Ecological Impact Assessment Report

Proposed Residential Development

Rathmullan Road,

Drogheda,

Co. Meath

September 2025

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LIMITATIONS

This report constitutes a Natura Impact Statement (NIS) assessing the impact of the Proposed Development on the above-referenced site. Best practice was followed throughout its preparation and within the limitations stated, works were undertaken according to budgetary considerations. This report is the property of Verde Environmental Consultants Limited and cannot be used, copied or given to any third party without the explicit prior approval or agreement of Verde Environmental Consultants Limited.

This report represents an assessment of the site and was performed in accordance with generally accepted standards regarding environmental assessments. Verde makes no other representations whatsoever, including those concerning the legal significance of its findings or as to other legal matters touched on in this report, including, but not limited to ownership of any property or the application of any law to the facts set forth herein.

1.0 INTRODUCTION

The proposed development consists of (i) demolition/removal of all existing farm buildings/structures and associated hard standing on site; (ii) construction of a large-scale residential development (LRD) of 249 no. units comprising 170 no. two-storey houses (including 37 no. two-bedroom houses, 111 no. three-bedroom houses and 22 no. four-bedroom houses), 16 no. three-storey duplex buildings (accommodating 16 no. one-bedroom and 16 no. two-bedroom units) and a mix of 8 no. three-storey and 3 no. four-storey apartments blocks accommodating a total of 22 no. one-bedroom and 25 no. two-bedroom apartments); (iii) construction of a new vehicular entrance and access road off Rathmullan Road with associated junction works and associated internal access road network with pedestrian and cyclist infrastructure; (iv) provision of a three-storey creche facility (411sq.m) with external play areas at ground and second floor levels and vehicular/bicycle parking area; and, (v) all ancillary site and infrastructural works, inclusive of removal of existing vehicular entrances, general landscaping and public open space provision, vehicular parking provision (396 no. spaces in total), bicycle parking, boundary treatments, foul/surface water drainage, attenuation areas, provision of a pumping station and provision of an ESB substation, as necessary to facilitate the proposed development. Each house will be served by vehicular parking to the front and private amenity space in the form of a rear garden. Each duplex building will be served by vehicular parking to the front and private amenity space in the form of balcony/terrace spaces to the rear. Each apartment block will have shared access to adjoining car parking bays with communal amenity space and bicycle/bin stores provided to the rear and each apartment will be provided with private amenity space in the form of a balcony or terrace. The development includes provision of a landscaped area of public open space to the north of the site, with 2 no. pedestrian/cyclist connections (via the northern/eastern site boundaries) to Rathmullan Road which will be subsequently ceded to Meath County Council.

1.1 Legislation

Flora and fauna in Ireland is protected at a national level by the Wildlife Act, 1976 and the Wildlife (Amendment) Act, 2000 and the Flora (Protection) Order, 1999 (SI 94/1999). They are also protected at a European level by the EU Habitats Directive (92/43/EEC) and the EU Birds Directive (79/409/EEC).

The transposition of the EU Habitats Directive by the European Communities (Natural Habitats) Regulations 1997 – 2011 (referred to as the Habitat Regulations) provides the legal basis for the protection of habitats and species of European importance in Ireland.

The legislative protection of habitats and species provided by the Habitats Directive has been implemented in Ireland and throughout Europe through the establishment of a network of designated conservation areas known as the Natura 2000 (N2K) network (with individual sites being referred to as Natura 2000 Sites). The N2K network includes sites designated as Special Areas of Conservation (SACs), under the EU Habitats Directive and Special Protection Areas (SPAs) designated under the EU Birds Directive. SACs are designated in areas that support habitats listed on Annex I and/or species listed on Annex II of the Habitats Directive. SPAs are designated in areas that support: 1% or more of the all-Ireland population of bird species listed on Annex I of the EU Birds Directive; 1% or more of the population of a migratory species; and more

than 20,000 waterfowl. Under the National Habitat Regulations all designated Natura 2000 Sites are referred to as European Sites.

The Wildlife Act 1976 (as amended) also provides for the statutory designation of nature conservation areas. These areas are referred to under the Wildlife Acts as Natural Heritage Areas and are designated in areas that support habitats and/or species of national importance. Other relevant national legislation concerning the protection of flora, fauna and fisheries include the:

- Planning and Development Act 2010;
- European Communities (Quality of Salmonid Waters) Regulations, 1988;
- The Freshwater Fish Directive 1978 (78/659/EEC); and
- The Surface Water Regulations, 2009.

Figure 1.1 Location of the Proposed Rathmullan Development, Co. Meath.

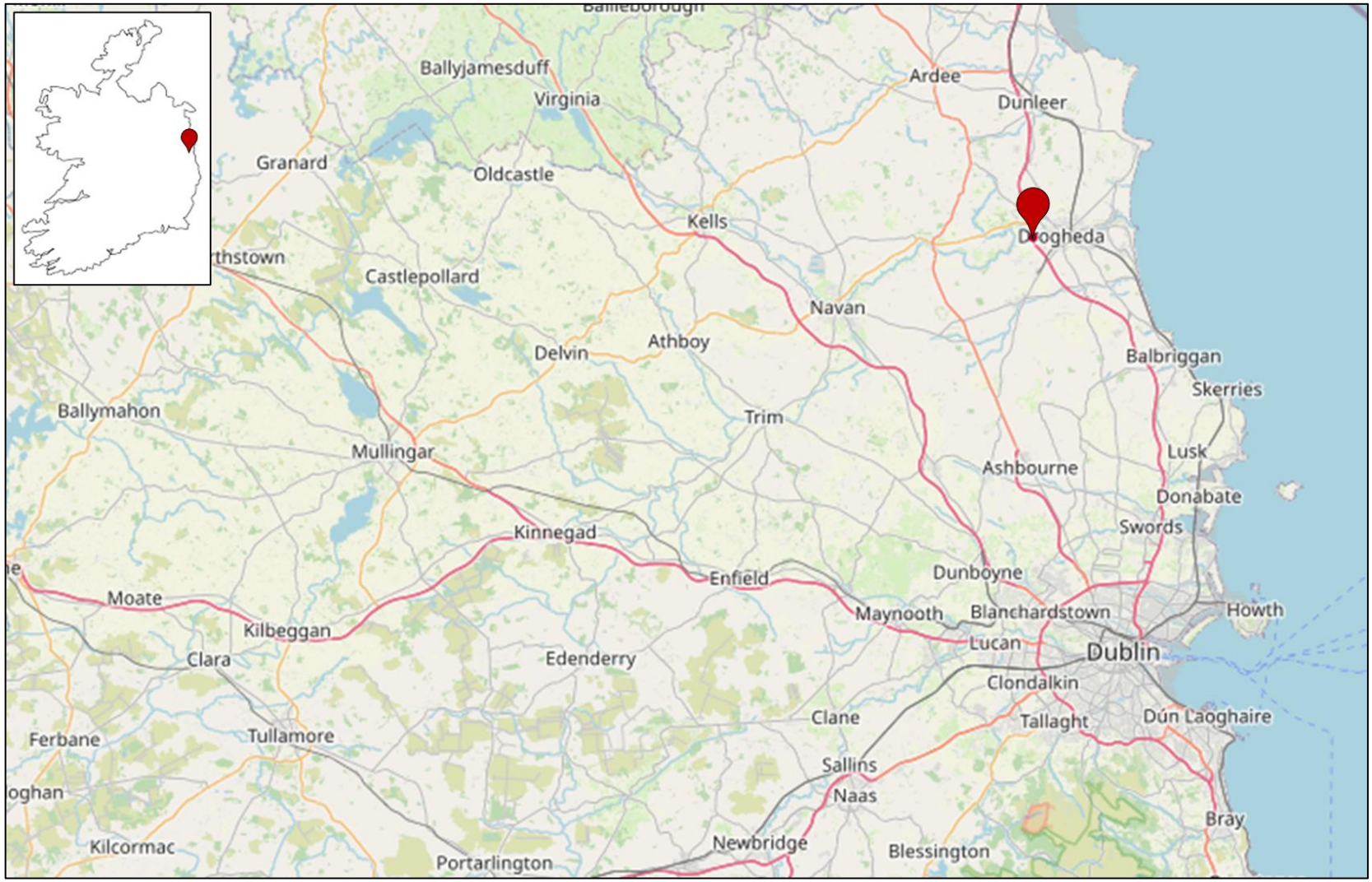


Figure 1.2 Proposed Development Layout.

2.0 PROPOSED DEVELOPMENT DESCRIPTION

2.1 Overview

The proposed development consists of (i) demolition/removal of all existing farm buildings/structures, existing vehicular entrance off Rathmullan Road and associated hard standing on site; (ii) construction of a residential development of 249 no. units comprising 170 no. two-storey houses (including 37 no. two-bedroom houses, 111 no. three-bedroom houses and 22 no. four-bedroom houses), 16 no. three-storey duplex buildings (accommodating 16 no. one-bedroom and 16 no. two-bedroom units) and a mix of 8 no. three-storey and 3 no. four-storey apartments blocks accommodating a total of 22 no. one-bedroom and 25 no. two-bedroom apartments); (iii) construction of a new vehicular entrance and access road off Rathmullan Road with associated junction works and associated internal access road network with pedestrian and cyclist infrastructure; (iv) provision of a creche facility (411sq.m) with external play area and vehicular/bicycle parking area; and, (v) all ancillary site and infrastructural works, inclusive of removal of existing vehicular entrances, general landscaping and public open space provision, vehicular parking provision (396 no. spaces in total), bicycle parking, boundary treatments, foul/surface water drainage, attenuation areas, provision of pumping station, as necessary to facilitate the proposed development.

Each house will be served by vehicular parking to the front and private amenity space in the form of a rear garden. Each duplex building will be served by vehicular parking to the front and private amenity space in the form of the form of balcony/terrace spaces to the rear. Each apartment block will have shared access to adjoining car parking bays with communal amenity space and bicycle/bin stores provided to the rear and each apartment will be provided with private amenity space in the form of a balcony or terrace. The development includes provision of a landscaped area of public open space to the north of the site, with 2 no. pedestrian/cyclist connections to Rathmullan Road which will be subsequently ceded to Meath County Council.

2.2 Surface Water Management

2.2.1 Introduction

It is proposed that the surface water from the Proposed Development shall drain via gravity and discharge at a restricted rate into the existing 1200mm culvert adjacent to Rathmullan Road at the northeast of the site. This culvert merges into a ditch on the opposite side of the existing road 120m to the north of the proposed outfall location. The ditch travels for c. 60m northwards before outfalling into the River Boyne which is tidal at this location.

Runoff will be restricted to the equivalent of the existing greenfield runoff and excess stormwater will be attenuated on-site. Surface water runoffs will be restricted through the incorporation of hydrobrakes or similar infrastructure.

The surface water strategy is outlined in the below sections. The surface water network for the subject site has been divided into 2 no. catchments, the Northern Catchment and the Southern Catchment. Both catchments will operate in series with runoff from the Southern Catchment flowing into the downstream Northern Catchment area at a restricted rate and outfalls into the existing 1200m surface water culvert/open drain adjacent to the Rathmullan Road.

The rainfall runoff for the Proposed Development will be limited to the equivalent of the existing agricultural runoff rate (Qbar). The greenfield runoff rate for the site has been calculated using the Institute of Hydrology report No 124 "Flood Estimation for Small Catchments". The attenuation storage for the Southern Catchment has been sized to accommodate a Qbar runoff rate for the Southern Catchment is 10.70l/s, while this figure is 11.23l/s in the case of the Northern Catchment. Surface water runoff will be restricted via hydrobrakes which will be installed at the outfall manhole of each water catchment with excess storm water attenuated in grass detention basins with Stormtech tanks below, or similar approved. It is noted that a hydrobrake will be installed at the Northern Catchment outfall (where it drains to the existing culvert on Rathmullan Road) and that this will result in a restricted overall runoff rate of 21.93l/s (sum of Southern and Northern Catchments).

2.2.1 Surface Water – General

Sustainable Urban Drainage systems (SUDS) have been developed and are in use to alleviate the detrimental effects of traditional urban storm water drainage practice that typically consisted of piping runoff of rainfall from developments to the nearest receiving watercourse. Surface water drainage methods that take account of quantity, quality and amenity issues are collectively referred to as sustainable urban drainage systems; they are typically made up of one or more structures built to manage surface water runoff.

The proposed surface water drainage system for this development has been designed as a sustainable urban drainage system and uses, water butts, permeable pavement, grass swales, attenuation storage together with flow control device and petrol interceptor to:

- Treat runoff and remove pollutants to improve quality
- Restrict outflow and to control quantity
- Increase amenity value

Strict separation of surface water and wastewater will be implemented within the development. Drains will be laid out to minimise the risk of inadvertent connection of waste pipes etc. to the surface water system.

Surface water local drains will be 150mm to 225mm and generally will consist of PVC (to IS 123) or concrete socket and spigot pipes (to IS 6). These drains will be laid to comply with the Requirement of the Building Regulations 2010.

Surface water public sewers will be 225mm to 750mm and generally will consist of PVC or concrete socket and spigot pipes (to IS 6) and laid strictly in accordance with the requirements of Meath County Council.

2.2.2 Storage

The site has been sub-divided into two catchments in terms of surface water management, the Northern Catchment and the Southern Catchment. The total impermeable area of including roads, footpaths, carparking and roofs is approximately 3.299Ha.

Excess stormwater shall be attenuated in an attenuation tank combined with a detention basin, which provides c. 1311.35m^3 of storage to cater for the northern catchments. While for the southern catchment, the excess stormwater will be attenuated in an attenuation system combines with an overground detention basin and an underground attenuation storage which give a total storage of c. 1110.4m^3 as calculated.

2.2.3 Sustainable Drainage System (SUDS) Selection Criteria

The SuDS selection process used for this site is in accordance with SuDS selection flow chart, Volume 3, Section 6.5, Figure 48 of the GDSDS. The characteristics of the site are utilised to select the various SuDS techniques that would be applicable. The applicant has considered the use of all appropriate SuDS devices as part of the site SuDS strategy.

- Water Butts – utilised within each residential unit
- Permeable Pavement
- Swales – utilised in grass verges alongside internal roads
- Grass Detention Basin/Attenuation Storage – located at the green open space areas
- Flow Control Device (e.g. hydrobrake) – installed at the outfall manhole of each catchment
- Petrol Interceptor – installed downstream of each flow control device manhole

The effectiveness of each SuDS/drainage mechanism proposed is outlined below:

1. **Water Butts:** It is proposed to provide water butts for the individual dwellings for external gardening and wash down use only, which will ensure interception of roof runoff at source.
2. **Permeable Pavement:** Permeable pavement reduces the overall impermeable area of the hard standing area, which will reduce the impact of the discharge and improve the quality of the effluent from the Proposed Development. Permeable pavement will be provided in private driveway areas. The permeable paving is provided for the purposes of improving the quality of the surface water runoff. No reduction in the rate of run-off as a result of the permeable paving provision is allowed for in the surface water calculations which assumes the system is in a saturated state.
3. **Swales:** Roadside swales have been incorporated in the grass verges where appropriate throughout the. The swales incorporate an infiltration trench at the invert of the swales which will encourage surface water to drain direct to ground as recommended by SUDS. Any remaining water which does not filtrate direct to ground will drain to the surface water network.
4. **Grass Detention Basin/Attenuation Storage:** The system attenuates surface water to restrict the outflow to the equivalent of the existing agricultural runoff. This ensures the development will not give rise to any impact downstream of the site.

5. **Flow Control Device:** It is proposed to provide a hydrobrake, or similar approved, at the outfall of each surface water catchment to restrict the outflow of water from the subject site. The hydrobrakes will be fitted with a pull cord bypass and a penstock valve installed on the inlet to the manhole for maintenance purposes.
6. **Petrol Interceptor:** It is proposed to provide a petrol interceptor prior to each outfall into the attenuation in order to ensure primary treatment of any pollutants. It is proposed to provide a Klargestor Bypass Separator Type NSP003 or similar approved.

In conclusion the water quality from this catchment should be of a high quality due to the above mentioned measures, which are applied in a treatment train to treat the water before discharge at a restricted rate to the local network. The above measures ensure a suitable management train is provided.

Management Train: The management train commences with source control through the provision of water butts and draw off taps in each dwelling for external reuse only. This will also reduce the water consumption required of each housing unit.

The second stage of the management train, site control, is provided by the introduction of permeable pavement and swales, all of which provide a degree of treatment before discharging to the proposed surface water network and detention basin. The rate of runoff is controlled through the provision of a flow control device installed in the outfall manhole of each surface water catchment.

The underground attenuation offers a third stage of treatment, regional control, by slowing the storm water discharge down, promoting infiltration and removing additional silts which may remain in the storm water.

2.3 Wastewater Management

2.3.1 Introduction

It is proposed that the foul sewerage from the site will drain via a new network of gravity sewers to a new pumping station located at the low point in the northeastern corner of the subject site. Foul water will be pumped from the new pumping station and connect to the existing 110mm diameter rising main on Rathmullan Road to the east of the subject site. This will require c. 300m of new 110mm rising main below the internal estate roads and a section of Rathmullan Road. Ultimately this foul water discharges into the existing gravity sewer network on Marley's Lane c. 900 m east of the subject site. Foul drainage eventually outfalls to the Drogheda Wastewater Treatment Plant.

2.3.2 Irish Water Pre-Construction Enquiry

2 no. pre-connection enquiries (PCEs) were submitted to Uisce Eireann each for 99 no. residential units based upon the development being constructed in 2 phases (CDS23000770 & CDS23000784). Confirmations of feasibility (CoFs) for 198

no. residential units have been received. Based on the 2 no. CoFs received, a PCE that covers for 249 no. residential units was sent to the Uisce Eireann in November 2024, CDS24009836. Confirmation of feasibility was received on 26th April, 2025.

The proposed pumping station will pump wastewater to the existing foul water drainage network at the junction of Rathmullan Road/Marley's Lane. There is an existing rising main along the Rathmullan Road which runs from the entrance of our Proposed Development to Marley's Lane. Uisce Eireann have indicated in their CoF that this existing rising main could be utilised for the Proposed Development. The proposed new pumping station will be designed to facilitate flows from the adjacent Riverbank and Oldbridge Manor Developments

2.3.3 Foul Water – General

Foul water sewers within the Proposed Development will be laid to comply with the requirements of the Building Regulations, and in accordance with the recommendations contained in the Technical Guidance Documents, Section H of the Engineering Assessment Report, provided under separate cover with the planning application documentation.

Foul water sewers which will be taken into charge will be laid strictly in accordance with Irish Water's requirements for taking in charge. In accordance with the Irish Water *"Code of Practice for Wastewater Supply*", 150mm nominal internal diameter sewers have been proposed for carrying wastewater from 20 properties or less; whilst 225mm nominal internal diameter carrying wastewater from more than 20 properties. Furthermore, where there are at least ten dwelling units connected, the 150mm diameter pipes are laid at a minimum gradient of 1:60 for up to nine connected dwelling units.

The pumping station has been located with a 20m separation distance from the nearest dwelling. This complies with Section 5.5 of the Irish Water *"Code of Practice for Wastewater Supply"*, which states that a Type 3 pumping stations require a minimum buffer zone of 15m.

2.3.4 Foul Water Pumping Station & Preliminary Specification

2.3.4.1 *General*

As set out in 2.3.1 above, it is proposed to construct a new pumping station at the northeastern side of the site. The pumping station will be sized to accommodate the Proposed Development. The proposed pumping station will be designed in compliance with the Irish Water Code of Practice and Irish Water Standard Details.

The proposed pump station has provision for foul water storage from the Proposed Development with a total capacity of 261m^3 which has sufficient storage to cater the foul.

2.3.4.2 *Emergency Storage*

The total volume of storage available in the pump sump to this level is c.10.828m^3 with a further 268.76m^3 available in the adjacent storage tanks.

In addition there is storage available in the foul water manholes and sewers.

At 3.154l/sec (1*DWF) the total volume required to be stored in a 24-hour period is 268.76m^3, which is less than the emergency storage available.

2.3.4.3 *Emergency Equipment & Procedures*

The pumping station is being provided with the following emergency equipment and procedures:

- Standby pump in the event of a pump failure
- Telemetry system to facilitate Irish Water monitoring of the station
- High level alarms to warn of increases in level of effluent in the pump sump
- Storage capacity within the sump and pipe network in excess of 24 hours
- Over-pumping facilities on the rising main to facilitate the installation of a temporary external pump to empty the sump directly into the rising main

The above emergency equipment and procedures provide a very high level of redundancy and backup in the event of a failure in the mechanical systems in the pumping station.

2.4 Water Supply

2.4.1 Introduction

Water supply to the subject site will be provided via a new proposed connection to the existing 150mm HPPE watermain on Rathmullan Road to the east of the site. All water supply details shall be in accordance with Irish Water requirements. Please refer to Waterman Moylan Drawing No's. 18-014-P481&P482-Water Supply Layout -Rev A, provided under separate cover with the planning application documentation, for details of the watermain layout to serve the subject site.

2.4.2 Irish Water Pre-Connection Enquiry

Two pre-connection enquiries (PCEs) were submitted to Uisce Eireann each for 99 no. residential units based upon the development being constructed in two phases (CDS23000770 & CDS23000784). Confirmations of feasibility (CoFs) for 198 no. residential units have been received. Based on the two CoFs received, a PCE that covers for 249 no. residential units was sent to the Uisce Eireann in November 2024, CDS24009836. Confirmation of feasibility was received on 26th April, 2025.

2.4.3 Water Supply – General

Water mains suitable for works and approved by Irish Water shall be either ductile iron (DI) or polyethylene (PE), with PE80 or PE100 rating (MDPE, HDPE or HPPE).

The minimum depth of cover from the finished ground level to the external crown of a water main shall be 900mm. A greater depth of cover and/or greater strength pipe and/or a higher class of bedding may be required where high traffic loading is anticipated. Depths may be altered to avoid obstructions, including separation distances between other utility services. The desirable maximum cover for a service connection pipe or a water main should be 1200mm, where practicable.

Sluice valves will be provided so that no more than 40 houses can be isolated at any time and hydrants provided so that each part of the dwellings are within 46m of a hydrant.

2.5 Transport

2.5.1 Description of the Proposed Development

The Proposed Development relates to the construction of a proposed residential development on residentially zoned lands located 2.5km west of Drogheda town centre. The Proposed Development includes the construction of a residential housing scheme comprising 170 no. houses, 32 no. duplexes and 47 no. apartment units, providing a total of 249 residential units and a creche. Access to the subject site will be provided through the proposed four-arm signalized junction located on Rathmullan Road to the east of the subject site.

2.5.2 Traffic & Transport Assessment

The threshold for residential developments for which a Traffic Assessment is required (as set out in the Department of Transport Traffic Management Guidelines) is a development in excess of 200 units. A separate Traffic and Transport Assessment has been carried out for the development and is included in this application under separate cover and should be read together with this report.

2.6 Parking Provision

2.6.1 Car parking

Section 11.9 of the Meath County Development Plan 2021-2027 (MCDP) sets out the maximum car parking standards for various development categories. The car parking spaces provided with the Proposed Development area are set out in Table 2.1 below.

Table 2.1 Car Parking Permitted and Provided.

Prop. Dev.	No. Units	Residential Ratio	Visitor Ratio	Residential Total Proposed	Visitor Total Proposed	Residential Total MCDP Requirement	Visitor Total MCDP Requirement

2-bed houses	37	1	-	37	-	74	-
3-bed houses	111	2	-	222	-	222	-
4-bed houses	22	2	-	44	-	44	-
1-bed apartments	22	1	0.25	22	12	44	12
2-bed apartments	25	1		25		50	
1-bed duplexes	16	1	-	16	-	32	-
2-bed duplexes	16	1	-	16	-	32	-
Creche	10 no. staff	0.4 staff	-	4	-	10	12
Total	249 units	-	-	386	10	508	24

2.7 Landscaping

A landscape masterplan has been prepared for the Proposed Development and is provided under separate cover with the planning application documentation. The landscape masterplan provides for the enhancement of woodland habitats to the north and east of the Proposed Development site as well as providing meadow habitat and standard tree planting throughout the site.

2.8 Lighting

Public lighting will be provided as part of the Proposed Development. The extent of the public lighting to be provided is described in detail in the Public Lighting Report, provided under separate cover with the planning application documentation. The lighting contour is located well outside of the River Boyne and River Blackwater SAC to the north and as well as woodland habitats and proposed woodland habitats that will be provided as part of the landscape masterplan for the Proposed Development.

2.9 Construction Phase Site Specific Works

2.9.1 Designated Storage Area & Site Compound

At least one temporary site compound, including offices and welfare facilities, will be constructed by the main contractor in a location or locations to be decided within the subject site.

The main contractor will be required to schedule delivery of materials on a daily basis. The main contractor shall use the constructed site compound(s) on the site for the secure storage of materials.

Prevention and mitigation measures will be implemented throughout the construction stage to prevent contamination of the soil and adjacent watercourses from oil and petrol leakages and significant siltation. Suitable bunded areas will be installed for oil and petrol storage tanks. Designated fuel filling points will be put in place with appropriate oil and petrol

interceptors to provide protection from accidental spills. Spill kits will be provided by the main contractor to cater for any other spills.

2.9.2 Deliveries & Site Access

Deliveries and access to the construction site will typically be made via the Rathmullan Road to the east of the site. Construction traffic will not be permitted to use the River Road to the north of the site or the local Sheephouse Road to the south of the site as these would be considered unsuitable for construction traffic. Haul roads for construction traffic purposes will generally be 6.0m wide and will be constructed using 300mm minimum capping layer material (clean broken stone).

In the event that large concrete pours are required which may result in congestion at the entrance to the site the deliveries will be organised such that concrete trucks will queue at a pre-determined staging point (such that they do not cause an obstruction to general traffic in the area) and will then be called in by radio as appropriate to the site, via a pre-determined route and to the required access gate. Set procedures and designated wash-out areas will be provided. All delivery vehicles will be co-ordinated as required at the relevant access point.

2.9.3 Working Hours for Construction Works

Working hours for the Construction Phase will be between 08.00 and 17.00 Monday to Friday. Special construction operations may occasionally need to be carried out outside typical working hours in order to minimise disruption to the surrounding area. Weather restrictions may apply, e.g. no cement pouring during heavy rainfall. These restrictions shall be determined by the appointed ecologist taking into account pertaining environmental factors on site.

2.10 Plant and Equipment

The amount of plant, equipment and labour at the site will be proportional to the extent of the activity underway at any one time. Typical plant and equipment for use is expected to include the following:

- 13 tonne excavator(s)
- 6t dumper truck(s)
- Teleporter(s)
- Cement mixer(s)
- Tractor/trailer(s)
- Bulldozer/Grader(s)
- Telescopic Handler(s)
- Compactors/loader(s)
- Pile driver(s)
- Crane(s)

A full inventory of specific plant and equipment will be supplied by the Contractor upon appointment and the CEMP will be updated accordingly.

3.0 METHODS

3.1 Proposed Development Site Habitat Assessment Methods

A range of in-situ ecological surveys were completed at the Proposed Development site. These surveys were completed between 2021 and 2025 during optimal timing for ecological surveys (Typical April – August) for the Proposed Development as well as a range of investigations that were completed for a previous planning application for lands within and surrounding the Proposed Development site.

A general assessment of the site was carried out by Verde ecologist Dr. Jeff Hean on the 17th June 2025. The site assessment was in line with the Heritage Council's Best Practice Guidance for Habitat Survey and Mapping (Smith et al., 2011) and habitats were classified to level 3 of the Fossitt (2000) classification system. To illustrate the general habitat quality, photographs were taken using a digital camera. Grid references were recorded using a GPS handset. Site evaluation is based on the guidelines of the Chartered Institute of Ecology and Environmental Management (CIEEM 2019). The site and immediate surroundings were inspected for the presence of invasive species, as listed in the First Schedule of the Birds and Natural Habitats Regulations (S.I. No. 477/2024). Regulation 49 (2) states that "any person who plants, disperses, allows or causes to disperse, spreads or otherwise causes to grow in any place any plant listed in the Third Schedule, shall be guilty of an offence".

The determination of the presence or absence of Annex I habitats was carried out in consultation with the habitat descriptions provided in the most recent Article 17 Reports (NPWS, The Status of EU Protected Habitats and Species in Ireland. Volume 1: Summary Overview., 2019). The Interpretation Manual of European Union Habitats (EUR 28, April 2013) was also consulted. In addition, the spatial GIS data for the Article 17 Reports were examined to determine the distribution of these habitats (as known to the NPWS) within the study area.

3.2 Key Ecological Receptors

Investigations completed with respect to biodiversity and that specifically relate to European Sites in the wider surrounding area include habitat surveys and an evaluation of the habitats occurring on site to function as a suitable habitat for otters, lamprey species and Atlantic salmon, all of which are qualifying species of the River Boyne and River Blackwater SAC, which is located to the north of the Proposed Development site. The habitat surveys were used to evaluate the potential for the Proposed Development site to offer suitable habitat for special conservation interest bird species or other waterbirds associated with the River Boyne and River Blackwater SPA; Boyne Estuary SPA, River Nanny Estuary and Shore SPA, and the North-West Irish Sea SPA.

3.2.1 Non-Volant Mammals

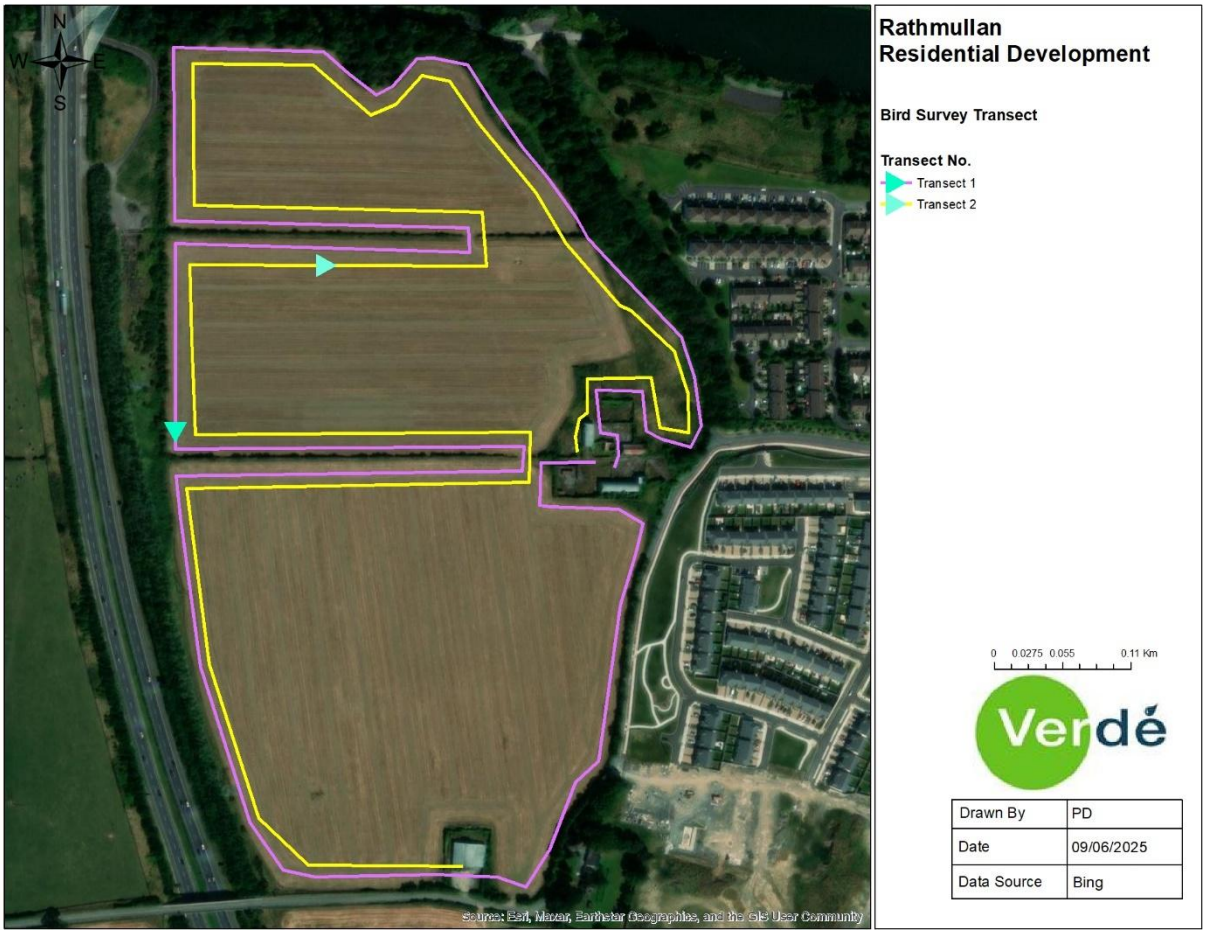
A search for field signs indicating the presence of non-volant mammals within and adjacent to the Proposed Development site was completed on the 24th May, 10th June and 28th July 2022, 9th February 2023, and 10th April 2025. These field signs, as described in Neal & Cheeseman (1996) and Bang & Dahlstrom (2006), include:

- Mammal breeding and resting places, such as setts, holts, lairs;

- Pathways & prints;
- Faecal deposits & latrines (and dung pits used as territorial markers);
- Feeding signs (snuffle holes);
- Hair; and
- Scratch marks.

The surveys for non-volant mammals were completed after periods of dry weather when field signs were more likely to be present.

Figure 3.1. Transect Paths Used to Survey.



3.2.2 Avifauna

Conditions on site have been surveyed for their potential to function as a foraging habitat for wintering birds. Dedicated surveys for the presence of special conservation interest bird species or waterbirds of the above listed SPAs were completed during the 2020/2021, 2021/2022 and 2024/2025 non-breeding bird season, when wintering special conservation interests of these SPAs are present. Certain special conservation interest bird species of these SPAs, as identified in the screening report, are known to rely on agricultural land such as grassland and stubble for foraging and roosting, especially during high tide when intertidal foraging habitats are inundated. For instance, golden plover and lapwing, both of which are special conservation interest bird species for the Boyne Estuary SPA and the River Nanny

Estuary and Shore SPA, are considered to be examples of terrestrial waders (NPWS, 2012b). Herring gull, which is a special conservation interest bird species of the River Nanny Estuary and Shore SPA, greylag goose (interest feature for Strabannan-Braganstown SPA and Dundalk Bay SPA) and lesser-black backed gull (interest feature for Lambay Island SPA) are known to utilise terrestrial habitat such as grassland/arable land. Given that the greatest likelihood of these species occurring at the Proposed Development site was during high tides, the majority of field surveys completed at the Proposed Development site were completed to coincide with high tide when waders and other waterbirds are most likely to use terrestrial habitats for foraging or roosting. Low-tide surveys were also completed so that baseline information relating to ex-situ waterbird movements from SPAs to the Proposed Development site and the vicinity of the Proposed Development site could be gathered. There is no formal methodology published for the surveying of wintering waterbirds on terrestrial sites. Surveys of waterbirds at low-tide to inform IWeBS surveys and surveys at coastal SPAs rely on 4 low-tide survey counts completed between the months of September and March. This is consistent with the British Trust for Ornithology (BTO) method of four surveys during the winter season, ideally during the months of November to February. Bird surveys were completed on the following dates.

Table 3.1 Summary of Bird Surveys Undertaken at the Proposed Development Site.

Date	Survey Focus
29th January 2021	Winter Birds
12th February 2021	Winter Birds
25th February 2021	Winter Birds
24th March 2021	Winter Birds
1st April 2021	Date is during the breeding season but overlaps with the migratory period for wintering species
16th April 2021	Date is during the breeding season but overlaps with the migratory period for wintering species
30th November 2021	Winter Birds
15th December 2021	Winter Birds
10th January 2022	Winter Birds
24th May 2022	Breeding Birds
10th June 2022	Breeding Birds
28th July 2022	Breeding Birds
9th February 2023	Winter Birds
25th June 2024	Breeding Birds
18th July 2024	Breeding Birds
26th August 2024	Breeding Birds
30th September 2024	Breeding Birds
24th October 2024	Winter Birds
26th November 2024	Winter Birds
19th December 2024	Winter Birds
31st January 2025	Winter Birds

14th February 2025	Winter Birds
12th March 2025	Winter Birds
21st April 2025	Breeding Birds
30th May 2025	Breeding Birds

Surveys on the above listed dates were completed from a vantage point on the public road located to the south of the Proposed Development site, where a view over the entire site is afforded. In addition to the vantage point survey, the lands within the Proposed Development site were walked on each survey occasion at the end of the vantage point to confirm presence/absence of waterbirds at the Proposed Development site. Based on the survey effort required for low tide surveys and the survey effort used to inform other large-scale projects it is considered that the survey effort undertaken to establish the use of the Proposed Development site by terrestrial waders or other waterbirds provides a robust evidence base for the examination of this aspect in this Ecological Impact Assessment and is representative of best scientific information

In addition to non-breeding season winter bird surveys, breeding season birds surveys were also completed at the Proposed Development site (see Table 3.1 for dates). The breeding season surveys were completed by walking the transect routes Transect 1 and Transect 2 shown on Figure 3.1 above. All birds seen and heard during the transect surveys were recorded so that the assemblage supported by the Proposed Development site could be identified.

3.2.3 Volant Mammals

An appraisal of habitats occurring within the Proposed Development site for their potential to support bat species was completed during the initial field surveys in January 2021 and again during May 2022; June 2024; and April 2025. The habitats on site were also appraised for their potential to function as a roosting, commuting and foraging habitat for bats. This appraisal was undertaken in line with guidance outlined by Collins et al. (2016 & 2023). The structures occurring within and adjacent to the Proposed Development site were appraised for their potential to function as roost sites for bats. Marnell (2022) provide guidance on assessing the potential for structures to support roosting bats. This guidance identifies a variety of factors that increase or decrease the potential of a structure to function as a bat roost. These factors are outlined in Table 3.2.

Additional guidance was sourced from the following;

- Marnell, Kelleher, Mullen (2022) Bat mitigation guidelines for Ireland V2. Irish Wildlife Manuals, No. 134. National Parks and Wildlife Service, Department of Housing, Local Government and Heritage, Ireland.
- CIEEM (2021) Mitigation Guidelines: A guide to impact assessment, mitigation and compensation for developments affecting bats. Beta version. Chartered Institute of Ecology and Environmental Management,
- CIEEM (2018) Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal, and Marine. Chartered Institute of Ecology and Environmental Management
- Department of Housing, Planning and Local Government (DHPLG - 2018). Urban Development and Building Heights Guidelines for Planning Authorities
- Bat Conservation Trust (2022) Interim Guidance Note: Use of night vision aids for bat emergence surveys and further comment on dawn surveys.

Table 3.2 Factors Affecting the Potential of a Building to Support a Bat Roosts, as described by Marnell et al. (2022).

Increase Potential	Disused or little used; largely undisturbed Large roof void with unobstructed flying spaces Large dimension roof timbers with cracks, joints and holes Uneven roof covering with gaps, though not too draughty Entrances that bats can fly in through Hanging tiles or wood cladding, especially on south-facing walls Rural setting Close to woodland and/or water Pre-20th century or early 20th century construction Roof warmed by the sun
Decrease Potential	Urban setting or highly urbanised area with few feeding places Small or cluttered roof void Heavily disturbed Modern construction with few gaps around soffits or eaves Prefabricated with steel sheet materials Active industrial premises Roof shaded from the sun

The daytime inspections of structures were completed on 24th May, 10th June and 28th July 2022; and again in June 2024 and April 2025. Dedicated bat activity surveys were completed on site on the 24th May and 10th June 2022 and the 25th June and 18th July 2024. This involved roost emergence surveys at the structure on site as well as continuous static detector monitoring at the Proposed Development site between the 24th May and the 10th July 2022 and again between the 25th June and 7th July 2024.

During the 2022 survey one Song Meter SM4 Full Spectrum bat detector was deployed on site to monitoring bat activity continuously during the monitoring completed between these dates. The static bat detector was positioned along hedgerow habitat and an agricultural shed within the Proposed Development site. The static detector was mounted at a height of 3m above the ground and was set to recorded bat activity continuously throughout each night of the monitoring period, with recording commencing at 30 minutes prior to sunset and 30 minutes after sunrise.

During the 2024 survey two Song Meter SM4 Full Spectrum bat detectors were deployed on site. The 2024 monitoring point no. 2 was as per the 2022 monitoring point described above. The monitoring point no. 1 was positioned towards the west of the site along a field boundary hedgerow.

Roost emergence surveys were completed at the structures occurring at the Proposed Development site during the 2022 and 2024 bat activity seasons. The emergence surveys were completed during the 2022 season on the 24th May and 10th June. These emergence surveys focused on surveying the structures at the farmyard complex at the centre-east of the site. A survey position was taken up on the hardstanding between the farm structures so that a view of all structures was

afforded during the survey. The emergence survey commenced 30 min prior to sunset and continued for 90 minutes after sunset.

Roost surveys were again completed during the 2024 bat activity season, on the 25th June and 18th July. The emergence survey on the 25th June was completed at the farmyard complex at the centre-east of the site. The survey position was as per the 2022 survey. The 18th July survey was completed at the agricultural shed adjacent to the southern boundary of the site. The emergence survey commenced 30 min prior to sunset and continued for 90 minutes after sunset.

A manual transect survey was also completed during the manual survey on the 24th May 2022 (transect 1) and the 10th June 2022 (transect 2), following the completion of the roost emergence survey at the remaining structure on site.

The manual transect survey was repeated during on the 25th June 2024 and 18th July 2024.

Bat calls recorded by the SM4 Bat detectors during the automatic bat monitoring sessions were analysed using Kaleidoscope Pro (v. 5.4.1 (for 2022 data and v. 5.7.0 for 2024 data) software. Kaleidoscope automatic bat identification software was used to assign bat calls to species level. Bat calls assigned to Myotis species were grouped together under the Myotis genus.

3.3 Ecological Evaluation

The conservation value of habitats and ecological sites occurring that may occur within the proposed site are assessed against a geographic hierarchy of importance (NRA, 2009)The outline of this geographic hierarchy is provided below and this has been used to determine ecological value in line with the ecological valuation examples provided by the NRA (see NRA, 2009). The geographic evaluation hierarchy is as follows:

- International Sites (Rating A);
- National Importance (Rating B);
- County Importance (Rating C);
- Local Importance (higher value) (Rating D); and
- Local Importance (lower value) (Rating E)

3.4 Impact Assessment

3.4.1 Impact Magnitude

Impact magnitude refers to changes in the extent and integrity of an ecological receptor. The IEEM (2006) defines integrity of designated conservation areas as “the coherence of the ecological structure and function across the area that enables it to sustain the complex of habitat and/or the levels of populations of the species for which it was classified”. For non-designated sites this can be amended to: “the coherence of ecological structure and function, that enables it (the site or populations supported by the site) to be maintained in its present condition’. For the purposes of this assessment the

impact magnitude is influenced by the intensity, duration, frequency and reversibility of a potential impact and is categorised as follows:

- High magnitude impact: that which results in harmful effects to the conservation status of a site, habitat or species and is likely to threaten the long-term integrity of the system.
- Moderate magnitude impact: that which results in harmful effects to the conservation status of a site, habitat or species, but does not have an adverse impact on the integrity of the system.
- Low magnitude impact: that which has a noticeable effect but is either sufficiently small or of short duration to cause no harm to the conservation status of the site, habitat or species.
- Imperceptible: that which has no perceptible impact.
- Positive: that which has a net positive impact for the conservation status of a site, habitat or species.

3.4.2 Impact Significance

The significance of impacts is determined by evaluating the nature conservation value of the site, habitat or species concerned together with the magnitude of the impacts affecting the system. The more ecologically valuable a receptor and the greater the magnitude of the impact, the higher the significance of that impact is likely to be. Table 3.3 outlines the levels of impact significance to be used during the assessment of impacts. The probability of an impact occurring will also be outlined when defining the significance of impacts.

Table 3.3 Impact Assessment Matrix.

Nature Conservation Value	Magnitude of Potential Impact			
	High	Moderate	Low	Imperceptible
International	Severe	Major	Moderate	Minor
National	Severe	Major	Moderate	Minor
Regional	Major	Moderate	Minor	Minor
Local	Moderate	Minor	Minor	Negligible
Low	Minor	Negligible	Negligible	Negligible

4.0 RESULTS

4.1 Site Overview

The Proposed Development will be located on an undeveloped green field site comprising c. 9.20 hectares and is located is located on Rathmullan Road in Drogheda, Co. Meath. It is situated approximately 2.5km west of Drogheda town centre and is bounded to the north by the River Boyne valley, to the east by residential developments, to the south by agricultural lands, and to the west by the M1 Dublin to Belfast Motorway.

The Proposed Development site itself is dominated by horticultural land and is dissected and bordered by hedgerows, dry meadows and grassy verges and recolonising bare ground habitats. No watercourses were identified within the subject lands, however, the River Boyne is located directly north of the Proposed Development site and is separated from the lands by the Rathmullan Road.

4.2 Soils & Geology

A ground investigation contractor, IGSL, carried out an investigation at the Proposed Development to establish the prevailing ground conditions in terms of material properties. A number of trial pits were excavated using a mechanical digger as well as several boreholes using a shell and auger drill with rotary core follow on to establish the profile of the rock-head and provide information on the rock quality. The exploratory holes showed the Proposed Development to be underlain predominately from firm brown sandy gravelly CLAY. The gravelly CLAY stratum increases in strength to stiff below circa 1.20m with holes continuing to between 5.80m and 8.50m. Angular and sub-angular cobbles and boulders were noted at varying depths on the site. The ground conditions encountered reflect a typical description of the boulder clays deposited during the last glacier movement in the region and are common along the mid-eastern area of Ireland. Locally, peats reflect decay of organic materials over a significant period of time, while some fluvial glacial materials may also be encountered as a result of the water flowing from melting glaciers. The ground investigation showed that in each of the exploratory holes, the bedrock was not encountered prior to the termination of the boreholes between 5.80m and 8.50m. The final termination depths may be indicative of boulders in the glacial clay or possibly the local bedrock horizon. To confirm the depth of bedrock proof core drilling would be required.

The Bedrock Geology Map of Ireland produced by the Geological Survey of Ireland (GSI), describes the prevalent geology of the area. The Proposed Development spans an area predominately underlain by one geological formation – the Platin Formation being Crinoidal peloidal grainstone-packstone.

4.3 Hydrology & Hydrogeology

The Proposed Development is located approximately 9.6km west of the Irish Sea, with the River Boyne located to the north of the Proposed Development site. The section of the river to the north of the Proposed Development site is within the tidal stretch of the river, which extends west of the Proposed Development site to Grove Island at Oldbridge. The section of the Boyne River upstream and downstream of the Proposed Development site is representative of a transitional waterbody (i.e. it is subject to and influenced by tidal waters). The current water quality of the lower transitional waters

of the River Boyne are classed as being of Moderate Status and are of less than Good Status (WFD 2016-2021). Catchments.ie (2025) have identified pressures to this waterbody as relating to agricultural pressures and urban wastewater pressures. Discharges from roads, motorway, other human activities, and agricultural fertilisation have also been identified as sources of threats and pressures to the River Boyne and the River Boyne and River Blackwater SAC and SPA.

The bedrock aquifer beneath the site is classified by the GSI as 'Rkd: Regionally Important Aquifer – Karstified (diffuse)' (GSI, 2025). 'Karstification' is the process whereby limestone is slowly dissolved away by percolating water. It usually occurs in the upper bedrock layers and along certain factures, fissures and joints. This results in an uneven distribution of permeability through the bedrock. The landscape is generally characterised by underground drainage, with most flow occurring through the more permeable, solutionally enlarged, interconnected fissure/conduit zones. Groundwater velocities through fissures/conduits may be high and aquifer storage is often low. Groundwater often discharges as large springs (>2,000m^3/d), with a high variance in dependability. There is strong interconnection between surface water and groundwater.

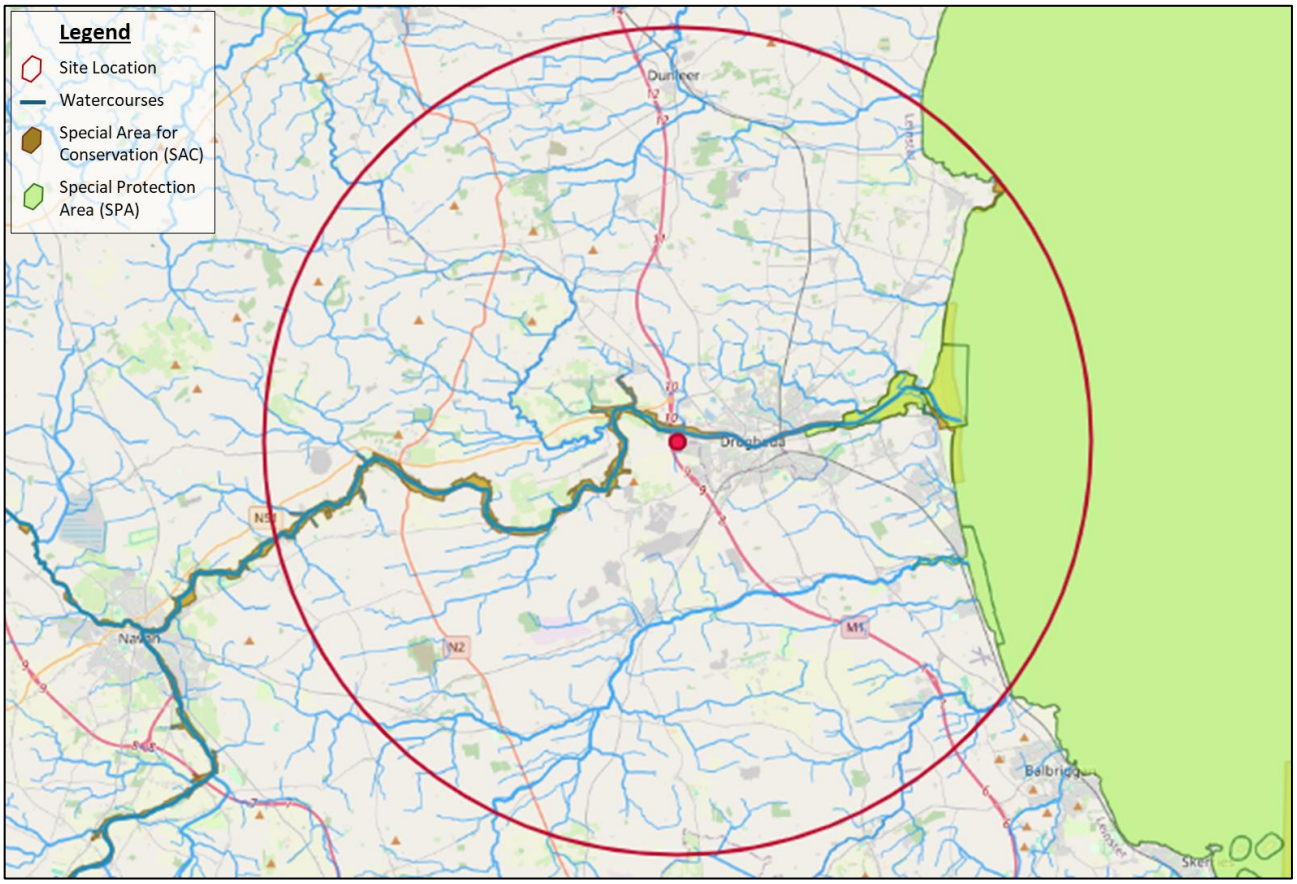
No groundwater was encountered during the exploratory boreholes or trial pits undertaken as part of the site investigation. The Proposed Development does not involve significant areas of cut extending into the groundwater table, and therefore no likely significant effects on groundwater resources are anticipated.

4.4 Desktop Analysis

4.4.1 Designated Conservation Areas

Two European Sites, the River Boyne and River Blackwater SAC and the River Boyne and River Blackwater SPA, are located c. 50 m from Proposed Development site. The northern boundary of the site overlaps within the boundary of the River Boyne and River Blackwater SAC. The nearest point of the River Boyne and River Blackwater SPA is located approximately 250m to the west of the Proposed Development site. No NHAs are located within the vicinity of the Proposed Development site. The Boyne River Islands pNHA, which overlaps with the River Boyne and River Blackwater SAC, is located approximately 220m to the north of the Proposed Development site, whilst the Boyne Coast and Estuary pNHA overlaps with the Boyne Coast and Estuary SAC. These are shown on Figure 4.1.

Figure 4.1 Natura 2000 Sites within the 15km Zone of Influence.



4.4.2 Protected Species Records

A search of the National Biodiversity Data Centre (NBDC) for records of rare and/or threatened species previously identified in the vicinity of the Proposed Development site was completed in February 2025. The Proposed Development site and the area immediately surrounding the Proposed Development site were searched for records of rare, threatened and/or protected species occurring within this area.

No records of protected plant species (listed on the Flora Protection Order 2021) are held for the area of search. With regard to bird species, Table 4.1 lists records for those species of conservation concern (Amber or Red List species); species that are listed on Annex 1 of the EU Birds Directive; species that are listed as special conservation interest bird species of SPAs in the wider surrounding area; and any other rare species. Other commonly occurring species, protected under the Wildlife Act are not listed in Table 4.1.

4.5 Fauna – Desktop Study

4.5.1 Bird Species

The desktop review of available information obtained from the NBDC between 2015 and 2025 revealed the confirmed observation of 38 bird species within the 4km^2 grid squares. Of these 38 species, 20 are listed as protected species. Table 4.1 provides an overview of bird species observed within the 2km grid squares.

Table 4.1 Summary of Bird Sighting Records within Grid Squares O07M and O07S, 2015 – 2025.

Common Name	Species Name	Count	Last Record	Conservation Status
Blackbird	*Turdus merula*	7	08/02/2018	
Blackcap	*Sylvia atricapilla*	3	18/11/2022	
Black-headed Gull	*Chroicocephalus ridibundus*	4	22/05/2018	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Red List
Blue Tit	*Cyanistes caeruleus*	1	13/11/2016	
Buzzard	*Buteo buteo*	1	13/09/2017	
Chaffinch	*Fringilla coelebs*	6	08/02/2018	
Common Gull	*Larus canus*	1	13/11/2016	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Cormorant	*Phalacrocorax carbo*	4	22/05/2018	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Dunnock	*Prunella modularis*	2	08/02/2018	
Goldfinch	*Carduelis carduelis*	3	12/02/2021	
Great Black-backed Gull	*Larus marinus*	1	22/05/2018	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Great Northern Diver	*Gavia immer*	1	30/12/2020	Protected Species: Wildlife Acts || Protected Species: EU Birds Directive || Protected Species: EU Birds Directive >> Annex I Bird Species

Common Name	Species Name	Count	Last Record	Conservation Status
Greenshank	*Tringa nebularia*	1	31/12/2011	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Grey Heron	*Ardea cinerea*	3	25/04/2021	
Grey Wagtail	*Motacilla cinerea*	1	13/11/2016	
Herring Gull	*Larus argentatus*	4	22/05/2018	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Red List
Hooded Crow	*Corvus cornix*	2	08/02/2018	
House Sparrow	*Passer domesticus*	2	08/02/2018	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Kestrel	*Falco tinnunculus*	1	28/02/2016	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Lapwing	*Vanellus vanellus*	2	18/11/2022	Protected Species: Wildlife Acts || Protected Species: EU Birds Directive || Protected Species: EU Birds Directive >> Annex II, Section II Bird Species || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Red List
Little Egret	*Egretta garzetta*	3	25/04/2021	Protected Species: Wildlife Acts || Protected Species: EU Birds Directive || Protected Species: EU Birds Directive >> Annex I Bird Species
Little Grebe	*Tachybaptus ruficollis*	1	13/09/2017	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List

Common Name	Species Name	Count	Last Record	Conservation Status
Magpie	*Pica pica*	2	12/02/2021	
Mallard	*Anas platyrhynchos*	3	08/02/2018	Protected Species: Wildlife Acts || Protected Species: EU Birds Directive || Protected Species: EU Birds Directive >> Annex II, Section I Bird Species || Protected Species: EU Birds Directive >> Annex III, Section I Bird Species
Moorhen	*Gallinula chloropus*	1	31/03/2024	
Mute Swan	*Cygnus olor*	2	13/11/2016	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Pied Wagtail	*Motacilla alba yarrellii*	1	12/02/2021	
Robin	*Erithacus rubecula*	5	12/02/2021	
Rook	*Corvus frugilegus*	2	01/01/2021	
Skylark	*Alauda arvensis*	2	28/05/2018	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Song Thrush	*Turdus philomelos*	6	08/02/2018	
Spotted Flycatcher	*Muscicapa striata*	3	23/08/2019	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Starling	*Sturnus vulgaris*	2	22/05/2018	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Swallow	*Hirundo rustica*	1	22/05/2018	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List

Common Name	Species Name	Count	Last Record	Conservation Status
Swift	*Apus apus*	2	18/07/2022	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Whitethroat	*Curruca communis*	1	19/05/2021	
Wren	*Troglodytes troglodytes*	3	12/02/2021	
Yellowhammer	*Emberiza citrinella*	7	07/09/2018	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Red List

4.6 Non-Volant Mammals

The desktop review of available information obtained from the NBDC revealed the confirmed observation of 15 mammal species within the 4km^2 grid squares, including 6 bat species. NBDC records include for the 2 grid squares include records of Pine Martin and Grey Squirrel, both critically engendered mammals in Ireland. However, records of these species were last confirmed in 2018 and 1981, respectively. Table 4.2 provides an overview of records of mammal sightings within the 2km grid squares O07M and O07S.

Table 4.2 Summary of Mammal Sighting Records within Grid Squares O07M and O07S, 1981 – 2025 (Yellow = records > 10 years old; Orange = records > 15 years old).

Common Name	Species Name	Count	Last Record	Conservation Status
American Mink	*Neovison vison*	1	01/03/2015	Invasive Species: Invasive Species || Invasive Species: Invasive Species >> High Impact Invasive Species || Invasive Species: Invasive Species >> Regulation S.I. 477 (Ireland)
Badger	*Meles meles*	5	30/07/2015	Protected Species: Wildlife Acts
Otter	*Lutra lutra*	2	16/09/2018	Protected Species: EU Habitats Directive || Protected Species: EU Habitats Directive >> Annex II || Protected Species: EU Habitats Directive >> Annex IV || Protected Species: Wildlife Acts

Common Name	Species Name	Count	Last Record	Conservation Status
Pine Marten	*Martes martes*	3	07/08/2018	Protected Species: EU Habitats Directive || Protected Species: EU Habitats Directive >> Annex V || Protected Species: Wildlife Acts
Grey Squirrel	*Sciurus carolinensis*	1	11/06/1981	Invasive Species: Invasive Species || Invasive Species: Invasive Species >> High Impact Invasive Species || Invasive Species: Invasive Species >> EU Regulation No. 1143/2014 || Invasive Species: Invasive Species >> Regulation S.I. 477 (Ireland)
Hedgehog	*Erinaceus europaeus*	7	24/04/2022	Protected Species: Wildlife Acts
Irish Hare	*Lepus timidus subsp. hibernicus*	2	02/08/2018	
Rabbit	*Oryctolagus cuniculus*	2	07/02/2015	Invasive Species: Invasive Species || Invasive Species: Invasive Species >> Medium Impact Invasive Species
Brown Long-eared Bat	*Plecotus auritus*	2	14/09/2017	Protected Species: EU Habitats Directive || Protected Species: EU Habitats Directive >> Annex IV || Protected Species: Wildlife Acts
Common Pipistrelle	*Pipistrellus pipistrellus sensu stricto*	1	13/05/2003	
Daubenton's Bat	*Myotis daubentonii*	1	13/09/2017	Protected Species: EU Habitats Directive || Protected Species: EU Habitats Directive >> Annex IV || Protected Species: Wildlife Acts
Leisler's Bat	*Nyctalus leisleri*	6	13/09/2017	Protected Species: EU Habitats Directive || Protected Species: EU Habitats Directive >> Annex IV || Protected Species: Wildlife Acts
Soprano Pipistrelle	*Pipistrellus pygmaeus*	10	14/09/2017	Protected Species: EU Habitats Directive || Protected Species: EU Habitats Directive >> Annex IV || Protected Species: Wildlife Acts
Pipistrelle	*Pipistrellus pipistrellus sensu lato*	3	04/06/2015	Protected Species: EU Habitats Directive || Protected Species: EU Habitats Directive >> Annex IV || Protected Species: Wildlife Acts
Red Deer	*Cervus elaphus*	1	15/06/2015	Protected Species: Wildlife Acts

4.7 Herpetofauna

The desktop review of available information obtained from the NBDC revealed the confirmed observation of 2 herpetofauna species within the 4km^2 grid squares. NBDC records for the 2 grid squares include common lizard and the

invasive terrapin turtle. However, records of common lizard were last confirmed in 1974. Table 4.3, overleaf, provides an overview of records of herpetofauna sightings within the 2km grid squares O07M and O07S.

Table 4.3 Summary of Herpetofauna Sighting Records within Grid Squares O07M and O07S (Yellow = records > 10 years old; Orange = records > 15 years old).

Common Name	Species Name	Count	Last Record	Conservation Status
Common Lizard	Zootoca vivipara	1	01/09/1974	Protected Species: Wildlife Acts
Slider Terrapins	Trachemys	1	24/03/2012	National Invasive Species Database

4.8 Survey Results

4.8.1 Habitats

The following Sub-Sections describe the habitats occurring within and immediately adjacent to the Proposed Development site. Each habitat described below has been identified to Level 3 of Fossitt's *Guide to Habitats in Ireland*. The alpha-numeric code for each habitat is also provided alongside the habitat name (e.g. hedgerow WL1). The locations and extent of each habitat described below are illustrated in Figure 4.2. The habitats occurring within the Proposed Development site boundary include:

4.8.1.1 *Arable Land (BC1)*

Arable land dominates the land cover within the Proposed Development site. This habitat supported a crop of barley (*Hordeum vulgare)* during field surveys. The crop is harvested during the summer months and the fields in which the Proposed Development site is located is then treated as a winter stubble field prior to subsequent sowing. It was previously used as horticultural land (BC2) for the production of broad beans *Vicia faba*). This habitat is subject to intensively agricultural management with tilling, nutrient and herbicide application forming part of the management activities.

4.8.1.2 *Buildings and artificial surfaces (BL3)*

Structures occur to the south of the Proposed Development site. These are representative of farm structures that are in a general state of disrepair with gaps and missing sheets associated with the corrugated roofs. Paved surfaces occur at the farmyard and this land cover is also representative of this habitat type.

4.8.1.3 *Dry Meadows and Grassy Verges (GS2)*

Dry meadows and grassy verges habitat occurs to the east of the Proposed Development site between the Proposed Development site and the Rathmullan Road. It occurs on steeper east facing slopes within the Proposed Development site. These are grasslands that are infrequently managed through cutting or grazing. Species included cock's-foot (Dactylis glomerata), bent grasses (Agrostis spp..), common couch *Elytrigia repens* and Yorkshire fog (*Holcus lanatus)* false oat-grass (Arrhenatherum elatius), fescues (Festuca spp.) and perennial rye-grass (Lolium perenne). Herbs included winter heliotrope (Petasites pyrenaicus), nettle (Urtica dioica) plantain (Plantago lanceolata), wild carrot (Daucus carota).

common knapweed (Centaurea nigra), common nettle (*Urtica dioica)*, cleavers (*Galium aparine)*, willowherb species (*Epilobium sp.)* and meadow buttercup (*Ranunculus acris)*. Invading scrub and tree species include gorse *Ulex europaeus, bramble (Rubus fruticosus agg.)* and eared willow (*Salix aurita)* also occur.

4.8.1.4 *Oak-Ash-Hazel Woodland (WN2)*

Oak-Ash-Hazel Woodland (WN2) is present along the northern and northeastern boundary of the Proposed Development site on a steeper north and northeast facing gradients that slope down to Rathmullan Road. This is the most important habitat on the subject lands as it is suitable habitat to support mammal species such as deer, badgers and foxes. This habitat is dominated by ash *Fraxinus excelsior,* hazel *Corylus avellana* and English elm *Ulmus procera*. Other tree species present include pedunculate oak *Quercus robur,* beech *Fagus sylvatica*, sycamore *Acer pseudoplatanus*. The understorey comprises elder *Sambucus nigra*, hawthorn *Crataegus monogyna* and bramble *Rubus fruticosus agg.* The canopy cover was heavy resulting in a diminished ground flora dominated by mosses, ferns and common ivy *Hedera helix.* The ferns present included lady-fern *Athyrium fliix-femina*, soft shield-fern *Polystichum setiferum* and Hart's tongue *Asplenium scolopendrium*. Mosses *Plagiomnium undulatum,* and *Thuidium tamariscinum* on the floor of the habitat, *Mnium hornum, Isothecium alopecuroides,* and *Neckra complanata* on the bases of the trees and *Bryum argentums* on rocks. Ground flora identified included herb robert *Geranium robertianum,* herb bennet *Geum urbanum,* opposite leaved golden saxifrage *Chrysosplenium oppositifolium*, meadow buttercup *Ranunculus acris*, primrose *Primula vulgaris*, honeysuckle *Lonicera periclymenum* and lords and ladies *Arum maculatum.* Cow parsley *Anthriscus sylvestris* and ground elder *Aegopodium podagraria* were noted within the habitat closer to the road. This habitat corresponds to the Irish Vegetation Community WL2C *Fraxinus excelsior-Acer pseudoplatanus* woodland, which is a relatively species-poor woodland type. Analysis of the relevé data against definitions of EU annex I habitats determined that the woodland does not correspond to [91E0] Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion*, *Alnion incanae*, *Salicion albae*), due to the absence of typical species for the habitat.

4.8.1.5 *Scrub (WS1)*

Scrub habitat has development along the boundary of the oak-ash-hazel woodland. This scrub habitat is entirely dominated by stands of spreading Rubus fruticosus agg.

4.8.1.6 Hedgerow (WL1)

Hedgerows within the Proposed Development area running north to south along the eastern boundary of the Proposed Development site and east to west, separating fields, through the Proposed Development site. These hedgerows are evaluated as being of moderate value (Local importance- higher value). These hedgerows are classified as important for several reasons including their dense ground cover, their role as a wildlife corridor connecting the woodland in the north of the lands with other habitats in the surrounding environment, the fact they are composed of mainly native species, and their advanced age[9]. Tree and shrub species present in the hedgerow include hawthorn *Crataegus monogyna*, elder *Sambucus nigra*, ash *Fraxinus excelsior*, sycamore *Acer pseudoplatanus* and bramble *Rubus fruticosus agg.* Ground flora present includes common nettle *Urtica dioica*, greater burdock *Arctium lappa*, cock's foot *Dactylis glomerata* and cleavers *Galium aparine*.

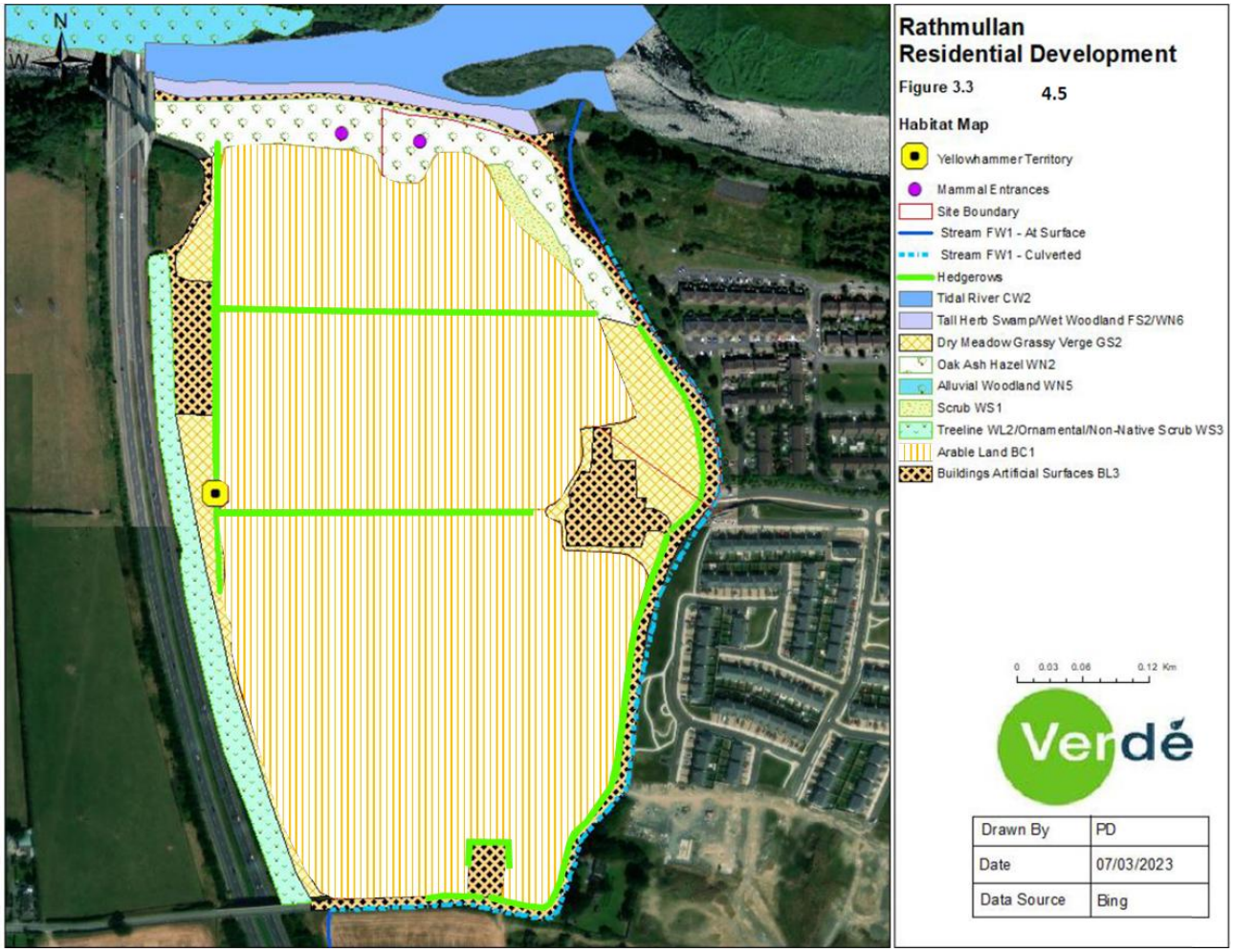


Figure 4.2. Habitats and Key Ecological Receptors within the Boundaries of the Proposed Development Site.

4.8.2 Habitats Outside the Proposed Development Site

Other habitats occurring outside the Proposed Development site include a mosaic of treeline and ornamental and non-native scrub to the west, parallel to the M1 motorway; tall herb swamp along the southern riparian fringe of the River Boyne to the north of the Rathmullan Road, and the River Boyne which is representative of a tidal river. A minor stream, the Sheepstown Stream is located to the east of the Proposed Development site, along the eastern side of the Rathmullan Road. This stream is culverted for most of its length to the east of the road. It emerges from the culvert approximately 100m upstream of its confluence with the River Boyne. No aquatic plants were noted within the channel or on the banks. Plant species noted were typical of those of the surrounding habitat types.

An example of Alluvial woodland habitat occurs to the north of the Proposed Development site at Yellow Island. This Alluvial woodland is representative of the Alluvial woodland qualifying habitat of the River Boyne and River Blackwater SAC.

4.9 Fauna

4.9.1 Non-Volant Mammals

Two mammal entrances, indicative of badger entrances and a badger sett were recorded within the woodland habitat on the north facing slope. One of the entrances is located within the Proposed Development site, whilst the other is located to the west of the Proposed Development site. The entrance within the Proposed Development site is situated at a location in the woodland that is subject to informal recreational activity. No definitive evidence indicating the presence of badgers at this entrance was noted during the survey completed on survey dates between May and July 2022 and again during February 2023. Both entrances were sticked firmly with twigs to monitor the movement of mammal traffic in an out of the entrances. The sticks remained in-situ during the surveys between May and July, indicating an absence of mammal traffic in and out of the entrances. Based upon the results of the monitoring at these entrances they are assessed as being representative of outlier/subsidiary setts for the local badger population. Subsequent site assessments (February 2023 – August 2025) have investigated locations identified as potential badgers setts for recent badger activity and have revealed no badger prints nor indication of badger presence / activity in the vicinity.

Aside from these sett entrances mammal tracks were noted within woodland habitat to the west and east of the Proposed Development site.

4.9.2 Volant Mammals – Bats

4.9.2.1 *Bat Roost Potential of Structures*

Based on the Marnell et al. (2022) roost potential assessment criteria, Table 4.4 lists the principal structural features associated with structures in the vicinity of the Proposed Development site that are considered to influence roost potential of these structures.

Table 4.4 Roost Potential Factors identified at the Structures occurring in the Vicinity of Proposed Development Site.

Factor	Factors Influence on Roost Potential
Sheet metal roof	Decreased Potential
Dilapidated roof with high levels of light penetration and bright interior conditions during daytime	Decreased Potential
Interior of the structure generally not shaded from the sun	Decreased Potential

The corrugated roof material used for the structures, along with the general dilapidated condition of these structures within large voids, draughty and bright interior conditions combine to result in these structures being unsuitable for supporting roosting bats and of low potential for roosting bats.

4.9.2.2 *Roost Surveys*

No signs of bat activity were recorded within the farm buildings at the farmyard complex towards the centre-east of the site or at the farm buildings further south and adjacent to the public road. No bats were observed emerging from structures at either farmyard during bat emergence surveys completed during the 2022 and 2024 seasons.

It is noted that a pair of bats were observed roosting at the lean-to concrete building at the eastern end of the farmyard immediately to the south of the Proposed Development site during separate bat survey completed during the 2018 bat activity season. A pair of Common pipistrelles were also observed roosting within corrugated farm buildings at the farmyard further to the south and adjacent to the public road.

The roosting activity recorded during the 2018 bat surveys were adjudged to be representative of transitional or night-time roosts for Common pipistrelle. The buildings were considered to be of low suitability for maternity roosts or for hibernation roosts.

The results of the more recent surveys of 2022 and 2024 indicate that the structures on site do not function as roost sites for bats and are not used by the local bat population for roosting. Moreover, subsequent site assessments (2024 – 2025) have found no evidence (evidence of guano or physical sightings) to suggest the presence nor use of structures as bat roosts

4.9.2.3 *Manual Bat Detector Survey*

Consistent Common pipistrelle foraging activity was recorded during both manual transects along the northern boundary of the Proposed Development site at the woodland edge and along the edge of the woodland and hedgerow within the Rathmullan Road “depression” along the eastern boundary of the site. Common pipistrelle foraging activity was also recorded during both transect surveys within the farm yard complex immediately to the south of the development site boundary.

Leisler's bat and Soprano pipistrelle were also recorded during the manual survey but these species were recorded at lower levels and the calls were fleeting indicative of commuting individuals as opposed to foraging activity.

4.9.2.4 *Static Detector Monitoring Results*

At least five bat species were recorded during bat surveys at the development site. These species include Leisler's bat, Common pipistrelle, Soprano pipistrelle, brown long-eared bat and Myotis species. The number of bat passes per night per species recorded during static monitoring is provided in Table 4.5.

Table 4.5 Results of Static Detector Bat Monitoring.

Date	MYOSPP	NYCLEI	PIPPIP	PIPPYG	PLEAUR	Total/Night
24/05/2022	0	1	13	2	0	**16**
25/05/2022	0	2	38	3	0	**43**
26/05/2022	0	3	498	4	0	**505**
27/05/2022	1	12	646	4	4	**667**
28/05/2022	0	22	516	17	0	**555**
29/05/2022	0	11	873	8	0	**892**
30/05/2022	0	21	263	12	0	**296**
31/05/2022	0	11	342	3	1	**357**
01/06/2022	0	3	335	5	0	**343**
02/06/2022	0	1	566	5	0	**572**
03/06/2022	0	26	643	24	2	**695**
04/06/2022	0	24	863	26	0	**913**
05/06/2022	0	21	630	29	1	**681**
06/06/2022	0	24	544	18	3	**589**
07/06/2022	0	3	202	6	0	**211**
08/06/2022	0	1	16	0	0	**17**
09/06/2022	0	2	128	3	0	**133**
10/06/2022	0	0	6	0	0	**6**
11/06/2022	1	1	249	7	5	**263**
12/06/2022	0	1	3	0	55	**59**
13/06/2022	0	5	588	12	33	**638**
14/06/2022	0	1	41	0	6	**48**
15/06/2022	0	1	450	2	4	**457**
16/06/2022	0	0	28	0	0	**28**
17/06/2022	1	43	507	11	2	**564**
18/06/2022	0	10	416	5	8	**439**
19/06/2022	0	47	162	6	1	**216**
20/06/2022	2	30	667	17	38	**754**
21/06/2022	0	43	561	35	26	**665**
22/06/2022	0	79	408	37	21	**545**
23/06/2022	0	25	875	14	70	**984**
24/06/2022	0	41	137	17	35	**230**
25/06/2022	0	13	877	12	12	**914**
26/06/2022	0	10	934	21	9	**974**
27/06/2022	0	14	498	21	10	**543**
28/06/2022	0	41	1387	13	55	**1496**
29/06/2022	0	34	363	8	153	**558**
30/06/2022	1	83	611	96	50	**841**
01/07/2022	0	109	659	46	56	**870**

02/07/2022	0	21	561	13	19	**614**
03/07/2022	0	16	1179	10	82	**1287**
04/07/2022	0	6	1179	12	82	**1279**
05/07/2022	0	47	796	28	234	**1105**
06/07/2022	0	24	22	1	72	**119**
07/07/2022	0	8	9		122	**139**
08/07/2022	0	3	965	11	12	**991**
09/07/2022	0	31	1212	21	171	**1435**
10/07/2022	1	21	1518	10	145	**1695**
Total/Species	**7**	**996**	**24984**	**655**	**1599**	**28241**

The evaluation of bat activity recorded during static monitoring surveys follows the approach outlined by Kepel (2011) who assigned bat activity based on bat passes per hour as follows:

- Pipistrelle species and Leisler's bat: Low = <3.5 passes per hour; Moderate = 3.6 – 6.5 passes per hour; High = >6.5 passes per hour
- All Other Bat species: Low = <4.0 passes per hour; 4.1 to 10 passes per hour; high = >10 passes per hour.

These categories are applied to the median bat pass per hour per night recorded during monitoring. The median bat pass per hour per night has been recommended by Lintott & Matthews (2018) as the most accurate representation of bat activity as bat activity levels between nights can be highly variable.

Based upon this approach the median bat pass per hour for the five bat taxa recorded during monitoring is provided in Table 4.6 below. The analysis of the monitoring shows that activity was low for Myotis species, Leisler's bat, Soprano pipistrelle and brown long-eared bat. Bat activity was very high for Common pipistrelle with a median bat pass per hour of 73.1 passes recorded.

Table 4.6 Median Bat Pass/Hour & Bat Activity Categories.

Species	Myotis Species	NYCLEI	PIPPIP	PIPPYG	PLEAUR
Median Pass/Hour/Night	0.00	1.9	73.1	1.5	1.0
Bat Activity Category (as per Kepel)	Low	Low	High	Low	Low

The high levels of Common pipistrelle are not unexpected at the development site given the presence of woodland and scrub habitats on site and the presence of woodland habitat and open grassland areas to the east of the development site. Common pipistrelle bats are widespread and abundant in Ireland and are generally encountered during bat activity surveys (NPWS, 2019). Notwithstanding this it is noted that the activity levels recorded during the surveys were indicative of very high foraging activity. Based upon these results and the results of manual surveys completed at the development site, the farmyard area and the sheltered Rathmullan Road corridor to the northeast of the farmyard represent preferred bat foraging habitat.

2024 Static Detector Monitoring Results

Four bat species were recorded during the 2024 bat surveys at the project site. These species include Leisler's bat, Common pipistrelle, Soprano pipistrelle, and brown long-eared bat. The number of bat passes per night per species recorded during static monitoring at monitoring point 1 and 2 are provided in Table 4.7.

Table 4.7 Summary of Static Detector Bat Monitoring Results at Monitoring Point 1.

Date	MYOSPP	NYCLEI	PIPPIP	PIPPYG	PLEAUR	Total/Night
20240625	0	7	533	16	2	558
20240626	0	20	15	3	3	41
20240627	0	13	24	0	0	37
20240628	0	27	361	35	2	425
20240629	0	5	225	67	0	297
20240630	0	11	146	43	0	200
20240701	0	10	185	13	0	208
20240702	0	30	391	146	1	568
20240703	0	3	112	3	0	118
20240704	0	26	109	21	0	156
20240705	0	19	266	60	0	345
20240706	0	18	407	47	0	472
20240707	0	0	76	2	0	78

Table 4.7 Summary of Static Detector Bat Monitoring Results at Monitoring Point 2.

Date	MYODAU	NYCLEI	PIPPIP	PIPPYG	PLEAUR	Total/Night
20240625	0	10	31	13	1	55
20240626	0	7	5	3	0	15
20240627	0	5	8	2	0	15
20240628	0	14	29	65	1	109
20240629	0	2	11	8	0	21
20240630	0	13	19	47	0	79
20240701	0	10	8	31	0	49
20240702	0	25	57	243	0	325
20240703	0	29	8	12	0	49
20240704	0	20	16	61	0	97
20240705	0	4	10	19	0	33
20240706	0	8	16	63	0	87
20240707	0	15	5	30	0	50

Based upon the Kepel approach for classifying bat activity levels the median bat pass per hour for the four bat taxa recorded during monitoring is provided in Table 4.8 below.

The analysis of the monitoring shows that activity was low for Myotis species, Leisler's bat, and brown long-eared bat. Bat activity was very high for Common pipistrelle at monitoring point 1 with a median bat pass per hour of 26.43 passes recorded. Activity for Common pipistrelle was low at monitoring point 2 indicating a concentration of foraging activity for this species in the vicinity of monitoring point 1. Bat activity for Soprano pipistrelle at monitoring point 1 was low, whilst it was medium at monitoring point 2.

Table 4.8 Median Bat Pass / Hour and Bat Activity Categories.

Species	Myotis Species	NYCLEI	PIPPIP	PIPPYG	PLEAUR
Median Pass / Hour / Night at MP1	0.00	1.86	26.43	3.00	0.00
Median Pass / Hour / Night at MP2	0.00	1.43	1.57	4.29	0.00
Bat Activity (as per Kepel)	Low	Low	High and Low	Low to Medium	Low

The high levels of Common pipistrelle are not unexpected at the Proposed Development site given the presence of woodland and scrub habitats on site and the presence of woodland habitat and open grassland areas to the east of the Proposed Development site. Common pipistrelle bats are widespread and abundant in Ireland and are generally encountered during bat activity surveys (NPWS, 2019). Notwithstanding this it is noted that the activity levels recorded during the surveys were indicative of very high foraging activity. Based upon these results and the results of manual surveys completed at the Proposed Development site, the farmyard area and the sheltered Rathmullan Road corridor to the northeast of the farmyard represent preferred bat foraging habitat.

Surveys for bat roosts and static detector assessments suggest that the Proposed Development site is used incidentally by bat species, but does not current nor historical bat roosting. Consequently, the existing activity levels and lack of bat roost use does not hinder potential development of the site.

4.10 Birds

A range of bird species were observed on and near the Proposed Development site between 2021 and 2025. Of note was the presence of two no. species of high conservation concern (i.e. Red-listed species), namely Meadow Pipit and Yellowhammer at and near the Proposed Development site during the breeding season surveys completed between 2022 and 2025.

A pair of buzzards were observed to be present within the general vicinity of the Proposed Development site, with a nest site being located to the north of the Proposed Development site (i.e., on the Northern bank of the River Boyne).
The red-listed breeding species Yellowhammer was confirmed to be present (via calls) within the northeastern portion of the Proposed Development site during the 2022 and 2025 in-situ surveys. Yellowhammer were identified within the linear woodland along the western portion of the Proposed Development site in 2022 and was identified as probably breeding within boundary hedging during the 2022 breeding season. Yellowhammer were heard calling to the northeast of the Proposed Development site during the April 2025 survey. No Yellowhammer were seen or heard on site during the May 2025 bird survey. This species was heard calling and singing in the arable field to the south of the Proposed Development site, south of Rathmullan Road. Given the presence of Yellowhammer within the Proposed Development site during the 2025, with one male recorded in suitable breeding habitat, this species is considered to be a possible breeder within the Proposed Development site for the 2025 breeding season.

Similarly, vocal calls of Meadow Pipit were heard in the southwest corner of the Proposed Development site during the April 2025 and May 2025 survey. Both calls were fleeting with no Meadow Pipit observed singing or displaying on site during these surveys. No evidence of breeding Meadow Pipit within the boundaries of the Proposed Development site.

For all other bird species recorded on / near the Proposed Development site, the distribution of bird species was confined to the woodland along the western boundary, and the scrub and woodland along the Northeastern boundary of the site. Bird activity typically decreased along the Southern portion of the site, with Wren, Song Thrush and Blackbird being the only species recorded along the southern portion of the site. No ground nesting birds were flushed from arable land during transects through this habitat. Table 4.9, provides a summary of bird species confirmed to occur on / near the site during in-situ bird surveys (2021 – 2025).

Table 4.9 Overview of Bird Count Data across the Various Surveys (2022 – 2025).

Common Name	Species Name	Survey Date	BoCCI Status
Blackbird	*Turdus merula*	May/June 2022	Green
Chaffinch	*Fringilla coelebs*	May/June 2022	Green
Chiffchaff	*Phylloscopus collybita*	May/June 2022	Green
Dunnock	*Prunella modularis*	May/June 2022	Green
Goldfinch	*Carduelis carduelis*	May/June 2022	Amber
Greenfinch	*Chloris chloris*	May/June 2022	Amber
Robin	*Erithacus rubecula*	May/June 2022	Green
Wren	*Troglodytes troglodytes*	May/June 2022	Green
Swallow	*Hirundo rustica*	May/June 2022	Amber
Wood pigeon	*Columba palumbus*	May/June 2022	N/A
Pheasant	*Phasianus colchicus*	May/June 2022	Green

Common Name	Species Name	Survey Date	BoCCI Status
Blue Tit	*Cyanistes caeruleus*	December 2024	Green
Black-headed Gull	*Chroicocephalus ridibundus*	December 2024	Amber
Buzzard	*Buteo buteo*	December 2024	Green
Cormorant	*Phalacrocorax carbo*	December 2024	Amber
Common Gull	*Larus canus*	December 2024	Amber
Hooded Crow	*Corvus cornix*	December 2024	Green
Robin	*Erithacus rubecula*	December 2024	Green
Rook	*Corvus frugilegus*	December 2024	Green
Starling	*Sturnus vulgaris*	December 2024	Green
Wood pigeon	*Columba palumbus*	December 2024	Green
Buzzard	*Buteo buteo*	April 2025	Amber
Meadow Pipit	*Anthus pratensis*	April 2025	Red
Yellowhammer	*Emberiza citrinella*	April 2025	Red
Herring Gull	*Larus argentatus*	April 2025	Amber
Swallow	*Hirundo rustica*	April 2025	Amber
Starling	*Sturnus vulgaris*	April 2025	Amber
Skylark	*Alauda arvensis*	April 2025	Amber
Willow warbler	*Phylloscopus trochilus*	April 2025	Amber
Goldcrest	*Regulus regulus*	April 2025	Amber
Wren	*Troglodytes troglodytes*	April 2025	Green
Blue tit	*Cyanistes caeruleus*	April 2025	Green
Great tit	*Parus major*	April 2025	Green
Blackcap	*Sylvia atricapilla*	April 2025	Green
Whitethroat	*Sylvia communis*	April 2025	Green
Blackbird	*Turdus merula*	April 2025	Green
Song thrush	*Turdus philomelos*	April 2025	Green
Chiffchaff	*Phylloscopus collybita*	April 2025	Green
Dunnock	*Prunella modularis*	April 2025	Green
Wood Pigeon	*Columba palumbus*	April 2025	Green
Magpie	*Pica pica*	April 2025	Green
Rook	*Corvus frugilegus*	April 2025	Green
Robin	*Erithacus rubecula*	April 2025	Green

4.11 Non-Breeding Season Waterbird Surveys

Wintering wetland bird species such as golden plover, lapwing, greylag goose, herring gull and lesser-black backed gull as well as other waterbirds are known to rely on and / or opportunistically use grassland and arable land for feeding and roosting. These species generally prefer to use areas of open and expansive grassland and arable land for feeding and roosting (FAS, 2017) and are less associated with enclosed and small field sizes (Milsom et al. 1998).

Wintering waterbirds that forage on grassland habitats prefer short sward grassland, with the optimum height for species such as golden plover and lapwing reported to be around 7cm tall (Gillings & Fuller, 1999). Gregory (1987) found lapwing avoided habitats with swards more than 10cm in height, while Milsom *et al.* (1998) demonstrated that both golden plover and lapwing preferred to feed in fields that had been mown twice rather than once during the season and virtually avoided unmown fields. The sward conditions within the Proposed Development site during all surveys between January 2021 and February 2023 were representative of short sward winter stubble that provides suitable foraging habitat for these species.

The regular presence of buzzards over the Proposed Development site (observed during site visits in January, February, April, November, 2021; January 2022 and February 2023) is likely to undermine the likelihood of the development site and surrounding area being used as a foraging habitat by waterbirds such as golden plover, lapwing or greylag goose.

During all surveys (2022 – 2025), no special conservation interest bird species of the Boyne Estuary SPA, River Boyne and River Blackwater SPA, River Nanny Estuary and Shore SPA or North-West Irish Sea SPA were observed foraging, roosting or loafing within the development site or the surrounding area during all winter season surveys. No other waterbird species were recorded at the development site during all surveys. In addition, no Kingfisher (the special conservation interest bird species of the River Boyne and River Blackwater SPA) were observed at the Proposed Development site during surveys. Based upon the results of the field surveys, the Proposed Development site does not function as a terrestrial habitat nor offer high value supporting habitat relied upon by special conservation interest bird species or waterbirds of the above 5 listed SPAs.

4.12 Nature Conservation Value – Identification of Key Ecological Receptors (KERs)

Designated sites are KERs as the development is within the Boyne Catchment and therefore hydrologically connected to European sites in the Boyne River and Estuary and to the Boyne River Islands pNHA. In light of the nature of the development , which will involve the generation of silts and sediments during construction which could potentially enter the downstream receiving surface water environment, and its location upstream of two other European Sites at the Boyne Estuary, designated sites have been included as KERs.

All habitats within the subject lands with the exception of the [what?] are considered to be KERs in light of their ecological importance and the potential for construction-phase impacts from the development .

Bats are considered to be KERs as the woodland habitats at and surrounding the development site provide suitable foraging habitat for bat species and are relied upon as a foraging resource by the local Common pipistrelle population. The structures immediately to the south of the development site have previously been identified as a transitional/night roost for low numbers (no more than 2 observed roosting) Common pipistrelle bats. There is therefore a risk for construction and operation-phase impacts on these legally protected species.

A badger outlier/subsidiary sett is located to the north of the Proposed Development within one entrance being located within the development site. As such badgers are identified as a KER.

The red-listed breeding species Yellowhammer has been identified as probably breeding along woodland habitat to the west of the development site. This species is known to rely on arable habitats and as such both Yellowhammer and arable land are identified as KERs.

5.0 IMPACT ASSESSMENT

5.1 Designated Conservation Areas

5.1.1 Direct Impacts

There will be no direct impacts to designated conservation areas occurring in the surrounding area. The nearest conservation area to the development site is the River Boyne and River Blackwater SAC, whose boundary overlaps the northern boundary of the development site. No works associated with the development will be undertaken within this SAC or any other designated site in the vicinity. The nearest point of any construction works to this SAC will be approximately 100m to the south. Landscaping works in the form of landscape planting will be completed within the existing arable field to the south of the River Boyne and River Blackwater SAC boundary. This works will be completed within approximately 40m of the SAC boundary. This work will not pose a risk of direct impacts to the SAC or any other designated sites.

5.1.2 Indirect Impacts

A Natura Impact Statement (NIS) has been prepared for the Proposed Development to examine the potential impacts the development may pose to the qualifying features of interest of the River Boyne and River Blackwater SAC, River Boyne and River Blackwater SPA and the Boyne Estuary SPA and Boyne Coast and Estuaries SAC occurring downstream at the Boyne Estuary. In the absence of mitigation, the possibility of significant effects cannot be ruled out with regards to the European sites and pNHA within the Boyne River and Estuary: River Boyne and Blackwater SAC (002299), River Boyne and Blackwater SPA (004080), Boyne Coast and Estuary SAC (001957), Boyne Estuary SPA (004080) and for Boyne River Islands pNHA (01862). The Proposed Development is connected to these designated sites as it is directly adjacent to the River Boyne SAC however there are no surface water drains onsite. The Stragrennan stream is culverted through the lands.

During the construction phase of the development , there is potential for sediments and pollutants such as oils and other hydrocarbons to be mobilised to the surface water network outside of the lands and discharge to designated sites within the Boyne River and estuary. A potential pollution event would be most likely during or after a storm event involving prolonged heavy rainfall and would be significant at a local level.

5.1.3 Mitigation Measures

The mitigation measures outlined hereunder are based on established best practice guidelines and will provide effective screening of the Proposed Development for likely effects to habitats, species and associated key ecological receptors generated during the construction phase and operational phases of the Proposed Development. Mitigation measures and environmental safeguards outlined for the construction phase are taken from established best practice guidelines that have been successfully implemented for a wide range of project-level infrastructural developments. These recommended mitigation measures have undergone extensive and rigorous monitoring for their effectiveness at development sites where they have previously been applied to ensure beyond reasonable scientific doubt that there will be not be adverse effect stemming from the Proposed Development.

It has been concluded beyond reasonable scientific doubt that, provided all mitigation measures that aim to avoid the discharge of contaminated surface drainage waters are implemented, the potential for negative impacts to water quality and associated adverse effects to qualifying features of interest along the River Boyne and downstream at the Boyne Estuary will be eliminated. This in turn will eliminate the potential for adverse effects to the conservation objectives and integrity of the River Boyne and Estuaries European Sites. The mitigation measures will also eliminate the risk of the proposed development impacting upon the environment via all other pathways, including air and human disturbance.

The best practice guidance that has informed the mitigation measures herein and the proposed environmental safeguards that should be adhered to throughout the construction and operational phases of the Proposed Development (as recommended by the EA / SEPA / EHS) include,

- PPG 1: Understanding your environmental responsibilities - good environmental practices
- GPP 2: Above ground oil storage tanks
- PPG 3: Use and design of oil separators in surface water drainage systems
- GPP 4: Treatment and disposal of wastewater where there is no connection to the public foul sewer
- GPP 5: Works and maintenance in or near water
- PPG 6: Working at construction and demolition sites
- PPG 7: Safe storage - The safe operation of refuelling facilities
- GPP 8: Safe storage and disposal of used oils
- GPP 8: Safe storage and disposal of used oils
- GPP 8: Safe storage and disposal of used oils
- GPP 19: Vehicles: Service and Repair
- GPP 21: Pollution incident response planning
- GPP 22: Dealing with spills
- GPP 26 Safe storage - drums and intermediate bulk containers
- PPG 27: Installation, decommissioning and removal of underground storage tanks
- CIRIA Environmental Good Practice on Site.

5.2 Habitats

5.2.1 Construction Phase

The site plan details that hedgerows, treelines and woodland will be retained where possible around the perimeter of the subject lands. Approximately 220m of hedgerow (WL1), 3.7ha of arable land and 0.43ha of dry meadows and grassy verges (GS2) grassland will be permanently lost from the development site during the construction phase of the development and replaced by buildings and artificial surfaces and various types of landscaping and planting as outlined in the landscape masterplan which is provided under separate cover with the planning application documentation.

Without compensation, the loss of these habitats will have a significant impact on wildlife at the local scale by removing wildlife corridors and nesting sites.

In the absence of any mitigation, there is potential for damage to treelines and hedgerows within the subject lands, arising from machinery strikes and/or inappropriate stockpiling of materials within their root protection zones. This impact would be significant at a local geographic scale.

5.2.2 Operation Phase

The woodland to be retained within the subject lands will be subject to increased human traffic. This may result in negative impacts such as damage to trees, litter and trampling of ground flora.

5.2.3 Mitigation Measures

The following measures will be undertaken to reduce and avoid potential damage to habitats within the lands during construction:

- All hedgerows and immature woodland marked for retention will be fenced off at the outset of works and for the duration of construction to avoid damage to the trunk, branches or root systems of the trees. Temporary fencing will be erected at a sufficient distance from the tree so as to enclose the Root Protection Area (RPA) of the tree (National Roads Authority, 2005-2011). In general, the RPA covers an area equivalent to a circle with a radius 12 times the stem diameter (measured at 1.5m above ground level for single stemmed trees);
- Where fencing is not feasible due to insufficient space, protection for the tree/hedgerow will be afforded by wrapping hessian sacking (or suitable equivalent) around the trunk of the tree and strapping stout buffer timbers around it. It will still be necessary to ensure that the area within the RPA is not used for vehicle parking or the storage of materials (including oils and chemicals);
- Soil will not be placed within the Root Protection Area of trees or within 5m of hedgerows;
- The woodland will not be lit during the construction or operational phases of the development; and
- The construction compound will be located a minimum of 50m from watercourses.

Measures to prevent pollution of watercourses are outlined above and within Sections 3 and 4 in of the Construction Environmental Management Plan.

The following measures will be undertaken in order to compensate for the loss of habitats during construction:

- Mixed native woodland planting is proposed along the boundaries of the Proposed Development site, as outlined in the landscape management plan;
- Tree planting is proposed in green spaces and along the streets throughout the Proposed Development site;
- Woodland enhancement planting will be provided at the north and east of the development site. The landscape masterplan has provided for an additional area of approximately 0.5 Ha of woodland to the north and east of the Proposed Development site.

- Upon completion of the construction phase, meadow planting is proposed in several areas, as outlined in the landscape masterplan. Wildflower planting has been proposed for these areas and the wildflower seed mix to be used will be of Irish provenance, to ensure against the introduction of non-native seeds;
- The wildflower seed mixes will be sourced from "Design by Nature"[1], which is a supplier of local native seed mixes. Specific seed mixes, such as those specified in the landscape masterplan, containing only the desirable plant species indicative of grassland habitat suited to the climate and main soil conditions of the receptor site, can be made up to order to help ensure the successful creation of this habitat type;
- To yield best results, it is recommended that seeds are sown in August or September time (i.es. late summer to early autumn) as it will allow the plants sufficient time to become established during the winter and be ready for vigorous growth the following spring (National Roads Authority, 2006); and,
- The wildflower mix will be managed in accordance with details provided by Design by Nature. The long-term management of the compensatory habitat will be under a single annual mow regime, to be undertaken in September-October each year.

5.3 Fauna

5.3.1 Construction Phase

In the absence of mitigation, the loss of habitats arising from the construction phase of the Proposed Development has the potential to affect local fauna. The permanent loss of dry meadows and grassy verges, arable land and hedgerow habitat within the Proposed Development site will result in loss of suitable foraging, commuting and nesting habitats for non-volant mammals, bats and birds, including the red-listed yellowhammer.

Most Irish bat species are closely associated with woodland and hedgerow habitats (Roche *et al*., 2014). Bats are known to use linear habitats such as hedgerows to commute between roosting sites and foraging sites, and therefore these habitats act as important connecting features for these protected mammals. For this reason, removal of hedgerow habitat has the potential to negatively affect local bat populations through the loss of commuting and foraging habitat. Impacts would be significant at a local geographic scale.

In the case of birds of low conservation concern at the development site (green-listed species), the loss of grassland and scrub habitat, while it may affect bird species locally, is not considered to be significant in this instance. This is because these species are frequently encountered in urbanised areas of the country, and it is anticipated that they will either adapt to the new habitats within the development site or be displaced to similar habitat present in nearby farmland. The buzzards *Buteo buteo* identified flying over the development site are known to nest in woodland habitat to the north of the River Boyne and there will be no loss of breeding habitat associated with this species.

[1] Design by Nature website: http://www.wildflowers.ie/

Yellowhammer were heard calling to the northeast of the Proposed Development site during the April 2022 survey. Catfolis (2021) and Dochy (2018) note that Yellowhammer are generally restricted to a 2km territory area during both the winter and breeding season. The loss of Yellowhammer foraging habitat to the footprint of the Proposed Development may result in the loss of suitable foraging habitat within a 2km buffer zone surrounding the Proposed Development site. However, it must be reiterated that Yellowhammer were only identified through vocal calls, and only during a single survey event in 2022, suggesting that Yellowhammer may only occur within the development boundary incidentally. Furthermore, lands surrounding the proposed development site to the south, west and north are predominantly comprised of agricultural lands, typically bounded by hedgerows, which offer suitable supporting habitat for Yellowhammer.

Percival (2003) provides a methodology for determining the magnitude of possible impacts of Proposed Development to bird species. This method ranks the impact of habitat loss at <1% as a negligible magnitude effect. The Percival methodology ranks red-listed bird species such as Yellowhammer as a species of medium sensitivity to impacts. Based on the medium sensitivity of this species and the negligible magnitude effect of habitat loss, the significance of this habitat loss for the local Yellowhammer population will be very low as per Percival (2003).

The construction phase of the development may result in the short- to medium-term disturbance of bats and birds utilising the lands within the development site and on adjacent lands.. However, given the very low numbers of bats recorded using the lands of the development site , along with the absence of persistent roosting observed in structures between 2022 and 2025, impacts to bat species are likely to be highly localised and would not affect the conservation status of any species. Similarly, concurrent bird surveys have revealed that no bird species listed under any nearby Natura 2000 sites have been observed utilising habitats within the boundaries of the proposed development site.

The proposed removal of hedgerow habitat will result in the loss of suitable habitat for breeding birds. Moreover, noise and vibration emissions during the construction phase of works may result in the short- to medium-term disturbance of breeding birds from habitats and lands adjacent to the development site.

Badger setts were identified along the northern boundary of the development site in 2018. The NRA (2007) outline the distances at which badgers are susceptible to disturbance from construction works, ranging up to 150m from any active setts. For construction works associated with heavy machinery, lighting machinery and light works this distance is up to 50m from an active sett during the breeding season (December to June inclusive). However, consecutive ecological surveys at the development site have revealed that the badger setts identified in 2018 have not been active since then, whilst the immediate area surrounding the identified badger setts have not shown any recent activity of badger between 2018 and August 2025. Moreover, ecological surveys undertaken in 2025 have not revealed any evidence suggesting the active use of the development site by badger. Consequently, impacts to badger during the construction phase is unlikely

As noted above the woodland in which the badger setts are located could be subject to increased human traffic. This may result in negative impacts such as disturbance to this sett.

5.3.2 Operation Phase

Operation of the Proposed Development will result in lighting being installed in an area that was previously largely unlit. In the absence of mitigation, lighting near hedgerow and woodland habitat may negatively impact bat species. Bats are known to be sensitive to lighting of their foraging habitats. Most Irish bat species avoid light sources when foraging (Bat Conservation Ireland, 2010). Light sources may attract insects from the surrounding areas and effectively reduce the available food resource to foraging bats locally.

During operation of the development, it is anticipated that noise, light and human presence, will increase over the existing baseline for the subject lands. This has the potential to result in birds permanently abandoning territories within the subject lands however, they are likely to become tolerant to increased levels of disturbance providing suitable habitat remains.

5.3.3 Mitigation Measures

Measures to mitigate the loss of faunal biodiversity are as follows:

- Clearance of tall vegetation (woody or herbaceous) to facilitate construction works will be undertaken outside of the breeding bird season (1st March to 31st August, inclusive), or where this seasonal constraint cannot be adhered to, the area of proposed clearance will be checked for nesting birds by a suitably qualified ecologist. If birds are encountered, clearance works will be suspended in the relevant area until nesting has finished;
- In order to minimise the potential for disturbance to the woodland habitat to the north of the development site the landscape masterplan has been designed to include the provision of new native woodland habitat to the south of the existing area of woodland. This woodland will be contiguous with the existing woodland to the north of the development. A 1.6m high temporary stock proof fence will be provided along the southern boundary of the new area woodland until it has developed. The 10m strip fringing this woodland will be treated as a dense woodland boundary with an abundance of *Prunus spinosa* and *Crataegus mongyna*.
- The outdoor lighting design for the operation phase of the development has been designed in order to avoid the spill of lighting on to existing woodland and woodland habitats to be created as part of the landscape masterplan. The lux contour will be set back from the edge of all existing and to be provided woodland habitat. This approach to the lighting design will maintain dark conditions within and at the edge of woodland habitats and provide favourable habitat for bat species.
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6.0 RESIDUAL IMPACTS

6.1 Designated Sites

Following the implementation of measures to prevent construction-related pollutants entering the receiving surface water network, the risk of pollutants reaching downstream European sites and nationally designated sites will be reduced substantially. Residual impacts on designated sites will therefore be reduced to levels deemed not to be significant.

6.2 Habitats

Following the implementation of measures to ensure the protection of hedgerows, treelines, and compensatory measures for the replacement of lost habitat, residual impacts on habitats are considered to be reduced, but will remain significant at a local level. This is because there will be a net loss of semi-natural habitat within the lands.

6.3 Fauna

Following the implementation of measures to prevent the accidental destruction of a bat roost or birds' nests, or the mortality of these protected species, construction phase impacts on fauna have been reduced to levels not deemed significant. Given the impacts of very low significance identified for yellowhammer and the provision of targeted landscape and habitat management measures for this species during the operation phase there will be no potential for significant negative impacts to this species. Given the position of the badger setts entrances outside the zone of disturbance during the construction phase and the provision for dense thorny and scrubby vegetation along the boundary of the woodland habitats to the north the potential for human access and ongoing disturbance to the woodland habitat and associated badger setts to the north will be minimised.

Adherence to the measures outlined will ensure compliance with legislation protecting birds and bats.

It is that the opinion of this ecologist, Dr. Jeff Hean, that in light of evidence collected through the various ecological surveys at the Proposed Development site and presented here, and in consideration of the recommended mitigation measures, that the Proposed Development is appropriate and will not have medium to long -term significant effects on ecological receptors nor adversely affect the local biodiversity of the area.

7.0 REFERENCES

- Bat Conservation Trust (2022) Interim Guidance Note: Use of night vision aids for bat emergence surveys and further comment on dawn surveys.
- Chartered Institute of Ecology and Environmental Management (CIEEM) 2018) Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal, and Marine. Chartered Institute of Ecology and Environmental Management
- Chartered Institute of Ecology and Environmental Management (CIEEM) (2021) Mitigation Guidelines: A guide to impact assessment, mitigation and compensation for developments affecting bats. Beta version. Chartered Institute of Ecology and Environmental Management,
- Collins, J. (2016). Bat Surveys for Professional Ecologists: Good Practice Guidelines (3rd edition). The Bat Conservation Trust, London.
- Department of Housing, Planning and Local Government (DHPLG - 2018). Urban Development and Building Heights Guidelines for Planning Authorities
- Fossitt J. A. (2000). A Guide to Habitats in Ireland. Heritage Council.
- Heritage Council (2002). Draft Habitat Survey Guidelines. Heritage Council.
- IEEM (2006). Guidelines for Ecological Impacts Assessment. IEEM.
- JNCC (1993). Handbook for Phase I habitat survey. JNCC.
- Marnell, F., Kelleher, C. & Mullen, E. (2022) Bat mitigation guidelines for Ireland v2. Irish Wildlife Manuals, No. 134. National Parks and Wildlife Service, Department of Housing, Local Government and Heritage, Ireland
- Neal E. & Cheeseman C. (1996). Badgers. Poyser Natural History. London.
- NRA (2006a). Guidelines for assessment of ecological impacts of National Road Schemes. National Road Authority
- Marnell, F., Kelleher, C. & Mullen, E. (2022). Bat mitigation guidelines for Ireland V2. Irish Wildlife Manuals, No. 134. National Parks and Wildlife Service, Department of Housing, Local Government and Heritage, Ireland.
- Percival, S.M., 2003. Birds and wind farms in Ireland: a review of potential issues and impact assessment. Ecology Consulting, 17, pp.2234-2236.