent these impacts as follows:

- Permeable paving will be used to construct car parking areas.
- Public road areas to be finished with porous asphalt
- Stone soakaways
- Swales
- Bio-retention strips
- Tree pits
- Swale
- Cubic M3 attenuation system

As such, rainfall and storm water within the proposed development site will be diverted away from the likely path towards the drainage channels with the implementation of the various SuDs measures. The excess flow from the soakaways (i.e. that which does not percolate through the ground) will be discharged to the cubic M3 attenuation tank. The discharge of surface water will be subject to standard environmental mitigation measures including a Class 1 Bypass Separator with an alarm and dial out facility, thereby preventing the discharge of emissions to the drainage ditch. Therefore, there will be no direct emissions of water discharge to the drainage ditch that are within the flow network that connects to the Lower River Shannon SAC and River Shannon and River Fergus Estuaries SPA. Phase 2 surface water and storm water runoff discharges to a swale that runs along the edge of the road and discharges into an OPW channel approximately 500m from the MS.

Foul water from all phases will discharge directly into the foul drainage system for Limerick City.

7.4.4 Cumulative Effects

This proposed development must be seen as part of a wider phased development of the surrounding lands. It is Delivery 5, Phase 3 of an overall planned development of five phases and seven delivery packages comprising as detailed in Chapter 1.0 Table 1.1. To date only Phase 1 has been granted permission although it is currently subject to a third party appeal to An Bord Pleanála. See the Masterplan Drawing detailed in Chapter 2.0. Notwithstanding the Masterplan being advanced as separate phases of development, this assessment has regard to Phase 1 which has been granted permission and the other remaining phases as proposed insofar as information is available. A number

of the identified impacts can also act cumulatively with other impacts from similar developments in this area of Limerick. These primarily arise through the additional loading to wastewater treatment plants in Limerick City.

In order to reduce the runoff or rainwater and storm water into the wastewater treatment system, all surface water will be collected and treated separately through SuDs measures or attenuation system, as detailed above, before being discharged to water courses, thus reducing the cumulative impact to of wastewater to some extent.

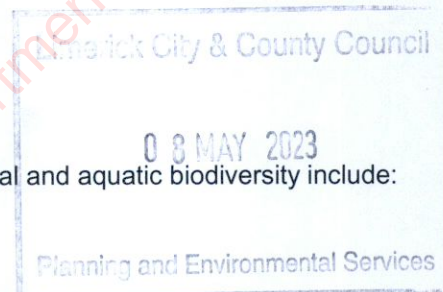
Based on the information in this report, the proposed Phase 3, will not have a significant adverse effect on the natural environment.

A search was made of Limerick County Council planning website for other developments in the vicinity of the proposed development. The only other significant development in the vicinity of the site was the construction of a new road network (Coonagh to Knockalisheen Distributer Road). However, at the time of surveying the construction of this road development was partially complete and has been halted. Access roads for Phase 3 have been constructed and will provide access to the site for all construction traffic.

7.5 LIKELIHOOD OF SIGNIFICANT EFFECTS

The potential impacts of the proposed development on terrestrial and aquatic biodiversity include:

- Impacts on Habitats
- Impacts from non-native invasive species
- Predicted impacts on water quality and aquatic ecology during construction
- Predicted impacts on water quality and aquatic ecology during operation
- Predicted Impacts on fauna during operation – Air
- Potential impacts on protected mammals – bats and otter during construction and operation
- Potential impacts on birds during construction and operation
- Potential impacts on other fauna during construction and operation.



The potential impacts and likelihood of significant effects are detailed in Table 7.9.

Impact	Residual Effect
Impacts on Habitats	The habitats to be directly affected consist primarily of modified habitats of reasonable ecological value and classified as Local Importance (Lower value). The impact on these habitats will be long term and significant. However measures have been implemented to reduce the impact by creating replacement habitats. The impacts on those habitats that are classed as Local importance (Higher Value) will be short term and imperceptible, provided mitigated measures are employed. The ecological effect from dust generation during construction will be short term and imperceptible.

Impacts from non-native invasive species	<p>Buddleia and this species was recorded outside the proposed development site. There will be no ecological effect from this invasive species.</p> <p>Indian balsam and Japanese knotweed were also recorded in the 2km squares adjacent to the development site. Although not within the site, these species are highly invasive and should they become established during the construction phase then appropriate actions to record and remove them will be required.</p>
Predicted impacts on water quality and aquatic ecology during construction	<p>No watercourses of high sensitivity to pollutants or high conservation value occur in close proximity to the development site. However through the flow network there is connectivity with European Sites and National Sites. Therefore, mitigation measures have been incorporated into the overall development to prevent any residual effects on aquatic habitats in Section 7.6. However, there is low risk of significant effects on water quality due to the distance involved and the dilution provided in the aquatic environment, the impacts on water quality will be imperceptible and the effect on aquatic ecology will be imperceptible.</p>
Predicted impacts on water quality and aquatic ecology during operation	<p>Following implementation of the SuDs measures, the resultant surface water system has sufficient capacity to adequately deal with any surface water arising from the overall site during operation. The proposed development is predicted to have an overall neutral long-term impact on water and hydrology with the development site.</p> <p>There will be no significant residual effect on hydrology, drainage characteristics of the site or water quality during operation.</p> <p>Based on the above it has been concluded that the impact on local water quality, water quality in downstream receptors and aquatic ecology will be imperceptible during operation.</p>
Potential impacts on protected mammals – bats and otter	<p>The impact on bats will be localised and will not significantly impact on overall bat populations as there will no significant loss of critical resources for bats. Overall, the impact on feeding habitat for bats is predicted to be permanent and not significant. Otter could potentially forage in the drainage ditches adjacent to the site boundaries. The proposed works will result in an increase in noise and disturbance. However it will be of limited significance in the context of Otters' largely nocturnal habits, ability to move away from short-term disturbance and the negligible significance of increased noise and disturbance in the context of the levels already generated by the adjoining housing developments. The impact on Otter, if they utilise the site, would be not significant in the short term and imperceptible in the long term.</p>
Potential impacts on birds during construction and operation	<p>Whilst works could potentially disrupt feeding patterns, given the availability of similar habitat in</p>

	<p>the surrounding area and the ability of birds to move away from disturbance, the impact on the feeding behaviour of these species would be not significant during construction. Any impact on these species would not be significant during construction and imperceptible during operation. During the operational phase, the levels of activity will stabilise and birds in the surrounding landscape will be expected to habituate to any increased noise and disturbance levels. The impact on terrestrial birds, in habitats adjoining the proposed development site is therefore predicted to be permanent and imperceptible during operation. During operation, the existing storm water management systems have been designed to ensure that there are no significant effects on surface or ground water quality. The impact on surface water quality and on prey availability for birds feeding in aquatic or estuarine habitats downstream of the facility will be imperceptible during construction and operation.</p>
<p>Potential impacts on other fauna during construction and operation</p>	<p>Mammal species which are protected under the Irish Wildlife Act 1976, as amended, occur or could potentially occur within the proposed development site. No habitats of significant value with regard to amphibians or reptiles will be affected by the proposed works. The work areas are only likely to support common invertebrate species. The effect on these species will be not significant in the short term and imperceptible in the long term.</p>

Table 7.9 Potential impact and residual effects on habitats

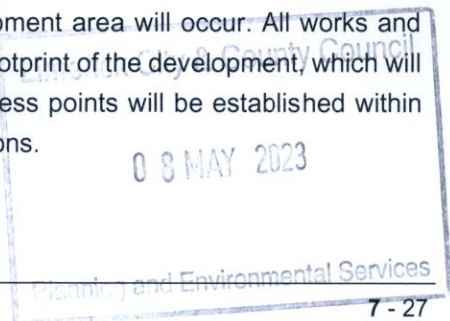
7.5.1 Construction Effects

Construction activities are likely to generate some noise and dust emissions. The potential for dust to be emitted depends on the type of construction activity being carried out in conjunction with environmental factors including levels of rainfall, wind speeds and wind direction. The potential for impact from dust depends on the distance to potentially sensitive locations and whether the wind can carry the dust to these locations.

Given that there are only two High Value habitats in proximity to the development site, dust suppression measures as detailed in Chapter 7.0 shall be employed to reduce impact. However, any impacts from dust generation will be short-term and can be minimised with correct site management procedures.

There will be some rock breaking on the MS and noise disturbance to wildlife can be minimised throughout the construction phase, by operating during day light hours only.

No disturbance to habitats or flora outside the proposed development area will occur. All works and temporary storage of material will be restricted to the immediate footprint of the development, which will be wholly within the development site boundary. Designated access points will be established within the site and all construction traffic will be restricted to these locations.



A Construction Environmental Management Plan shall be prepared by the appointed contractor prior to commencement of development to include a range of standard surface water control measures during construction. However, the following site specific measures shall be implemented to protect existing habitats:

In order to prevent flow into the drainage ditches, silt fencing with geotextile membrane shall be erected around the site to prevent any discharge to water courses. To further protect the drainage ditches identified in Figure 7.1, berms shall be constructed. This is particularly important as the overall MS is at a higher elevation than both of the ditches and the likelihood of discharge from the construction site during periods of rainfall are high.

In addition, a lined attenuation pit shall be constructed at the lowest point to capture any surface water during the construction phase.

The water quality mitigation measures outlined above will ensure otter and aquatic species are not negatively impacted by a decline in water quality.

7.5.2 Operational Effects

Surface Water Drainage Infrastructure.

Due to the inclusion of Sustainable Drainage Solutions (SuDs), soakaways, and attenuation system within the design of the development, the impact on the aquatic habitats, in particular will be removed during the operation of the Masterplan development and the proposed Phase 3.

While the proposed operational phase water management strategies will be specific to the MS development, they will also serve to minimise potential operational phase run-off impacts into the wider environment including the Lower River Shannon SAC and other designated sites even if not primarily designed to address any particular risks to the SAC/other designated sites as such. The retained drainage ditches will be outside of the boundary treatments for the Masterplan development.

Taking the above into consideration, potential operational phase impacts in relation to surface water drainage on designated sites are considered imperceptible and neutral.

Habitats

Impacts on terrestrial habitats are generally restricted to the direct removal of habitats and possible impacts from the spread of invasive species. Based on the criteria outlined by EPA, 2017, as described above, the predicted impacts are detailed in Table 7.10

Habitat	Evaluation	Potential Impact
GA1/ GS1 Improved Agricultural Grassland/Dry Neutral Grassland Mosaic	Local Importance (Lower Value)	Loss of large areas. Heavily grazed and lower value habitat. Negative. Significant. Permanent impact.
GA1 Improved Agricultural Grassland	Local Importance (Lower Value)	Loss of large areas. Poor diversity. Negative. Imperceptible. Permanent impact
GS4 Wet Grassland	Local Importance (Higher Value)	Outside of the development, therefore no loss of habitat. Positive. Imperceptible. Short term impact.

ED2 Spoil and Bare Ground	Local Importance (Lower Value)	Loss of small areas of low value habitat. Negative. Imperceptible. Long term impact
FW4 Drainage ditch	Local Importance (Higher Value)	No loss of habitat. Neutral. Imperceptible. Short term impact.
FL5 Eutrophic (lakes) pond	Local Importance (Lower Value)	Loss of habitat. Negative. Significant. Permanent impact.
WS1/WD5 Scrub/Scattered Trees Mosaic	Local Importance (Lower Value)	Within exclusion zone where archaeological feature is contained. Positive. Imperceptible. Short term impact
WD5 Scattered Trees (non-native)	Local Importance (Lower Value)	Loss of non-native trees. Negative. Not significant. Permanent impact.
WD5 Scattered trees (native)	Local importance (Lower Value)	Loss of native trees. Negative. Significant. Permanent impact. Trees where the archaeological feature is present will be retained.
WL1/WL2 Hedgerows/Treelines	Local Importance (Higher Value)	A number of hedgerows will be removed as part of the development. Negative, Significant, Long term impact. However, new native species hedgerows will be planted to replace these (Figure 7.12). The boundary hedgerows of the development site area will be retained and some of the internal hedgerows will be retained where possible. Neutral. Imperceptible. Short term impact

Table 7.10 Evaluation of potential impact of the construction phase on habitats

As detailed above there will be some significant direct loss of habitats as a result of the proposed development. However the habitats that will be lost as a result of the overall Masterplan development will be replaced with habitats that have the potential to be of higher conservation value and therefore the overall evaluation of the biodiversity will be that of net gain. Details of the habitats to be retained and newly created habitats are detailed in Figure 7.12. Details of the habitats to be lost and compensation measures are detailed in Table 7.11.

Habitat to be Removed	Compensation Habitat	Impact Classification	Biodiversity Net Loss/Net Gain
WL1/WL2 Hedgerows/Treelines	Replacement native species hedgerows	Positive	Net gain as more hedgerows will be planted than those removed in the overall MS.
WD5 Scattered trees (native)	Native or pollinator friendly species will be planted in green areas	Positive	Net gain as more trees will be planted than those removed
WD5 Scattered Trees (non-native)	Native or pollinator friendly species will be planted in green areas	Positive	Net gain as more trees will be planted than those removed
FL5 Eutrophic (lakes) pond	Replacement pond	Positive	Net gain as the proposed new pond will be of a larger size and the water quality is likely to be of improved quality as there will be no horse grazing or runoff from farming activities.

GA1/ GS1 Improved Agricultural Grassland/Dry Neutral Grassland Mosaic	Green areas to be planted with native wildflower and grass seed mix and managed with a reduced mowing regime during the summer months to provide a habitat for pollinators. In addition, an area will be retained as a new wet grassland that was formerly Improved Agricultural Grassland.	Neutral	Although the existing area of Improved Agricultural Grassland/Neutral Grassland is larger than the proposed green areas and new wet grassland, both of these measures will have a greater potential for increased biodiversity and therefore there will be no net loss overall.
GA1 Improved Agricultural Grassland	Green areas to be planted with native wildflower and grass seed mix and managed with a reduced mowing regime during the summer months to provide a habitat for pollinators.	Neutral	Although the existing area of Improved Agricultural Grassland is larger than the proposed green areas and new wet grassland, both of these measures will have a greater potential for increased biodiversity and therefore there will be no net loss overall.

Table 7.11 Habitats to be removed and resultant biodiversity net loss/net gain

The impact during operation on the boundary treelines/hedgerows will be minimised with the inclusion of walls around the development and therefore the impact is considered to be imperceptible and neutral.

As the additional native and/or non-native pollinator friendly trees and native hedgerow planting and grassy areas within the MS matures they will enhance the quality of the foraging habitat on the site as well as providing additional cover for fauna while maintaining and/or providing wildlife corridors/green infrastructure across the study site.

As per the construction phase, the Landscape Masterplan associated with the development will also be relevant to other fauna including bats during the operational phase by creating new linear hedgerows hedgerows for bats to use as the vegetation matures while also retaining existing boundary hedgerows and some of the internal hedgerows as detailed in Figure 7.12.

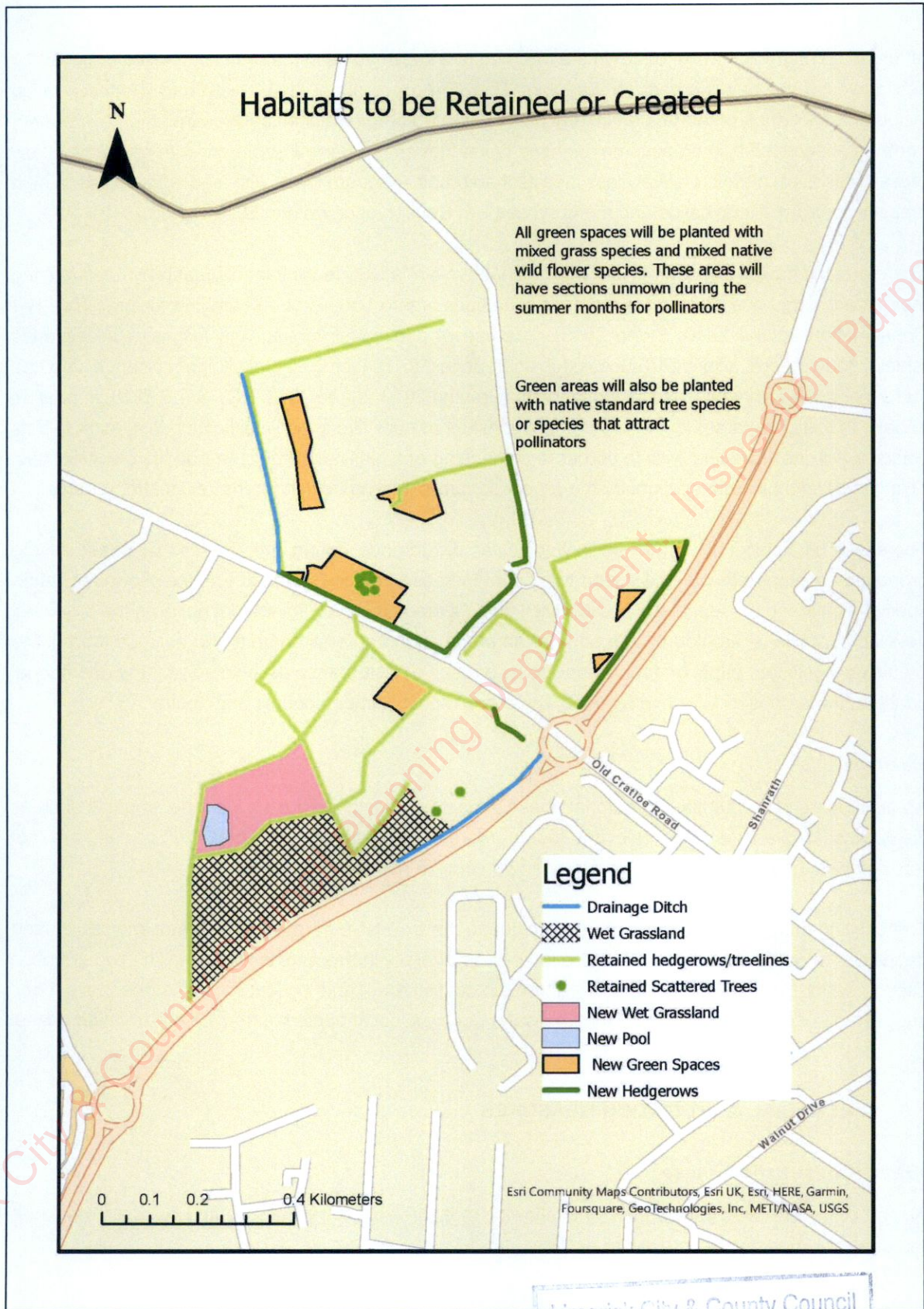


Figure 7.12 Habitats to be retained or created within the MS.

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Bats

Although no bat roosts were found on the MS, bats are known to be in the area as detailed in Table 7.8 and may use the development for foraging. Therefore operational stage disturbance effects which includes disturbance of fauna, particularly bats arising from artificial light spillage into the environment from the associated lighting scheme. Lighting types that emit a narrow spectrum with no UV (e.g. low pressure sodium) attract relatively less insects than broad spectrum types with high or low UV (e.g. high pressure sodium, Metal halide and mercury; see Bat Conservation Ireland 2010, Stone 2013).

Therefore, the narrow spectrum types with no UV have a relatively lower impact on bats by not attracting their insect prey base away from the nearby habitats where bats will be searching for prey (see Bat Conservation Ireland 2010, Stone 2013). The use of directional lighting and luminaire accessories (shield, louvre) are also very successful approaches to reducing light spillage nuisance into the surrounding environment (see Bat Conservation Ireland 2010, Stone 2013, BCT & ILP 2018) in relation to bats. In this case, areas of the MS that are considered sensitive to artificial lighting in relation to bats coincide with new/existing wildlife corridors comprising of linear hedgerows and hedgerows/treelines. This has been taken into account by the proposed public lighting design for the residential scheme.

There will be additional human activity/vehicular disturbance during the operational phase of the proposed development which will lead to a slight increase in noise levels at the site. However, fauna species confirmed present at the site are likely to be already relatively tolerant of noise as the proposed development site is situated on the edge of an urban/suburban environment and as such there is no predicted significant effect on faunal species as a result of disturbance associated with the operational phase of the proposed MS development. Therefore impact is imperceptible and neutral.

Other Impacts

As outlined above, potential operational phase impacts on designated sites via other impacts such as disturbance/displacement on relevant fauna, recreational activity and flooding/floodplain are not relevant here and are therefore considered imperceptible neutral.

The existing eutrophic pool is of poor quality due to the extensive trampling by horses and ponies and deposition of horse manure and thus the level of biodiversity in this pool is very low. The two drainage ditches which are of Higher Value will remain undisturbed and mitigation measures have been suggested in Section 7.5 to ensure that the water quality is not impacted during the construction phase.

7.6 REMEDIAL & MITIGATION MEASURES

7.6.1 Construction Phase

As part of the proposed development the following measures are to be implemented in order to minimise the potential impacts on the existing ecology.

6.6.1.1 Mitigation by Avoidance / Design

No mitigation proposed.

7.6.1.2 Mitigation by Prevention

BIO CONST 1: In order to prevent flow into the drainage ditches, silt fencing with geotextile membrane shall be erected around the site to prevent any discharge to water courses. To further protect the drainage ditches identified in Figure 7.1, berms shall be constructed. This is particularly important as the overall MS is at a higher elevation than both of the ditches and the likelihood of discharge from the construction site during periods of rainfall are high.

BIO CONST 2: A lined attenuation pit shall be constructed at the lowest point to capture any surface water during the construction phase.

BIO CONST 3: The phased ground clearance works for the proposed development that involve the removal/disturbance of any hedgerow, treeline or occasional mature trees, will be undertaken outside of peak bird breeding season (March 1st to August 31st inclusive); if hedgerow clearance cannot be limited to outside this period, a qualified ecologist will be required to oversee clearance operations, with works being halted in the event that nesting birds are observed.

BIO CONST 4: Construction operations shall take place during the hours of daylight to minimise disturbances to roosting birds and to minimise disturbances to faunal species at night. No badger or otter activity was observed during the walk over surveys.

BIO CONST 5: If site lighting is required during construction works it will be placed with consideration of and away from the potential foraging/roosting areas of protected species associated with the wider area such as hedgerows/treelines

BIO CONST 6: A pre-construction mammal survey will be undertaken within the footprint of the development in order to confirm that none of these species have colonised the site following the walkover surveys. In the event that a badger sett or otter spraint or holts should be encountered at any point, the NPWS will be informed and in the case of badger, NRA Guidelines for the Treatment of Badgers Prior To the Construction of National Road Schemes will be followed. Should evidence of Otters be found then a derogation licence will be required.

BIO CONST 7: As part of best practice construction measures a preconstruction bat survey shall be carried out within the site prior to construction to reconfirm the findings of preplanning surveys (no roosts were detected during the walkover surveys). If any roosts are found during these surveys a relevant bat derogation licence shall be sought prior to construction works commencing and works will be carried out under the terms of the relevant derogation licence this shall include any felling works being undertaken, and works will be timed and conducted in a manner to ensure that no bats are harmed as a result of felling.

BIO CONST 8: Lighting shall not be left switched on overnight within the site during the construction phase. The use of lighting within the site can discourage some bat species from using the site, and attract other species due to higher insect activity, increasing their vulnerability to predators.

7.6.1.7 Mitigation by Prevention

BIO CONST 9: The proposed surface water drainage infrastructure as proposed which includes the use of SuDs measures as well as an attenuation system fed by soakaways shall be implemented on

site, therefore preventing impact on the adjacent drainage ditches and the wider aquatic environment, including the European Sites evaluated in the NIS.

7.6.1.8 Mitigation by Reduction

Good site management practices and construction mitigation measures will be implemented as per the CEMP. However, a number of measures are specific for protecting freshwater habitats (drainage ditches) as detailed below:

BIO CONST 10: Construction will follow guidance from Inland Fisheries Ireland (IFI, 2016) for the protection of aquatic habitats. This will include the erection of a geotextile silt fence (or similar barrier) along the western boundary to prevent the ingress of silt to the drainage ditch. Water leaving the site will pass through an appropriately-sized silt trap or settlement pond so that only silt-free run-off will leave the site.

BIO CONST 11: Dangerous substances, such as oils, fuels etc., will be stored in a bunded zone. Emergency contact numbers for the Local Authority Environment Section, Inland Fisheries Ireland, the Environmental Protection Agency and the National Parks and Wildlife Service will be displayed in a prominent position within the site compound. These agencies will be notified immediately in the event of a pollution incident.

BIO CONST 12: Site personnel will be trained in the importance of preventing pollution and the mitigation measures described here to ensure same.

BIO CONST 13: The site manager will be responsible for the implementation of these measures. They will be inspected on at least a daily basis for the duration of works, and a record of these inspections will be maintained.

BIO CONST 14: The area of the proposed works will be kept to the minimum necessary, including all site clearance works, to minimise disturbance to habitats and flora. In this case, particular care to minimise impact to retained hedgerows is required, with no felling, removal or trimming undertaken other than where required to facilitate essential access and to ensure health and safety of operatives. Where individual trees are to be retained within the development, protected fencing must be erected.

7.6.2 Operational Phase

7.6.2.1 Mitigation by Avoidance / Design

BIO OPER 1: The SUDs strategy as designed shall be implemented on site as it will reduce the impact of the flow of surface water and storm water on the adjacent aquatic environments (drainage ditches).

7.6.2.2 Mitigation by Prevention

BIO OPER 2: The habitats to be retained outside of the development shall be fenced off from the public so that they remain undisturbed for wildlife. These habitats include the proposed new pond, new and existing wet grassland and drainage ditches (the latter will be separated from the development by a boundary wall).

7.6.2.3 Mitigation by Reduction

No mitigation proposed.

7.7 RESIDUAL EFFECTS

While the construction of high-density housing in a semi-rural setting will significantly alter the environment for local wildlife and reduce the naturalness of habitats in the area, with the implementation of the biodiversity enhancement measures detailed in Section 7.5 and the mitigation measures in Section 7.6, the potential impact of the proposed development on the habitats, flora and fauna in the local area will be reduced markedly.

Considering the requirement for greater housing capacity, the expansion of urban areas is inevitable, making certain impacts unavoidable. The impact of urban expansion on wildlife and natural and semi-natural habitats can be lessened. However, using the types of mitigation measures, ecological enhancements, drainage design, and environmentally responsible wastewater management systems which are incorporated into this development.

At a higher level, the implementation and maintenance of responsible urban planning policies such as green wedges, which benefit both wildlife and human health and wellbeing can also reduce the impacts associated with urbanisation. Within the MS a small green wedge has been proposed south of Phase 5 and together with the hedgerows/treelines to be retained and new hedgerows to be planted, will provide connectivity from within the development to the open countryside and reduce the impact of habitat fragmentation.

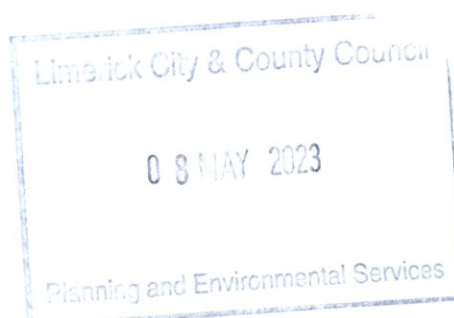
Considering these mitigating factors, while also acknowledging the magnitude of the change represented by the alteration of the landscape from a semi-rural to an urban environment, the overall residual impact of the proposed development is considered to be *Permanent but Moderate*.

7.7.1 Construction Phase

Tree felling and other site clearance works will take place outside the season of peak nesting activity in birds, or the area will be surveyed by an ecologist to confirm that no protected fauna are present. As a result, there will be no impact on nesting birds, and no legal offence under the Wildlife Act 1976 (as amended).

7.7.1 Operational Phase

Bat-sensitive lighting techniques will be incorporated into the lighting plan to avoid light-spill in areas that are likely to be used by bats. As a result, there should be no significant change in bat activity within the Site.



7.8 MONITORING

7.8.1 Construction Phase

Prior to construction water testing should be conducted to provide baseline information on water quality for the two water courses (drainage ditches) adjacent to the overall site.

Suitably qualified personnel will be appointed by the contractor to monitor the construction process and a daily environmental record will be kept of any accidents, leaks or spills and how they were addressed. In addition, the appointed personnel will also monitor the removal of any of the trees and hedgerows and should any nests or bat roosts be identified then work will cease and the ecologist contacted.

Similarly, if any of the Qualifying Interest species for the European Sites should occupy the site during construction (as detailed in the Stage 2 Appropriate Assessment for NIS Report), then works will cease immediately and the relevant authority (NPWS) will be contacted for advice on proceeding.

7.8.1 Operational Phase

On completion of the construction phase water monitoring of surface water must be completed to determine any changes to water quality as a result of the construction process.

All onsite environmental record sheets will be collated and an environmental report compiled on completion of the construction phase. This report will be made available to LC&CC.

A qualified ecologist will complete a walkover survey of the development site on completion to ensure that all SuDs measures and landscaping measures have been implemented. A report of this survey will be made available to LC&CC.

Subject to the successful implementation of these measures, it can be concluded that the proposed development will not cause any significant negative impacts on designated sites, habitats, legally protected species, or any other features of ecological importance.

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