



Ecological Impact Assessment Report

PRESENTED TO

Cabriz Group

**Proposed Residential Development at Hill Street, Dundalk,
Co. Louth**

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1 INTRODUCTION

Enviroguide Consulting was commissioned by Cabriz Group to undertake an Ecological Impact Assessment (EclA) in relation to a proposed residential development at Hill Street, Dundalk, Co. Louth hereafter referred to as 'Proposed Development' or 'Site' when referring to the site area of the Proposed Development.

This EclA assesses the potential effects of the Proposed Development on habitats and species; particularly those protected by national and international legislation or considered to be of particular nature conservation importance on or adjacent to the Site. This Report will describe the ecology of the Site, with emphasis on habitats, flora and fauna, and will assess the potential effects of the Construction and Operational Phases of the Proposed Development on these ecological receptors. The Report follows the Guidelines for Ecological Impact Assessment in the UK and Ireland, by the Chartered Institute of Ecology and Environmental Management (CIEEM, 2018) and is supplemented by the National Roads Authority (2009) guidelines for the Assessment of Ecological Impacts of National Road Schemes. The purpose of this EclA is to:

- Set out the methodologies used to inform the assessment.
- Identify Key Ecological Receptors (KERs) within the Zone of Influence (ZOI).
- Assess the impacts from the Proposed Development on the KERs and the resulting significant effects.
- Set out measures to avoid or mitigate negative impacts.
- Assess the residual effects after the incorporation of agreed avoidance or mitigation measures to ensure legal compliance.
- Set out agreed measures to offset significant residual effects.
- Set out opportunities for ecological enhancement.

1.1 Quality Assurance and Competence

Enviroguide Consulting is a multi-disciplinary consultancy specialising in the areas of the Environment, Waste Management and Planning. All of our consultants carry scientific or engineering qualifications and have a wealth of experience working within the Environmental Consultancy sectors, having undergone extensive training and continued professional development.

Enviroguide Consulting as a company remains fully briefed in European and Irish environmental policy and legislation. Enviroguide staff members are highly qualified in their field. Professional memberships include the Chartered Institution of Wastes Management (CIWM), the Irish Environmental Law Association and Chartered Institute of Ecology and Environmental Management (CIEEM).

All surveying and reporting have been carried out by qualified and experienced ecologists and environmental consultants. SOB, Ecologist with Enviroguide undertook the ecological surveys and desktop research for this Report.

SOB has a B.A. in Zoology from Trinity College Dublin and a M.Sc. Hons. in Wildlife Conservation and Management from University College Dublin, and has experience in desktop research, report writing, and literature scoping-review, as well as practical field and

laboratory experience (Pollinator surveying, sampling and identification, habitat surveying, invasive species surveying, etc.). SOB has prepared Stage I and Stage II Appropriate Assessment (AA) Reports, Invasive Species Surveys, Ecology Statements, EclAs, and Biodiversity Chapters of Environmental Impact Assessment Reports (EIARs).

1.2 Relevant Legislation and Policy Context

An EclA is a process of identifying, quantifying, and evaluating potential effects of development-related or other actions on habitats, species and ecosystems (CIEEM, 2018).

An EclA is not a statutory requirement, however, it is a best practice evaluation process. This EclA is provided to assist the Competent Authority with its decision making in respect of the Proposed Development.

There are a number of pieces of legislation, regulations and policies specific to ecology which underpin this assessment. These may be applicable at a European, National or Local level. Legislation at the International level relevant to the Proposed Development are listed below:

- *Council Directive 92/43/EEC* on the Conservation of Natural Habitats and of Wild Fauna and Flora; hereafter the 'Habitats Directive'.
- *Directive 2009/147/EEC*, hereafter the 'Birds Directive'.
- EU Regulation 1143/2014, on Invasive Alien Species.
- *Convention on the Conservation of European Wildlife and Natural Habitats 1982*, hereafter the 'Bern Convention'
- *The Convention on the Conservation of Migratory Species of Wild Animals 1983*, hereafter the 'Bonn Convention'.
- *Ramsar Convention on Wetlands 1971*, hereafter referred to as 'Ramsar'.
- *Water Framework Directive 2000/60/EC*, hereafter the 'WFD'.

National legislation and policy relevant to the Proposed Development are listed below:

- Wildlife Act 1976, as amended in 2000.
- Flora (Protection) Order 2015.
- The Planning and Development Act 2000.
- National Biodiversity Plan 2017-2021.

Additionally, Natural Heritage Areas (NHAs) are designations under the Wildlife Acts to protect habitats, species, or geology of national importance. The boundaries of many of the NHAs in Ireland overlap with Special Areas of Conservation (SAC) and/or Special Protection Area (SPA) sites. Although many NHA designations are not yet fully in force under this legislation (referred to as 'proposed NHAs' or pNHAs), they are offered protection in the meantime under planning policy which normally requires that planning authorities give recognition to their ecological value.

Local plans and policies relevant to the Proposed Development are listed below:

- Louth County Development Plan 2021 – 2027.
- Louth Biodiversity Action Plan 2021 – 2026.

Further details on legislation and policy relevant to the Proposed Development are detailed in Appendix I.

2 DESCRIPTION OF THE PROPOSED DEVELOPMENT

2.1 Site Location

The Site of the Proposed Development, as shown in Figure 1, is located within the lands adjacent to the Mourne View Hall student accommodation. The Site is bound primarily by the residential houses along the Dublin Road (R132) to the west and south, Avenue Road (R172) to the north, and Mourne View Hall student accommodation and a greenfield site to the east. The Site is a greenfield site with areas of wetland habitat, with the Ramparts Stream, also referred to as the River Blackwater, flowing through the centre and along the north boundary of the Site in an easterly direction. The surrounding landscape is primarily urban in nature.

2.2 Description of Development

The Proposed Development will consist of 193no. apartments in 8no. distinctive blocks (A to H) ranging in height from one to five storeys together with all associated public, communal and private open space, car parking, cycle parking, roads infrastructure and site services. The proposed development will be supported by a childcare facility within Block C with allocated car parking and outdoor play area. The Site will be accessed from a new vehicular entrance onto Hill Street and via the existing access road onto Hill Street at Mourne View Hall. There is an existing pedestrian/cycle route through the Site from Hill Street to Avenue Road which will be maintained and integrated into the landscape masterplan for the Site. The application Site is at flood risk and a site-specific flood risk assessment has been undertaken. The development will include an overflow area for the Blackwater River as one of the flood risk mitigation measures. This overflow area connects to the riparian zone which forms the central public open space for the development focused along the Blackwater River which flows north and then east through the application Site. Buildings are set back by 10-meters along the river creating a riverside walk featuring play zones and informal kick about spaces with opportunities for sitting/passive recreation. A pedestrian/cycle crossing point is proposed over the Blackwater River to the existing greenway increasing permeability and providing the most direct route to the retail area to the north centered around Tesco and Lidl supermarkets to sustainable modes of transport.

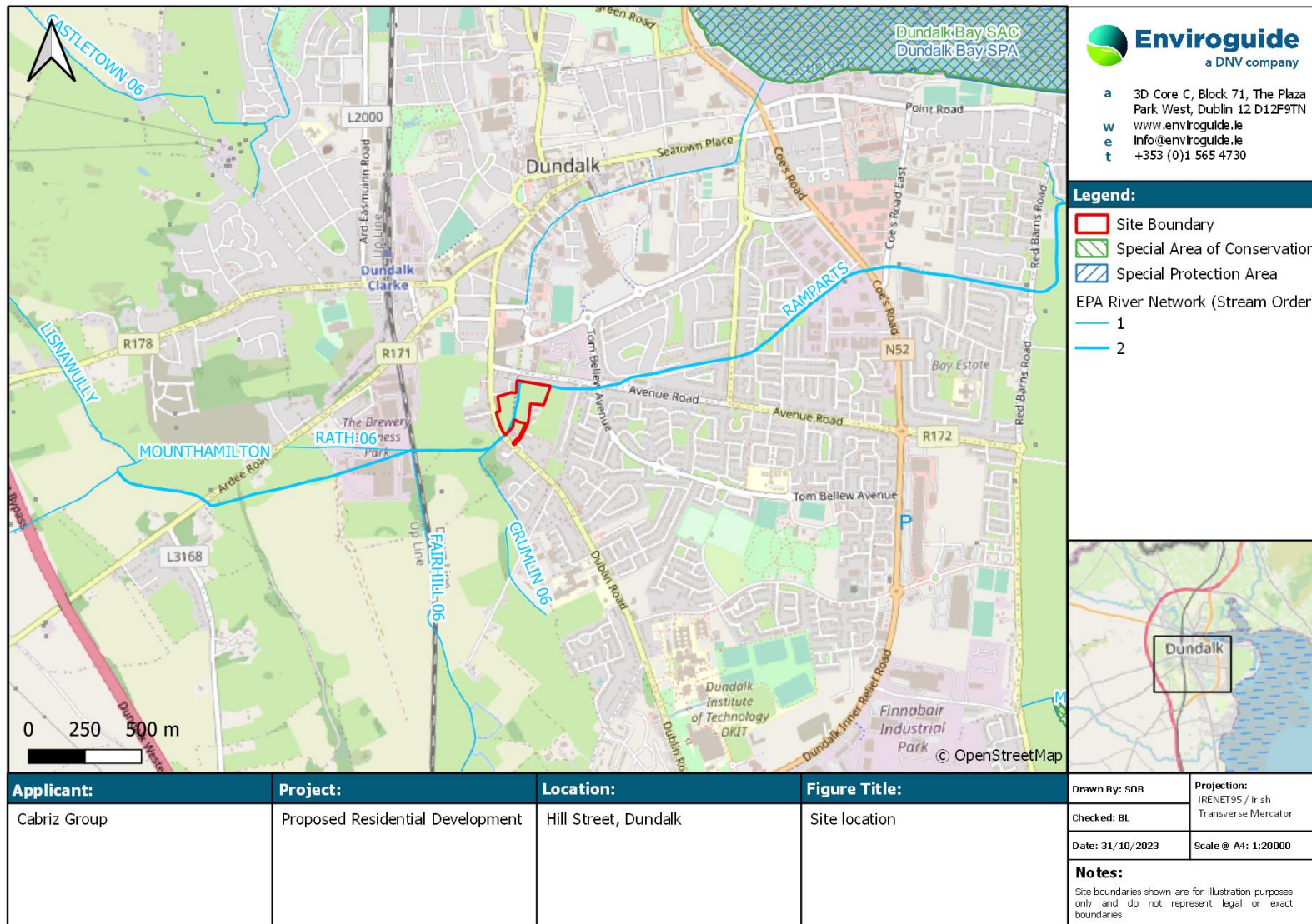


FIGURE 1. SITE LOCATION.

2.2.1 Surface Water

2.2.1.1 Construction Phase

As outlined in the Construction Methodology and Environmental Management Plan (CMEMP) (OCSC, 2023) accompanying this application, and seen below in Figure 2, the west area of the Site, also referred to as Plot A, currently drains to the Dublin Road to the southwest of the Site. It is proposed that, during the Construction Phase, a temporary settlement pond will be put in place within the south of the Site, and surface water will pass through this pond and a flow control device to a temporary connection to the existing drainage along the Dublin Road.

The east area of the Site, also known as Plot B, currently sits lower than the banks of the Ramparts Stream, and the Site drains mainly via evaporation. A proposed flood mitigation pond will initially be utilised as a construction settlement pond, with surface water then flowing to a final attenuation tank before discharging to the Ramparts Stream via a newly construction headwall and flow control system.

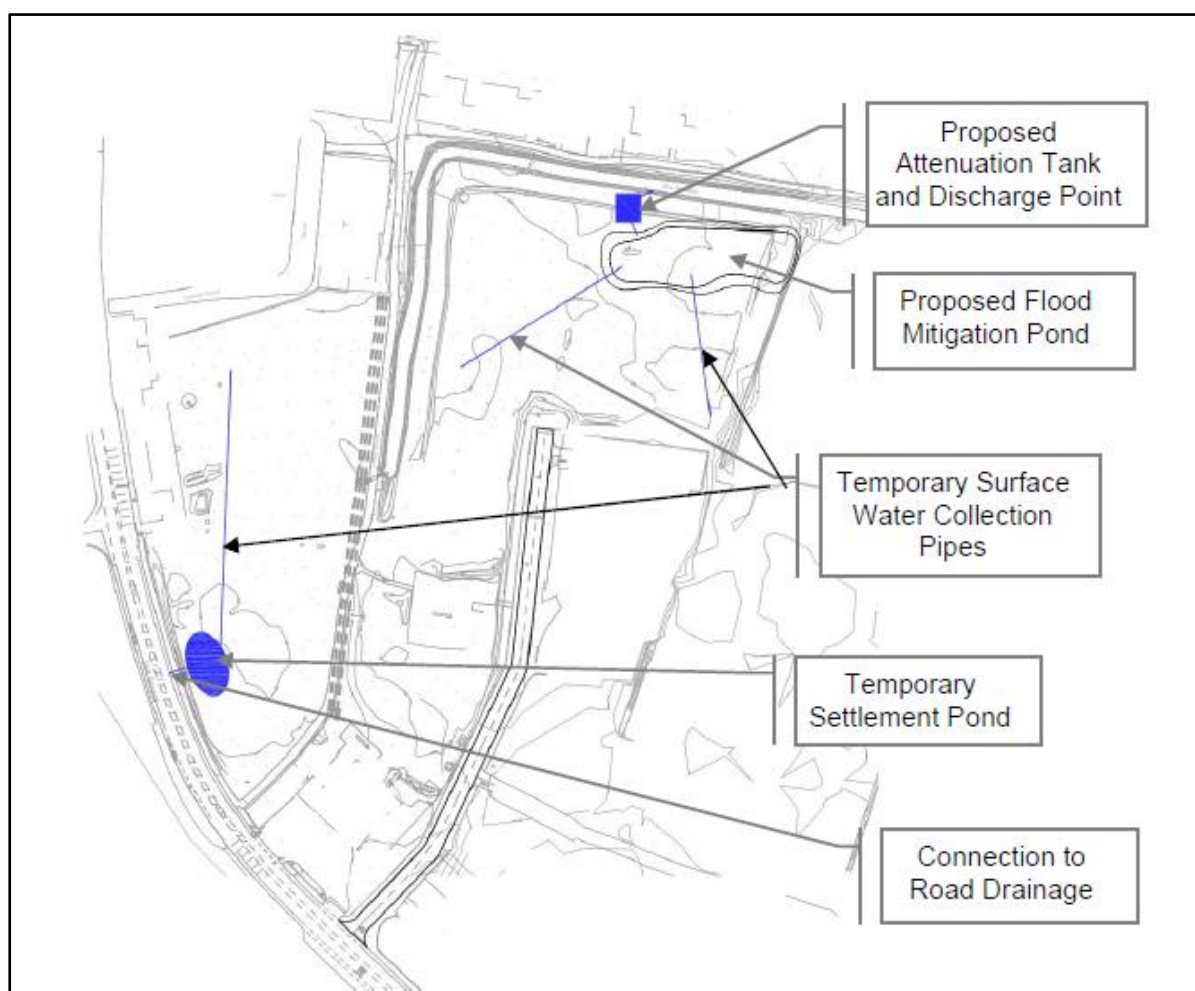


FIGURE 2. SURFACE WATER DISPOSAL DURING THE CONSTRUCTION PHASE OF THE PROPOSED DEVELOPMENT (OCSC, 2023).

2.2.1.2 Operational Phase

As outlined in the Engineering Services Report (OCSC, 2024) accompanying this application, it is proposed that the surface water from the roads will be collected and will flow by gravity via a petrol interceptor, attenuation tank, and flow control valve before discharging into a

surface water drain located adjacent to the Ramparts Stream (River Blackwater). The surface water from the eight (8no.) building blocks will also be collected by each of their respective attenuation tanks before flowing to a final collective attenuation tank, which will then also discharge to the same surface water drain.

Sustainable Urban Drainage Systems (SUDS) measures are included in the design of the Proposed Development; however, they are not being relied upon in any way to mitigate against likely significant effects on any European sites. These measures include pervious paving, hydrobrakes, attenuation tanks, and fuel interceptors (OCSC, 2024).

2.2.2 Foul Water

As outlined in the Engineering Services Report (OCSC, 2024) accompanying this application, there are a number of public wastewater networks on the road to the south and west of the Site and flowing through the centre of the Site of the Proposed Development. It is proposed to discharge the foul water from the Proposed Development to the existing Irish Water wastewater sewer network flowing through the centre of the Site. Foul water from the Site will be treated at Dundalk Wastewater Treatment Plant (WwTP) prior to discharging into Dundalk Bay.

2.2.3 Description of the Construction Phase

As delineated in the Construction Methodology and Environmental Management Plan (OCSC, 2023a) accompanying this application, the proposed works will be carried out:

- Pre-construction activities; access/ site set up/ hoarding.
- Site Clearance and demolition works.
- Concrete Strip Foundations.
- Site services.
- Construction of Superstructure.
- Hard and soft landscaping.
- Completion.

Working hours will be between the hours of 07:00 and 19:00 Mondays to Fridays inclusive and between 08:00 and 14:00 hours on Saturdays, with no works on Sundays or bank holidays. If work is required outside of these hours, written approval will be sought by the contractor from Louth County Council.

2.2.4 Description of the Operational Phase

The Operational Phase of the Proposed Development will include the occupancy of residential dwellings, with childcare facilities and will operate indefinitely.

2.2.5 Landscape Design Plan

As depicted in the Landscape Masterplan (Douglas Wallace Architects, 2023), seen in Figure 3, tree planting is proposed as part of the Proposed Development, particularly within the east of the Site, along the boundaries and bordering the attenuation area. Tree species include sweet cherry (*Prunus avium*), and lime (*Tilia cordata* 'Greenspire'), both of which are recommended as part of the All-Ireland Pollinator Plan 2021 – 2025, along with a mix of native and ornamental species such as Japanese rowan (*Sorbus commixta* 'Olympic Flame'), field maple (*Acer campestre* 'Elsrijk'), oak (*Quercus robur* 'Fastigiata Koster'), and aspen (*Populus tremula*).

Riparian planting will be included along the banks of the Ramparts Stream, with managed perennial and wildflower planting incorporated adjacent to the amenity grasslands and pathways on Site. Some margins of the greenspaces will be managed as no-mow pollinator-friendly grassland areas, particularly along the boundaries of the attenuation grassland area.



FIGURE 3. EXTRACTED FROM THE LANDSCAPE MASTERPLAN – DRAWING NO. HSD-BDP-01-00-PL-LA-90-1100 (DOUGLAS WALLACE ARCHITECTS, 2023).

3 METHODOLOGY

This EclA has been undertaken to support and assess the Proposed Development planning application and assesses the potential impacts that the Proposed Development may have on the ecology of the Site and its environs. Where the potential for a risk to the environment is identified, mitigation measures are proposed on the basis that by deploying these mitigation measures the risk is eliminated or reduced to an insignificant level.

This section details the steps and methodology employed to undertake an EclA of the Proposed Development.

3.1 Scope of Assessment

The specific objectives of the study were to:

- Undertake baseline ecological surveys and evaluate the nature conservation importance of the Site;
- Identify and assess the direct, indirect and cumulative ecological implications or impacts of the Proposed Development during its lifetime; and
- Where possible, propose mitigation measures to remove or reduce those impacts at the appropriate stage of the Proposed Development.

3.2 Desk Study

A desktop study was carried out to collate and review available information, datasets and documentation sources pertaining to the Site's natural environment. The desk study, completed in October 2023, relied on the following sources:

- Information on species records¹ and distributions, obtained from the National Biodiversity Data Centre (NBDC) at maps.biodiversityireland.ie;
- Information on the Floral Protection Order (FPO) Bryophytes database at dahq.maps.arcgis.com;
- Information on waterbodies, catchment areas and hydrological connections obtained from the Environmental Protection Agency (EPA) at gis.epa.ie;
- Information on bedrock, groundwater, aquifers and their statuses, obtained from Geological Survey Ireland (GSI) at www.gsi.ie;
- Information on the network designated conservation sites, site boundaries, qualifying interests and conservation objectives, obtained from the National Parks and Wildlife Service (NPWS) at www.npws.ie;
- Satellite imagery and mapping obtained from various sources and dates including Google, Digital Globe, Bing and Ordnance Survey Ireland;
- Information on the existence of permitted development, or developments awaiting decision, in the vicinity of the Proposed Development from the National Planning Application Database available at:

¹ The Site of the Proposed Development lies within the 10km Grid Square (J00), 2km Grid Square (J00N) and 1km Grid Square (J0406). Records from the last 20 years from available datasets are given in the relevant sections of this Report.

<https://housinggovie.maps.arcgis.com/apps/webappviewer/index.html?id=9cf2a09799d74d8e9316a3d3a4d3a8de>; and

- Information on the extent, nature and location of the Proposed Development, provided by the applicant and/or their design team.

A comprehensive list of all the specific documents and information sources consulted in the completion of this Report is provided in Section 10, References.

3.3 Zone of Influence

The ZOI for a project is the area over which ecological features may be affected by changes as a result of the Proposed Development and associated activities. This is likely to extend beyond the development site, for example where there are ecological or hydrological links beyond the site boundaries (CIEEM, 2018). The ZOI will vary with different ecological features, depending on their sensitivities to an environmental change.

Furthermore, ZOI in relation to European sites is described as follows in the 'OPR Practice Note PN01 - Appropriate Assessment Screening for Development Management' (OPR, 2021):

"The zone of influence of a proposed development is the geographical area over which it could affect the receiving environment in a way that could have significant effects on the Qualifying Interests of a European site. This should be established on a case-by-case basis using the Source-Pathway-Receptor framework and not by arbitrary distances (such as 15 km)."

3.4 Identification of Relevant Designated Sites

To determine the ZOI of the Proposed Development for designated sites, reference was made to the OPR Practice Note PN01 - Appropriate Assessment Screening for Development Management' (OPR, 2021), a practice note produced by the Office of the Planning Regulator, Dublin. This note was published to provide guidance on screening for AA during the planning process, and although it focuses on the approach a planning authority should take in screening for AA, the methodology is also readily applied in the preparation of EclA reports such as this to identify all relevant designated sites potentially linked to the Proposed Development.

As noted above, the most recent guidance advises against the use of arbitrary distances that serve as precautionary ZOI (e.g., 15km), and instead recommends the application of the Source-Pathway-Receptor (S-P-R) model in the identification of designated sites, stating that *"This should avoid lengthy descriptions of European sites, regardless of whether they are relevant to the proposed development, and a lack of focus on the relevant European sites and issues of importance"*. Although this statement refers to European sites, it is also applicable to other designated sites.

Thus, the methodology used to identify relevant designated sites comprised the following:

- Identification of potential sources of effects based on the Proposed Development description and details;
- Identification of potential pathways between the Site of the Proposed Development and any designated sites within the ZOI of any of the identified sources of effects.

- Water catchment data from the EPA (www.epa.ie) were used to establish or discount potential hydrological connectivity between the Proposed Development and any designated sites.
- Groundwater and bedrock information used to establish or discount potential hydrogeological connectivity between the Proposed Development and any designated sites.
- Air and land connectivity assessed based on Proposed Development details and proximity to designated sites.
- Consideration of potential indirect pathways, e.g., impacts to flight paths, *ex-situ* habitats, etc.
- Review of Ireland's designated sites to identify those sites which could potentially be affected by the Proposed Development in view of the identified pathways, using the following sources;
 - European sites and nationally designated sites (e.g., NHAs and pNHAs) from the NPWS (www.npws.ie);
 - Ramsar sites from the Irish Ramsar Wetland Committee (<https://irishwetlands.ie/irish-sites/>);
 - Other internationally designated sites e.g., UNESCO Biosphere's; and
- Regional development plans to identify any remaining sites or areas designated for nature conservation at a local level.

3.5 Field Surveys

3.5.1 Habitat Surveys

Habitat surveys of the Site were conducted on the 8th of September 2023 and the 29th of September 2023. Habitats were categorised according to the Heritage Council's 'A Guide to Habitats in Ireland' (Fossitt, 2000) to level 3. The habitat mapping exercise had regard to the 'Best Practice Guidance for Habitat Survey and Mapping' (Smith *et al.*, 2010) published by the Heritage Council. Any observations of evidence for rare and/or protected flora were recorded.

In addition, the Site was searched for invasive flora with a particular focus on those listed on the Third Schedule of SI No. 477/2011, and their locations and extent recorded.

3.5.2 Bat Surveys

3.5.2.1 Preliminary Bat Roost Assessment

A preliminary bat roost assessment of Potential Roost Features (PRFs) within trees and built structures on or close to the Site was completed on the 15th of June, in adherence to best practice guidelines (Collins, 2016 and Marnell *et al.*, 2022). This was undertaken to determine the suitability of the Site for roosting bats and the potential requirement for further surveys to be undertaken. PRFs can be defined in four broad terms of suitability as detailed below:

- Negligible – No suitable features observed;

- Low – A structure with one or more roost features as used by individual bats or a tree of sufficient size to contain roost features but none observed from the ground;
- Moderate – A structure or tree with one or more roost features and able to support one or more bats but unlikely to support a roost of high conservation status.
- High - A structure or tree with one or more roost features that are obviously suitable for use by a larger number of bats on a regular basis, and potentially for longer periods of time.

3.5.2.2 Preliminary Bat Habitat Suitability Assessment

Bat Habitat Suitability Assessments were completed on the 8th of September 2023 and the 29th of September 2023 according to the guidance outlined in Collins (2016). This assessment evaluated the habitats present on Site and in the wider area for bat foraging and commuting suitability. Habitat suitability is assessed qualitatively from Negligible to High:

- Negligible – No suitable foraging or commuting habitats on Site.
- Low – Suitable but isolated habitats that could be used by small numbers of commuting and/or foraging bats, such as poorly connected gappy hedgerows, lone trees, unvegetated streams, etc.
- Moderate – Suitable continuous habitat connected to the wider landscape that could be used by commuting and/or foraging bats, such as treelines, scrub, grassland, water, etc.
- High – Continuous high-quality habitat that is well-connected to the wider landscape, and is likely used regularly by commuting and/or foraging bats, such as river valleys, broadleaved woodland, woodland edge, grazed parkland, etc.

3.5.3 Bird Surveys

The survey methodology employed was based on that recommended in standard literature used by for example the British Trust for Ornithology (BTO) (Gillings et al, 2007; Bibby et al, 1992 and Gilbert et al, 1998), which has subsequently been adapted into guidelines for ecological consultants by the Bird Survey & Assessment Steering Group (2022). During the surveys, the Site was walked slowly, approaching all habitats within and adjacent to the Proposed Development and scanning and listening for birds.

3.5.3.1 Scoping Bird Surveys

Bird scoping surveys were carried out on the 8th of September 2023 and the 29th of September 2023. The surveys were carried out in suitable weather conditions (dry, little to no rain, low wind) and within daylight hours. All species encountered during the surveys and the location of any visible nest sites were recorded in field notes.

3.5.4 Other Fauna

General fauna surveys of the Site were carried out in conjunction with the other field surveys on the 8th of September 2023 and the 29th of September 2023. The habitat types recorded throughout the survey area were used to assist in identifying the fauna considered likely to utilise the area. Furthermore, the Site was searched for tracks and signs of mammals as per Bang and Dahlstrom (2001) and the National Road Authority (NRA, 2005). This survey considers protected or notable fauna that may occur within the Site or in the adjacent lands,

but for which no historical records from the relevant grid square exists or no targeted surveys were carried out.

3.6 Ecological Assessment

This EclA has been undertaken following the methodology set out in Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine (CIEEM, 2018); and with reference to the National Roads Authority 'Guidelines for Assessment of Ecological Impacts of National Road Schemes' (NRA, 2009) and the Environmental Protection Agency (EPA) 'Guidelines on the information to be contained in Environmental Impact Assessment Reports' (EPA, 2022) and BS 42020:2013 Biodiversity: Code of practice for planning and development (BSI, 2013).

The evaluation of significant effects should be based on available scientific evidence. Based on the precautionary principle, if the available information is not sufficient, then a significant effect may be assumed likely to occur.

3.6.1 Evaluation of Ecological Features

The value of the ecological features, i.e., the habitats and species present or potentially present, was determined using the ecological evaluation at different geographical scales (NRA, 2009), presented in Appendix II. This evaluation scheme, with values ranging from locally important to internationally important, seeks to provide value ratings for habitats and species present that are considered ecological receptors of impacts that may ensue from a proposal. Based on best practice (CIEEM, 2018), any features considered to be less than of local value are not assessed within this EclA.

3.6.2 Impact Assessment

As per the NRA guidelines, impact assessment is only undertaken of Key Ecological Receptors (KERs). The assessment of the potential impact of the Proposed Development on the identified KERs was carried out with regard to the criteria outlined in the EPA Guideline (EPA, 2022), presented in Appendix III. These guidelines set out a number of parameters that should be considered when determining which elements of the Proposed Development could constitute impact or sources of impacts. These include;

- Positive, neutral or negative effect;
- Significance;
- Extent;
- Probability;
- Duration;
- Timing;
- Frequency; and
- Reversibility.

The impact assessment process considers both direct and indirect impacts: direct ecological impacts are changes that are directly attributable to a defined action, e.g., the physical loss of habitat. Indirect ecological impacts are attributable to an action, but which affect ecological resources through effects on an intermediary ecosystem, process, or feature, e.g., the creation of roads which cause hydrological changes, which, in the absence of mitigation, could lead to an adverse effect of a sensitive habitat.

3.6.3 Assessment of Cumulative Impacts and Effects

Cumulative effects can result from individually insignificant but collectively significant actions taking place over a period of time or concentrated in a location. Cumulative effects can occur where a Proposed Development results in individually insignificant impacts that, when considered in combination with impacts of other proposed or permitted plans and projects, can result in significant effects.

Relevant plans and policies (see section 1.2) were reviewed to identify any potential for negative cumulative impacts with the Proposed Development. Additionally, existing planning permissions from the past five years (from 2018 onwards) within the ZOI of the Proposed Development were reviewed, with a particular focus on potential cumulative impacts on the identified KERs. Long-term developments were also considered where applicable.

3.6.4 Avoidance, Mitigation, Compensation and Enhancement Measures

Where potentially significant effects have been identified, the mitigation hierarchy has been applied, as recommended in the CIEEM Guidelines. The mitigation hierarchy sets out a sequential approach beginning with the avoidance of impacts where possible, the application of mitigation measures to minimise unavoidable impacts and then compensation for any remaining impacts. Once avoidance and mitigation measures have been applied residual effects are then identified along with any necessary compensation measures, and incorporation of opportunities for enhancement. When seeking mitigation or compensation solutions, efforts should be consistent with the geographical scale at which an effect is significant. For example, mitigation and compensation for effects on a species population significant at a county scale should ensure no net loss of the population at a county scale. The relative geographical scale at which the effect is significant will have a bearing on the required outcome which must be achieved.

It is important for the EclA to clearly differentiate between avoidance, mitigation, compensation and enhancement and these terms are defined here as follows:

- Avoidance is used where an impact has been avoided, e.g., through changes in scheme design. In practice, avoidance measures are typically implemented during the design stage via discussions and re-design (e.g., avoiding a sensitive habitat by relocating a building). Avoidance measures are therefore rarely reported within an EclA, which focuses on assessing the final design.
- Mitigation is used to refer to measures to reduce or remedy a specific negative impact in situ.
- Compensation describes measures taken to offset residual effects, i.e., where mitigation in situ is not possible.
- Enhancement is the provision of new benefits for biodiversity that are additional to those provided as part of mitigation or compensation measures, although they can be complementary.

3.7 Limitations

Every effort has been made to provide a comprehensive description of the Site; however, the following specific limitations apply to this assessment:

- An extensive search of available datasets for records of rare and protected species within proximity of the Proposed Development has been undertaken as part of this assessment. However, the records from these datasets do not constitute a complete species list. The absence of species from these datasets does not necessarily confirm an absence of species in the area.
- Bat activity/emergence surveys have not been carried out on Site, as such the utilisation of the Site by local bats has not been determined. The mitigation measures outlined in section 6.1.2.3 below are precautionarily applied and designed to protect any bats which may be roosting on Site, along with enhancing the Proposed Development for local bats commuting or foraging within the vicinity of the Site.
- The bird scoping surveys were carried out outside the optimal breeding bird survey season, however habitats on Site were assessed to determine the bird species likely to utilise the Site.

4 ECOLOGICAL BASELINE CONDITIONS

This section sets out the baseline conditions for the ecological features within the Site using the findings of the desk study and field surveys.

4.1 Geology, Hydrogeology and Hydrology

The Site of the Proposed Development is within the *Newry, Fane, Glyde and Dee* (Catchment ID: 06) catchment, and within the *Castletown_SC_020* (Sub-Catchment ID: 06_12) sub-catchment (EPA 2023). The Ramparts Stream (EU Code: IE_NB_06R010300) flows through the west and north of the Site in a generally northeasterly direction, before entering Dundalk Bay (EU Code: IE_NB_040_0100) approximately 3.5km northeast of the Site.

During the most recent survey period of 2016 – 2021, the Ramparts Stream was assigned a *Poor* ecological status (EPA, 2023), and is currently under review as to whether it will meet its Water Framework Directive (WFD) objectives. There are no EPA monitoring stations along this watercourse. Inner Dundalk Bay was categorised as being *At Risk* of not meeting its WFD objectives, and was allocated a *Moderate* ecological status during this survey period (EPA, 2023).

The Site is situated on the *Louth* (EU Code: IEGBNI_NB_G_019) groundwater body, which is classed as being of *Good* quality for the 2016-2021 survey period, and is *Not at Risk* of not meeting its WFD objectives. The aquifer type within the Site boundary is a *Poor Aquifer* (PI) on bedrock which is *Generally Unproductive except for Local Zones*. The groundwater rock units underlying the aquifer are classified as *Silurian Metasediments and Volcanics* (GSI, 2023). The level of vulnerability of the Site to groundwater contamination via human activities is predominantly *Moderate*, with small areas of *High* along the northeast and southwest of the Site. The soil on Site is primarily classified as *Tidal Marsh*, with *Urban* present along some boundaries of the Site, and the predominant subsoil is Estuarine Sediments (silts/clays) (*Mesc*), with man-made (*Made*) partially bounding the Site (EPA, 2023).

The Waterbody Status for river, transitional and groundwater water bodies relevant to the Site as recorded by the EPA (2023) in accordance with European Communities (Water Policy) Regulations 2003 (SI no. 722/2003) are provided in Table 1.

TABLE 1. WFD RISK AND WATER BODY STATUS

Waterbody Name	Water body; EU code	Location from Site	Distance from Site (km)	WFD water body status (2016-2021)	WFD 3 rd cycle Risk Status	Hydraulic Connection to the Site
Surface Water Bodies						
Ramparts Stream	IE_NB_06R010300	On Site	On Site	Poor	Under Review	Yes, via surface water run-off from the Site of the Proposed Development
Transitional Water Bodies						
Inner Dundalk Bay	IE_NB_040_0100	Northeast	3.5km	Moderate	At Risk	Yes, via surface water run-off from the Site of the Proposed Development
Coastal Water Bodies						
Outer Dundalk Bay	IE_NB_040_0000	Southeast	5.7km	High	Not at Risk	Yes, via surface water run-off from the Site of the Proposed Development
Groundwater Bodies						
Louth	IEGBNI_NB_G_019	N/A	N/A	Good	Not at Risk	Underlying groundwater-body

4.2 Designated Sites

All European sites potentially linked to the Proposed Development have been identified and fully assessed in the AA Screening Report (Stage 1 AA) accompanying this submission under separate cover. A summary of the AA conclusions is given below in section 4.2.1.

Other nationally or internationally designated sites potentially linked to the Proposed Development are identified in section 4.2.2.

4.2.1 European sites – Appropriate Assessment

The following conclusion is extracted from the AA accompanying this application under separate cover:

“The Proposed Residential Development at Hill Street, Dundalk has been assessed taking into account:

- *The nature, size and location of the proposed works and possible impacts arising from the construction works and operational activity.*
- *The qualifying interests and conservation objectives of the European sites.*
- *The potential for in-combination effects arising from other plans and projects.*

*In conclusion, upon the examination, analysis and evaluation of the relevant information and applying the precautionary principle, it is concluded by the authors of this report that the possibility **may be excluded** that the Proposed Development will have a significant effect on any of the European sites listed below:*

- Dundalk Bay SAC (000455).
- Dundalk Bay SPA (004026).

*In carrying out this AA screening, mitigation measures intended or included for the purposes of avoiding adverse effects arising as a result of the Proposed Development on any European site **have not been considered** as part of this Screening Report.*

On the basis of the screening exercise carried out above, it can be concluded, on the basis of the best scientific knowledge available and objective information, that the possibility of any significant effects on the above listed European sites, whether arising from the project itself or in combination with other plans and projects, can be excluded in light of the above listed European sites' conservation objectives. Thus, there is no requirement to proceed to Stage 2 of the AA process and the preparation of a NIS is not required".

As such, European sites are not considered further in this Report.

4.2.2 Other Designated sites

4.2.2.1 S-P-R links to Designated Sites

Potential impact pathways are discussed in the following sections in the context of the Proposed Development as described in Section 2.

4.2.2.1.1 Direct Pathways

4.2.2.1.1.1 Hydrological pathways

The surface and foul waters from the Site will ultimately drain to Dundalk Bay via the Ramparts Stream and Dundalk WwTP.

During the Construction Phase of the Proposed Development, surface water run-off containing silt/sediments or other pollutants could inadvertently flow into the Ramparts Stream on Site and flow to Dundalk Bay downstream of the Site. During the Operational Phase, surface water from the Site will be discharged to the Ramparts Stream. As such, there is a potential, weak hydrological pathway via surface water run-off to Dundalk Bay pNHA (000455).

The hydrological pathway to this downstream designated site is 3.9km along the Ramparts Stream, over which any potential pollutants that may enter this downstream designated site via drainage from the Site would become diluted to indiscernible levels. Therefore, this hydrological pathway to this downstream designated site is considered insignificant.

The Site will also be connected to the public foul water sewer network, which will discharge to the Dundalk Bay from Dundalk WwTP. As such, there is a weak hydrological link between the Dundalk Bay pNHA (000455) via discharges from Dundalk WwTP during the Operational Phase. However, the potential for foul waters generated at the Site of the Proposed

Development to reach this designated site within Dundalk Bay and cause significant effects, during the Operational Phase, is negligible due to the following:

- The potential for dilution in the sewer network during heavy rainfall events.
- The Dundalk WwTP has additional hydraulic capacity and organic capacity, as the current annual max hydraulic loading is just over 88% of the peak hydraulic capacity as constructed, and the collected organic load is 90% of the organic capacity as constructed (Irish Water, 2020). As such, the WwTP will not be overloaded (leading to the release of untreated wastewater) as a result of the connection of the Proposed Development to the foul water network.

No other designated sites are hydrologically connected to the Proposed Development.

4.2.2.1.1.2 Hydrogeological pathways

Potential discharges to ground could potentially migrate vertically downward to the underlying bedrock aquifer and laterally within the aquifer to the downgradient receiving surface waterbodies, i.e., the Ramparts Stream, contributing to the hydrological pathway to the designated site downstream of the Site. However, no direct hydrogeological pathways to any designated sites exist due to the considerable distance and intervening watercourses in between the Proposed Development and the nearest designated sites.

4.2.2.1.1.3 Air and land pathways

The Construction Phase of the Proposed Development could introduce dust and noise impacts transferable via air and land pathways, as well as increased lighting and human activity at the Site and in the vicinity of the Site during the Construction and Operational Phases.

Construction-related disturbance and displacement of fauna species could potentially occur within the vicinity of the Proposed Development. For mammal species such as otter, disturbance effects would not be expected to extend beyond 150m². For birds, disturbance effects would not be expected to extend beyond a distance of c.300m (Cutts, et al., 2009), as noise levels associated with general construction activities would attenuate to close to background levels at that distance. There are no designated sites within the disturbance ZoI, i.e. 150m for mammals, and 300m for birds; the next nearest European site to the proposed development is c.1.6km away.

Due to the nature and localised scale of the works, emissions to air during Construction will be limited to brief to temporary dust generation within 25m of the construction site (based on TII assessment criteria for moderate sized construction sites), and emissions from construction machinery and vehicles (NRA, 2011). Given the size of the Proposed Development site, dust generation and deposition during construction has the potential to degrade habitats within 25m of the proposed development site (NRA, 2011). There are no designated sites at risk from dust generation during Construction given the distance between the Site and the next nearest designated site. There is no potential for release of contained material to air during Operation.

² This is consistent with Transport Infrastructure Ireland (TII) guidance (*Guidelines for the Treatment of Otters prior to the Construction of National Road Schemes* and *Guidelines for the Treatment of Badgers prior to the Construction of National Road Schemes*) documents. This is a precautionary distance, and likely to be moderated by the screening effect provided by surrounding vegetation and buildings, with the actual ZoI of construction related disturbance likely to be much less in reality.

Therefore, no direct impact pathways via air and land exist between the Proposed Development and any designated sites.

4.2.2.1.2 Indirect Pathways

No indirect pathways to any nationally or internationally designated sites (excl. SACs/SPAs) were identified.

4.2.2.2 Relevant Designated Sites

A designated site will only be at risk from likely significant effects where an S-P-R link of note exists between the Proposed Development and the designated site. All designated sites considered as part of the S-P-R method (excl. European sites) are listed in Table 2 and Figure 4. Location of pNHA sites considered with the Source-Pathway-Receptor (S-P-R) method in relation to the Proposed Development. and Figure 4. Those sites with notable S-P-R links to the Proposed Development are assessed further in this report as KERs of 'National Importance' (pNHAs and NHAs) or 'International Importance' (SACs/SPAs, UNESCO sites, Ramsar sites, etc.).

TABLE 2. DESIGNATED SITES CONSIDERED WITH THE SOURCE-PATHWAY-RECEPTOR (S-P-R) METHOD TO ESTABLISH NOTABLE LINKS BETWEEN THE SOURCES OF EFFECTS ARISING FROM THE PROPOSED AMENDMENTS, AND ANY RELEVANT DESIGNATED SITES. THOSE SITES WITH NOTABLE S-P-R LINKS THAT ARE FURTHER ASSESSED IN THIS REPORT ARE HIGHLIGHTED IN GREEN (IF ANY).

Site Name & Code (Receptor)	Distance to Site of Proposed Development	Designation Rationale / Site Description	Potential Pathway to receptors
Proposed Natural Heritage Areas			
Dundalk Bay pNHA (000455)	2.1km NE	<p>The Conservation Objectives for this pNHA are not specified, and as such the QIs for Dundalk Bay SAC (000455) and Dundalk Bay SPA (004026) are referred to:</p> <p>Habitats Estuaries [1130] Mudflats and sandflats not covered by seawater at low tide [1140] Perennial vegetation of stony banks [1220] Salicornia and other annuals colonising mud and sand [1310] Atlantic salt meadows (<i>Glauco-Puccinellietalia maritimae</i>) [1330] Mediterranean salt meadows (<i>Juncetalia maritimi</i>) [1410]</p> <p>SCI Birds Red-throated Diver (<i>Gavia stellata</i>) [A001] Great Northern Diver (<i>Gavia immer</i>) [A003] Great Crested Grebe (<i>Podiceps cristatus</i>) [A005] Cormorant (<i>Phalacrocorax carbo</i>) [A017] Greylag Goose (<i>Anser anser</i>) [A043] Light-bellied Brent Goose (<i>Branta bernicla hrota</i>) [A046] Shelduck (<i>Tadorna tadorna</i>) [A048] Wigeon (<i>Anas penelope</i>) [A050] Teal (<i>Anas crecca</i>) [A052] Mallard (<i>Anas platyrhynchos</i>) [A053] Pintail (<i>Anas acuta</i>) [A054] Common Scoter (<i>Melanitta nigra</i>) [A065] Common Goldeneye (<i>Bucephala clangula</i>) [A067] Red-breasted Merganser (<i>Mergus serrator</i>) [A069] Oystercatcher (<i>Haematopus ostralegus</i>) [A130] Ringed Plover (<i>Charadrius hiaticula</i>) [A137] Golden Plover (<i>Pluvialis apricaria</i>) [A140]</p>	<p>Weak hydrological pathway via Ramparts Stream, deemed insignificant due to distance and dilution.</p> <p>No other potential pathways identified.</p>

Site Name & Code (Receptor)	Distance to Site of Proposed Development	Designation Rationale / Site Description	Potential Pathway to receptors
		Grey Plover (<i>Pluvialis squatarola</i>) [A141] Lapwing (<i>Vanellus vanellus</i>) [A142] Knot (<i>Calidris canutus</i>) [A143] Curlew Sandpiper (<i>Calidris ferruginea</i>) [A147] Dunlin (<i>Calidris alpina</i>) [A149] Ruff (<i>Philomachus pugnax</i>) [A151] Black-tailed Godwit (<i>Limosa limosa</i>) [A156] Bar-tailed Godwit (<i>Limosa lapponica</i>) [A157] Curlew (<i>Numenius arquata</i>) [A160] Spotted Redshank (<i>Tringa erythropus</i>) [A161] Redshank (<i>Tringa totanus</i>) [A162] Common Greenshank (<i>Tringa nebularia</i>) [A164] Ruddy Turnstone (<i>Arenaria interpres</i>) [A169] Black-headed Gull (<i>Chroicocephalus ridibundus</i>) [A179] Common Gull (<i>Larus canus</i>) [A182] Herring Gull (<i>Larus argentatus</i>) [A184] Greenland White-fronted Goose (<i>Anser albifrons flavirostris</i>) [A395] A999 Wetland and Waterbirds	

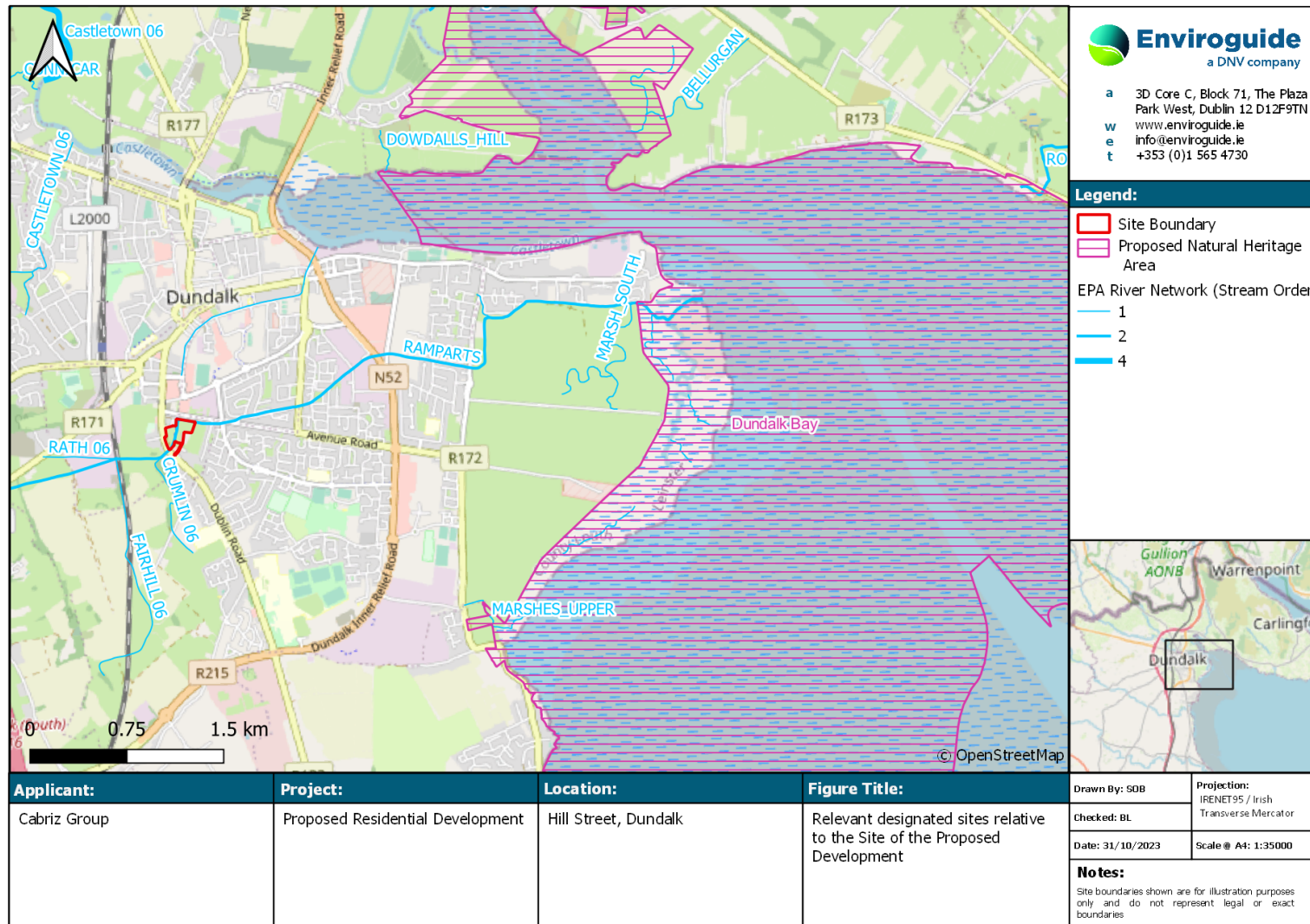


FIGURE 4. LOCATION OF PNHA SITES CONSIDERED WITH THE SOURCE-PATHWAY-RECEPTOR (S-P-R) METHOD IN RELATION TO THE PROPOSED DEVELOPMENT.

4.3 Habitats

During the Site walkovers on the 8th of September 2023 and the 29th of September 2023, habitats were identified to Level 3 (codes follow Fossitt, 2000), see Figure 5. Photographs of the habitats can be seen in Appendix IV – Site Photographs. Habitats identified as being present at the Site of the Proposed Development during these two dates are listed below and described in more detail in the subsequent paragraphs.

- Dry meadows and grassy verges (GS2)
- Wet grassland (GS4)
- Scrub (WS1)
- Depositing/lowland rivers (FW2)
- Drainage ditches (FW4)
- Recolonising bare ground (ED3)
- Buildings and artificial surfaces (BL3)

Dry meadows and grassy verges (GS2) habitat was recorded primarily within the west area of the Site, and included common grassland species such as red clover (*Trifolium pratense*), self-heal (*Prunella vulgaris*), dock (*Rumex sp.*), nettle (*Urtica dioica*), thistle (*Cirsium sp.*), knapweed (*Centaurea nigra*), buttercup (*Ranunculus sp.*), rosebay willowherb (*Chamaenerion angustifolium*), tufted vetch (*Vicia cracca*), and ragwort (*Jacobaea vulgaris*). Small mammal trails were noted throughout this habitat, however dogwalkers were also present in this area, which may have contributed to these trails. The taller grasses and flora were found towards the margins of this grassland habitat, while the central area was quite short.

Wet grassland (GS4) habitat comprises the eastern area of the Site, and includes some of the ground flora recorded above, namely nettle, hedge bindweed, and rosebay willowherb, along with species suitable to wetter conditions, such as silverweed (*Potentilla anserina*). Young willow (*Salix spp.*) shrubs are scattered throughout this dense grassland habitat.

The Ramparts Stream creates *Depositing/lowland rivers (FW2)* habitat on Site and separates the two grasslands mentioned above. This watercourse flows north from the south of the Site and exits the Site from the northeast, where it then discharges to a culvert. The stream is densely vegetated with water mint (*Mentha aquatica*) and was littered with domestic debris. The banks of the river were also vegetated with the ground flora recorded within the grassland habitats. The water appears to be mostly stagnant.

The *Scrub (WS1)* habitat on Site is primarily young willow, sweet briar (*Rosa rubiginosa*), and bramble (*Rubus fruticosus agg.*), which form dense habitat immediately east of the existing student accommodation, and also is found bounding the grassland within the west of the Site.

A *Drainage ditch (FW4)* was found along the east boundary of the Site, which currently serves the existing student accommodation abutting the Site and appears to discharge to the Ramparts Stream, however vegetation surrounding the discharge point to this stream was too dense and the water in the ditch too stagnant to confirm the flow.

Small, paved areas of *Buildings and artificial surfaces (BL3)* habitat exist on Site in the form of pathways and areas of broken concrete, much of which has started to form *Recolonising bare ground (ED3)* by way of the encroachment of grassland species on Site.

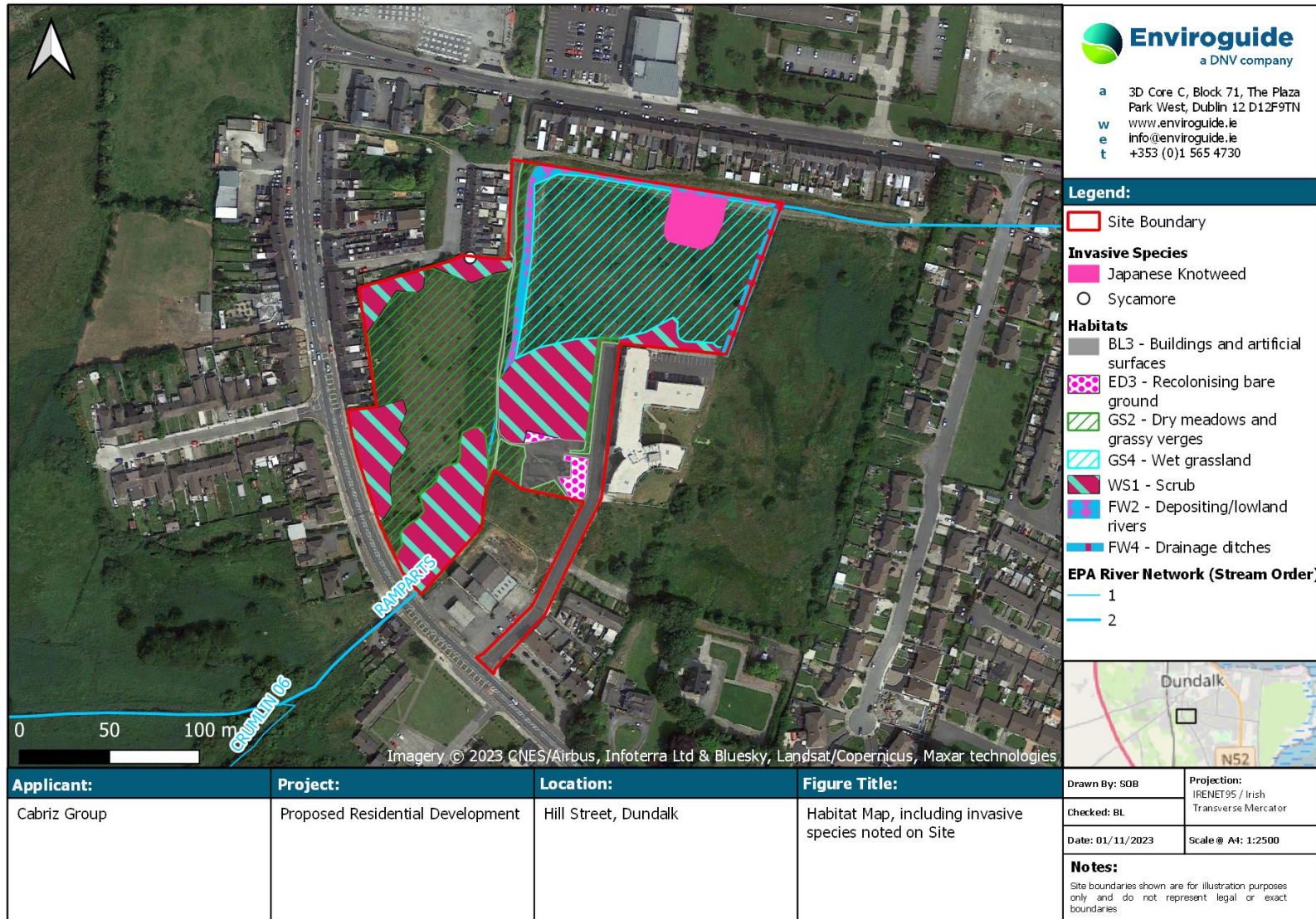


FIGURE 5. MAP OF HABITATS PRESENT AT THE PROPOSED DEVELOPMENT SITE.

4.4 Species and Species Groups

4.4.1 Flora

4.4.1.1 Desk Study Results

4.4.1.1.1 Rare and Protected Flora

The Site of the Proposed Development is located within the Ordnance Survey 10km Grid Square (J00), 2km Grid Square (J00N) and 1km Grid Square (J0406). Species records from the NBDC online database of these grid squares were studied for the presence of rare and/or protected species within the last 20 years. This database contained no records of protected flora within the last 20 years. The FPO Bryophytes database was also checked for rare and protected flora records within the vicinity of the Proposed Development. No rare and/or protected bryophyte records exist within the vicinity of the Proposed Development.

4.4.1.1.2 Invasive Species

There are records for 13 species of flora considered to be invasive within the 10km grid square, with 10 of these species recorded in the 2km grid square which encompasses the Site of the Proposed Development, and two recorded within the 1km grid square. Details of these records are listed in Table 3.

TABLE 3. RECORDS OF INVASIVE SPECIES OF FLOWERING PLANT FOR THE SURROUNDING GRID SQUARES ASSOCIATED WITH THE SITE FROM THE NBDC

Species	Grid square	Date of last record	Source	Designations
Black Currant (<i>Ribes nigrum</i>)	J00 J00N J0406	31/12/2011	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	Medium Impact Invasive
Butterfly-bush (<i>Buddleja davidii</i>)	J00 J00N	08/07/2022	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	Medium Impact Invasive
Cherry Laurel (<i>Prunus laurocerasus</i>)	J00 J00N	14/03/2023	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	High Impact Invasive
Common Cord-grass (<i>Spartina anglica</i>)	J00	13/06/2020	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	High Impact Invasive Regulation S.I. 477 (Ireland)
Evergreen Oak (<i>Quercus ilex</i>)	J00 J00N	22/07/2019	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	Medium Impact Invasive
Himalayan Honeysuckle (<i>Leycesteria formosa</i>)	J00 J00N	22/12/2019	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	Medium Impact Invasive

Species	Grid square	Date of last record	Source	Designations
Indian Balsam (<i>Impatiens glandulifera</i>)	J00	01/08/2019	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	High Impact Invasive Regulation S.I. 477 (Ireland)
Japanese Knotweed (<i>Reynoutria japonica</i>)	J00 J00N J0406	25/05/2023	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	High Impact Invasive Regulation S.I. 477 (Ireland)
Japanese Rose (<i>Rosa rugosa</i>)	J00 J00N	08/07/2022	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	Medium Impact Invasive
Narrow-leaved Ragwort (<i>Senecio inaequidens</i>)	J00 J00N	09/08/2019	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	Medium Impact Invasive
Rhododendron (<i>Rhododendron ponticum</i>)	J00 J00N	04/04/2023	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	High Impact Invasive Regulation S.I. 477 (Ireland)
Sycamore (<i>Acer pseudoplatanus</i>)	J00 J00N	14/03/2023	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	Medium Impact Invasive
Three-cornered Garlic (<i>Allium triquetrum</i>)	J00	06/04/2020	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	Medium Impact Invasive Regulation S.I. 477 (Ireland)

4.4.1.2 Field Survey Results

One Medium Impact invasive species, sycamore (*Acer pseudoplatanus*), and one High Impact invasive species, Japanese knotweed (*Reynoutria japonica*), was recorded on the Site of the Proposed Development. Japanese knotweed is listed on the Third Schedule of the European Communities (Birds and Natural Habitats) Regulations (S.I. 477 of 2011). An early-mature sycamore was recorded within the scrub habitat along the northern boundary of the west grassland habitat (Figure 5). Japanese knotweed was documented as a large cluster of medium to large stands along the Ramparts Stream within the northern area of the wet grassland habitat on Site.

4.4.2 Bats

4.4.2.1 Desk Study Results

A total of five bat species have been recorded within the 10km (J00) grid square which encompasses the Site (Table 4).

TABLE 4. RECORDS OF BATS FOR THE SURROUNDING 10KM GRID SQUARE (J00) ASSOCIATED WITH THE SITE FROM THE NBDC.

Species	Date of last record	Database	Designation
Brown Long-eared Bat (<i>Plecotus auritus</i>)	11/09/2006	National Bat Database of Ireland	EU Habitats Directive - Annex IV Wildlife Act 1976 (as amended)
Daubenton's Bat (<i>Myotis daubentonii</i>)	03/09/2014	National Bat Database of Ireland	EU Habitats Directive - Annex IV Wildlife Act 1976 (as amended)
Lesser Noctule (<i>Nyctalus leisleri</i>)	28/05/2009	National Bat Database of Ireland	EU Habitats Directive - Annex IV Wildlife Act 1976 (as amended)
Pipistrelle sp. (<i>Pipistrellus pipistrellus sensu lato</i>)	28/05/2009	National Bat Database of Ireland	EU Habitats Directive - Annex IV Wildlife Act 1976 (as amended)
Soprano Pipistrelle (<i>Pipistrellus pygmaeus</i>)	28/05/2009	National Bat Database of Ireland	EU Habitats Directive - Annex IV Wildlife Act 1976 (as amended)

The Proposed Development Site is indicated by the black box in Figure 6. The overall habitat suitability index for bats within the Site is 37.56, indicating *High* suitability for all bat species. The species with the highest individual suitability score for this area of the Site is lesser noctule (*Nyctalus leisleri*) with a score of 57, followed by common pipistrelle (*Pipistrellus pipistrellus*), with 53. The suitability index for each specific bat species is presented in Table 5.

TABLE 5. LANDSCAPE SUITABILITY INDEX FOR INDIVIDUAL BAT SPECIES WITHIN THE 5KM GRID SQUARE (SOURCE: NBDC). THOSE SPECIES THAT HAVE BEEN RECORDED IN THE NBDC DATABASE WITHIN THE J00 10KM GRID SQUARE ARE HIGHLIGHTED IN GREEN.

Bat Species	Suitability Index for the Site (5km Grid Square)
Soprano pipistrelle (<i>Pipistrellus pygmaeus</i>)	48 (High)
Brown longed-eared bat (<i>Plecotus auritus</i>)	48 (High)
Common pipistrelle (<i>Pipistrellus pipistrellus</i>)	53 (High)
Lesser horseshoe bat (<i>Rhinolophus hipposideros</i>)	1 (Low)
Lesser noctule (<i>Nyctalus leisleri</i>)	57 (High)
Whiskered bat (<i>Myotis mystacinus</i>)	37 (High)
Daubenton's bat (<i>Myotis daubentonii</i>)	38 (High)
Nathusius' pipistrelle (<i>Pipistrellus nathusii</i>)	12 (Low)
Natterer's bat (<i>Myotis nattereri</i>)	44 (High)

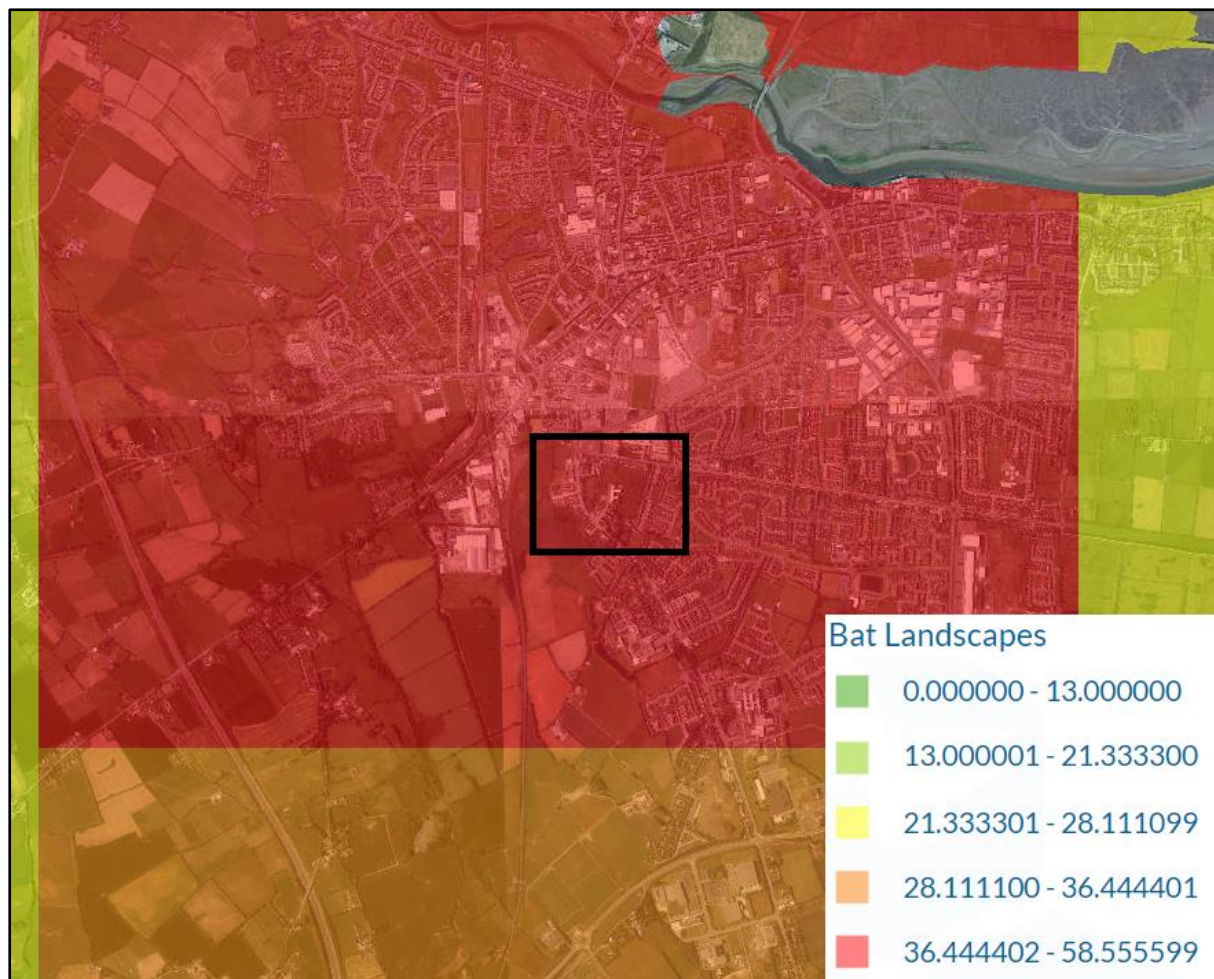


FIGURE 6. BAT LANDSCAPE SUITABILITY MODEL (ALL BATS) SURROUNDING THE PROPOSED DEVELOPMENT SITE (ADAPTED FROM NBDC).

4.4.2.2 Field Survey Results

4.4.2.2.1 Bat Roost Assessment and Habitat Suitability

The linear habitat features such as the boundaries of scrub and the riparian habitat within the Site were assessed for bat roosting potential and foraging/commuting suitability. A dead tree was observed along the Ramparts Stream within the centre of the Site which was assessed as PRF-I, as it may offer limited roosting habitat for local opportunistic bats due to the cracks and crevices throughout this tree. This tree will be removed as part of the Proposed Development. The remaining vegetation within the bounds of the Site was classified as NONE, due to the lack of semi-mature and mature trees on Site.

The scrub, grassland, and riparian habitats within the Site were considered to offer Moderate foraging and commuting suitability to bats and act as ecological corridors which may be present within or near the Site due to the connection to the neighbouring marsh habitat to the east of the Site, which contains mature treeline and hedgerow habitat, along with foraging habitat for local bats. The Site itself is primarily enclosed by residential homes and the Dublin Road (R132), which may act to sever the Site from the agricultural lands to the southwest of the Site, which otherwise have a high degree of connectivity to each other due to mature hedgerow and treeline habitats.

4.4.2.3 Evaluation

Seven of the bat species present in Ireland were found to have a High individual habitat suitability score within the landscape surrounding the Proposed Development. Based on the precautionary principle, and in the absence of activity/emergence surveys, it will be assumed regularly occurring populations of these species, namely, soprano pipistrelle (*Pipistrellus pygmaeus*), brown longed-eared bat (*Plecotus auritus*), common pipistrelle (*Pipistrellus pipistrellus*), lesser noctule (*Nyctalus leisleri*), whiskered bat (*Myotis mystacinus*), Daubenton's bat (*Myotis daubentonii*), and Natterer's bat (*Myotis nattereri*) are present within the locality of the Site (NBDC, 2023).

While Nathusius' pipistrelle (*Pipistrellus nathusii*) was found to have a Low individual habitat suitability score within the surrounding landscape, this species is known to forage near rivers, canals, and waterlogged areas. With similar habitats occurring within or adjacent to the Site of the Proposed Development, it will also be assumed regularly occurring populations of this species may be present within the environment surrounding the Site.

It is unlikely populations of lesser horseshoe bat (*Rhinolophus hipposideros*) occur within the vicinity of the Site, as this species is mainly limited to western Ireland in Clare, Cork, Galway, Kerry, Limerick, and Mayo.

The scrub, grassland, and riparian habitats within the Site were found to have Moderate commuting and foraging potential. One dead tree within the Site was found to have PRF-I potential.

4.4.3 Birds

4.4.3.1 Desk study Results

A total of 163 bird species have been recorded within the 10km grid square by the NBDC within the last 20 years. Of these, 29 are red listed birds and 51 are amber listed birds as identified on the Birds of Conservation Concern in Ireland (BoCCI) (Gilbert et al. 2021). A further 16 were classed as rare visitors to Ireland, and as such were not assessed as part of the BoCCI (Gilbert et al. 2021). The remaining species were green listed, with the exception of two invasive bird species. Details of amber and red listed species are detailed in Table 6.

TABLE 6. DETAILS OF AMBER LISTED, RED LISTED AND INVASIVE BIRD SPECIES WITHIN THE 10KM GRID SQUARE (J00).

Species	Date of record	BoCCI Status
Barn Owl (<i>Tyto alba</i>)	31/12/2011	Red
Bar-tailed Godwit (<i>Limosa lapponica</i>)	22/02/2023	Red
Black-legged Kittiwake (<i>Rissa tridactyla</i>)	17/09/2016	Red
Black-tailed Godwit (<i>Limosa limosa</i>)	28/02/2023	Red
Common Goldeneye (<i>Bucephala clangula</i>)	19/01/2019	Red
Common Kestrel (<i>Falco tinnunculus</i>)	21/03/2018	Red
Common Redshank (<i>Tringa totanus</i>)	28/02/2023	Red
Common Scoter (<i>Melanitta nigra</i>)	01/12/2016	Red
Common Snipe (<i>Gallinago gallinago</i>)	14/12/2022	Red
Common Swift (<i>Apus apus</i>)	15/05/2023	Red
Dunlin (<i>Calidris alpina</i>)	11/02/2023	Red
Eurasian Curlew (<i>Numenius arquata</i>)	11/02/2023	Red
Eurasian Oystercatcher (<i>Haematopus ostralegus</i>)	28/02/2023	Red
Eurasian Woodcock (<i>Scolopax rusticola</i>)	31/12/2011	Red

Species	Date of record	BoCCI Status
European Golden Plover (<i>Pluvialis apricaria</i>)	08/11/2019	Red
Grey Plover (<i>Pluvialis squatarola</i>)	11/02/2023	Red
Grey Wagtail (<i>Motacilla cinerea</i>)	22/01/2018	Red
Long-tailed Duck (<i>Clangula hyemalis</i>)	31/12/2011	Red
Meadow Pipit (<i>Anthus pratensis</i>)	06/01/2019	Red
Northern Lapwing (<i>Vanellus vanellus</i>)	28/02/2023	Red
Northern Shoveler (<i>Anas clypeata</i>)	31/12/2011	Red
Red Kite (<i>Milvus milvus</i>)	09/03/2003	Red
Red Knot (<i>Calidris canutus</i>)	23/01/2021	Red
Redwing (<i>Turdus iliacus</i>)	30/01/2023	Red
Slavonian Grebe (<i>Podiceps auritus</i>)	17/02/2018	Red
Stock Pigeon (<i>Columba oenas</i>)	31/12/2011	Red
Twite (<i>Carduelis flavirostris</i>)	04/02/2018	Red
Velvet Scoter (<i>Melanitta fusca</i>)	01/12/2016	Red
Yellowhammer (<i>Emberiza citrinella</i>)	26/05/2020	Red
Barn Swallow (<i>Hirundo rustica</i>)	06/07/2021	Amber
Black-headed Gull (<i>Larus ridibundus</i>)	28/02/2023	Amber
Light-bellied Brent Goose (<i>Branta bernicla subsp. hrota</i>)	31/12/2011	Amber
Brent Goose (<i>Branta bernicla</i>)	22/02/2023	Amber
Common Coot (<i>Fulica atra</i>)	22/07/2017	Amber
Common Kingfisher (<i>Alcedo atthis</i>)	14/12/2022	Amber
Common Linnet (<i>Carduelis cannabina</i>)	30/01/2023	Amber
Common Sandpiper (<i>Actitis hypoleucos</i>)	08/08/2018	Amber
Common Shelduck (<i>Tadorna tadorna</i>)	11/02/2023	Amber
Common Starling (<i>Sturnus vulgaris</i>)	30/01/2023	Amber
Eurasian Teal (<i>Anas crecca</i>)	28/02/2023	Amber
Eurasian Tree Sparrow (<i>Passer montanus</i>)	17/01/2019	Amber
Eurasian Wigeon (<i>Anas penelope</i>)	17/01/2019	Amber
European Greenfinch (<i>Carduelis chloris</i>)	08/01/2018	Amber
European White-fronted Goose (<i>Anser albifrons subsp. albifrons</i>)	02/01/2012	Amber
Gadwall (<i>Anas strepera</i>)	05/12/2018	Amber
Goldcrest (<i>Regulus regulus</i>)	26/05/2021	Amber
Goosander (<i>Mergus merganser</i>)	11/02/2023	Amber
Cormorant (<i>Phalacrocorax carbo</i>)	08/11/2019	Amber
Great Crested Grebe (<i>Podiceps cristatus</i>)	21/01/2018	Amber
Great Northern Diver (<i>Gavia immer</i>)	31/12/2011	Amber
Greater Scaup (<i>Aythya marila</i>)	31/12/2011	Amber
Greater White-fronted Goose (<i>Anser albifrons</i>)	17/01/2019	Amber
Greenland White-fronted Goose (<i>Anser albifrons subsp. flavirostris</i>)	31/12/2011	Amber
Greylag Goose (<i>Anser anser</i>)	06/01/2019	Amber Regulation S.I. 477 (Ireland)

Species	Date of record	BoCCI Status
Hen Harrier (<i>Circus cyaneus</i>)	17/01/2019	Amber
Herring Gull (<i>Larus argentatus</i>)	28/02/2023	Amber
House Martin (<i>Delichon urbicum</i>)	26/05/2021	Amber
House Sparrow (<i>Passer domesticus</i>)	22/02/2023	Amber
Lesser Black-backed Gull (<i>Larus fuscus</i>)	28/02/2023	Amber
Mallard (<i>Anas platyrhynchos</i>)	28/02/2023	Amber
Manx Shearwater (<i>Puffinus puffinus</i>)	01/12/2016	Amber
Merlin (<i>Falco columbarius</i>)	31/12/2011	Amber
Common Gull (<i>Larus canus</i>)	28/02/2023	Amber
Mute Swan (<i>Cygnus olor</i>)	28/02/2023	Amber
Northern Gannet (<i>Morus bassanus</i>)	02/04/2011	Amber
Northern Pintail (<i>Anas acuta</i>)	06/01/2018	Amber
Red-breasted Merganser (<i>Mergus serrator</i>)	05/12/2018	Amber
Red-throated Diver (<i>Gavia stellata</i>)	31/12/2011	Amber
Ringed Plover (<i>Charadrius hiaticula</i>)	31/12/2011	Amber
Roseate Tern (<i>Sterna dougalli</i>)	18/06/2016	Amber
Ruddy Turnstone (<i>Arenaria interpres</i>)	06/01/2018	Amber
Ruff (<i>Philomachus pugnax</i>)	28/02/2023	Amber
Sandwich Tern (<i>Sterna sandvicensis</i>)	18/06/2016	Amber
Sky Lark (<i>Alauda arvensis</i>)	21/04/2021	Amber
Smew (<i>Mergellus albellus</i>)	24/12/2017	Amber
Spotted Flycatcher (<i>Muscicapa striata</i>)	25/06/2019	Amber
Spotted Redshank (<i>Tringa erythropus</i>)	14/10/2018	Amber
Tufted Duck (<i>Aythya fuligula</i>)	31/12/2011	Amber
Whooper Swan (<i>Cygnus cygnus</i>)	26/12/2018	Amber
Willow Warbler (<i>Phylloscopus trochilus</i>)	31/12/2011	Amber
Canada Goose (<i>Branta canadensis</i>)	07/04/2014	High Impact Invasive Species Regulation S.I. 477 (Ireland)

4.4.3.2 Field Survey Results

4.4.3.2.1 Bird Scoping Survey

Bird scoping surveys were carried out in suitable weather conditions and within daylight hours. During this walkover, a total of six species of birds were recorded within the Site (Table 7), one of which is amber listed, and the remaining species are green listed (Gilbert et al. 2021).

TABLE 7. BIRD SPECIES RECORDED IN SEPTEMBER 2023.

Species	BoCCI Status
House Sparrow (<i>Passer domesticus</i>)	Amber
Woodpigeon (<i>Columba palumbus</i>)	Green
Robin (<i>Erithacus rubecula</i>)	Green
Blackbird (<i>Turdus merula</i>)	Green
Goldfinch (<i>Carduelis carduelis</i>)	Green
Chiffchaff (<i>Phylloscopus collybita</i>)	Green

4.4.3.3 Evaluation

Considering the variety of bird species recorded both in the historical records and during the field survey, it is considered that the Site contains a breeding population resident and regularly occurring bird species which are protected under the Wildlife Act due to the habitats present on Site. The Site is not considered to offer significant suitable *ex-situ* habitat for the SCI bird species associated with Dundalk Bay SPA and Dundalk Bay pNHA due to the dense nature of much of the scrub and grassland habitat on Site.

4.4.4 Mammals (excl. bats)

4.4.4.1 Desk Study Results

Records for terrestrial mammals within the J00 10km grid square were obtained from the NBDC online database. Table 8 lists these species, their date of last record and summarises their protected status/designation. In total, ten mammal species (eight native and two non-native or invasive) were recorded within the grid squares which encompass the Proposed Development Site.

TABLE 8. RECORDS OF TERRESTRIAL MAMMALS (NATIVE AND NON-NATIVE) FOR THE SURROUNDING 10KM (J00) GRID SQUARE ASSOCIATED WITH THE SITE FROM THE NBDC.

Species	Date of last record	Source	Designation
NATIVE SPECIES			
Eurasian Badger (<i>Meles meles</i>)	16/08/2018	Mammals of Ireland 2016-2025	Wildlife Act 1976 (as amended)
Eurasian Pygmy Shrew (<i>Sorex minutus</i>)	13/08/2018	Mammals of Ireland 2016-2025	Wildlife Act 1976 (as amended)
Eurasian Red Squirrel (<i>Sciurus vulgaris</i>)	11/05/2009	Road Kill Survey	Wildlife Act 1976 (as amended)
European Otter (<i>Lutra lutra</i>)	30/01/2023	Mammals of Ireland 2016-2025	Wildlife Act 1976 (as amended) EU Habitats Directive – Annex II & IV
Irish Hare (<i>Lepus timidus subsp. hibernicus</i>)	13/09/2018	Mammals of Ireland 2016-2025	Wildlife Act 1976 (as amended) EU Habitats Directive – Annex V

Species	Date of last record	Source	Designation
Pine Marten (<i>Martes martes</i>)	28/10/2015	Atlas of Mammals in Ireland 2010-2015	Wildlife Act 1976 (as amended) EU Habitats Directive – Annex V
Red Fox (<i>Vulpes vulpes</i>)	10/12/2018	Mammals of Ireland 2016-2025	Not legally protected
West European Hedgehog (<i>Erinaceus europaeus</i>)	28/09/2022	Hedgehogs of Ireland	Wildlife Act 1976 (as amended)
NON-NATIVE AND INVASIVE SPECIES			
Eastern Grey Squirrel (<i>Sciurus carolinensis</i>)	16/09/2018	Mammals of Ireland 2016-2025	High Impact Invasive Species EU Regulation No. 1143/2014 Regulation S.I. 477/2011 (Ireland)
European Rabbit (<i>Oryctolagus cuniculus</i>)	12/05/2018	Mammals of Ireland 2016-2025	Medium Impact Invasive Species

4.4.4.2 Field Survey Results

No evidence of rare, protected or invasive mammals was recorded within the Site during field surveys in September 2023. The scrub and grassland habitats offer commuting, foraging, and nesting habitat for small local mammals, including hedgehogs (*Erinaceus europaeus*), pygmy shrew (*Sorex minutus*), and Irish stoat (*Mustela erminea subsp. hibernica*). The dense areas of these habitats also offer areas suitable for the creation of badger (*Meles meles*) setts, however none were recorded on Site.

The banks of the Ramparts Stream were searched for signs of otter (*Lutra lutra*). There is limited commuting habitat for otter along this area of the watercourse due to the dense vegetation and debris within the watercourse, and its banks adjacent to the Site, with no evidence of otter recorded during this survey.

4.4.4.3 Evaluation

The Site could potentially support resident and regularly occurring populations of native mammals, such as hedgehog, Irish stoat and pygmy shrew due to the dense areas of scrub and grassland habitat on Site within the surrounding urban environment.

4.4.5 Amphibians

4.4.5.1 Desk Study Results

Both common frog (*Rana temporaria*) and smooth newt (*Lissotriton vulgaris*) have been historically recorded in the 10km (J00) grid square encompassing the Site of the Proposed Development, most recently in March 2023.

4.4.5.2 Field Survey Results

No evidence of frogs was recorded on or within the vicinity of the Site, however, suitable habitats were found on Site in the form of the wet grassland and Ramparts Stream and its banks. Typically, smooth newts are more likely to be found in non-linear ponds as opposed to

linear drainage ditches, with small ponds of less than 200m² between 0.5m – 1.0m deep and partly vegetated creating ideal breeding habitat. Suitable breeding habitat for newt was not recorded on Site.

4.4.5.3 Evaluation

The Site could potentially support resident and regularly occurring population of common frog.

4.4.6 Other Fauna

4.4.6.1 Common Lizard

No records of common lizard (*Zootoca vivipara*) exist for the relevant 10km grid square. However, there is suitable habitat for this species within the Site of the Proposed Development, such as grassland and scrub vegetation. As no targeted surveys for common lizard were carried out, it is assumed under the precautionary principle that a population of this species may be present at the Site, as common lizard is ubiquitous throughout Irish landscapes and is likely to be present where suitable habitats are present.

4.4.6.2 Fish

The Ramparts Stream on Site is unlikely to have the potential to support notable fish species such as salmonids, namely, brown trout (*Salmo trutta*), and European eel (*Anguilla anguilla*). However, as no targeted aquatic surveys were carried out, it is assumed under the precautionary principle that notable fish populations may be present within or downstream of this watercourse at the Site.

4.4.6.3 Invasive Invertebrates

There are three records of invasive invertebrate species within the relevant J00 10km grid square encompassing the Site (Table 9).

TABLE 9. RECORDS OF INVASIVE INVERTEBRATES FOR THE SURROUNDING 10KM GRID SQUARE (J00) ASSOCIATED WITH THE SITE FROM THE NBDC.

Species	Date of last record	Database	Designation
Freshwater Shrimp (<i>Gammarus pulex</i>)	02/06/2015	A national macroinvertebrate dataset collected for the biomonitoring of Ireland's river network, 2007–2018 (EPA)	Medium Impact Invasive Species
New Zealand Flatworm (<i>Arthurdendyus triangulatus</i>)	24/03/2020	New Zealand Flatworm (<i>Arthurdendyus triangulatus</i>) Database	High Impact Invasive Species
Jenkins' Spire Snail (<i>Potamopyrgus antipodarum</i>)	25/06/2018	A national macroinvertebrate dataset collected for the biomonitoring of Ireland's river network, 2007–2018 (EPA)	Medium Impact Invasive Species

4.4.7 Protected and/or Notable Species Unlikely to Occur at the Site

Other notable and/or rare species and species listed on Annex IV of the Habitats Directive that were considered but that are unlikely to occur at the Site include:

- **Flora**
 - Marsh Saxifrage (*Saxifraga hirculus*) – Known populations only in Co. Mayo.
 - Killarney Fern (*Vandenboschia speciosa*) – Nearest known populations in Co. Wicklow, not recorded at the Site, no suitably sheltered and moist habitats available.
 - Slender Naiad (*Najas flexilis*) – A clear water, lowland lake species. No suitable habitat available at the Site.
- **Fauna**
 - White-clawed Crayfish (*Austropotamobius pallipes*) – There are no records of this species within the 10km grid square encompassing the Site.
 - Freshwater Pearl Mussel (*Margaritifera margaritifera*) – There are no records of this species within the 10km grid square encompassing the Site.
 - Natterjack Toad (*Epidalea calamita*) – Distribution restricted to few coastal sites.
 - Kerry Slug (*Geomalacus maculosus*) – Distribution restricted to south and west of Ireland.

4.5 Evaluation of Ecological Features

Habitats have been evaluated for their conservation importance, based on the NRA evaluation scheme (NRA, 2009b). Those selected as KERs are those which are evaluated to be of at least local importance (higher value).

Fauna that has the potential to utilise the Site and immediate area of the Proposed Development, or for which records exist in the wider area, have been evaluated for their conservation importance. This evaluation follows the Guidelines for Assessment of Ecological Impacts of National Road Schemes (NRA, 2009b).

The impacts of the Proposed Development on the identified KERs are assessed in section 5. Table 10 below summarises the evaluation rating assigned to each ecological feature and the rationale behind these evaluations is also provided.

TABLE 10. EVALUATION OF DESIGNATED SITES, HABITATS, FLORA AND FAUNA RECORDED WITHIN THE SITE AND THE SURROUNDING AREA. THOSE IDENTIFIED AS KEY ECOLOGICAL RECEPTORS (KERs) ARE HIGHLIGHTED IN GREEN.

Species / Species Group	Evaluation	Rationale	Key Ecological Receptor (KER)
HABITATS			
Dry meadows and grassy verges (GS2)	Local Importance (Lower Value)	Relatively low diversity grassland containing common floral species of low ecological value.	No
Wet grassland (GS4)	Local Importance (Lower Value)	Relatively low diversity grassland containing common floral species of low ecological value.	No

Species / Species Group	Evaluation	Rationale	Key Ecological Receptor (KER)
Scrub (WS1)	Local Importance (Higher Value)	Relatively dense areas of native scrub which may act as ecological corridors throughout the Site and offers foraging, commuting, and nesting habitat for local wildlife. This habitat will be removed to facilitate the Proposed Development.	Yes
Depositing/lowland rivers (FW2)	Local Importance (Higher Value)	Hydrologically linked to the Site via potential surface water run-off and acts as an ecological corridor for aquatic species.	Yes
Drainage ditches (FW4)	Local Importance (Higher Value)	Hydrologically linked to the Site via potential surface water run-off and acts as an ecological corridor for aquatic species.	Yes
Recolonising bare ground (ED3)	Local Importance (Lower Value)	Low diversity ground flora on hardstanding with limited biodiversity value.	No
Buildings and artificial surfaces (BL3)	Local Importance (Lower Value)	Man-made habitat of negligible biodiversity value.	No
FLORA			
Rare & Protected Flora	Local Importance (Lower Value)	No rare or protected flora were recorded during the field surveys. Unlikely to be present in notable numbers/densities.	No
Invasive Species	Local Adverse Importance (Higher Value)	Two invasive species recorded on Site	Yes
NATIVE FAUNA			
Bat Assemblage	Local Importance (Higher Value)	Potential foraging, commuting, and roosting habitat recorded on the Site of the Proposed Development.	Yes
Bird Assemblage	Local Importance (Higher Value)	Amber and green listed species recorded at the Site during the September 2023 surveys, with suitable breeding habitat for these species.	Yes
Badger	Local Importance (Lower Value)	These species were not recorded on Site, with limited suitable habitat for these species present on Site.	No
Pine Marten			
Fox	Local Importance (Lower Value)	Not legally protected in Ireland. No evidence of Fox at the Site.	No
Hedgehog, Pygmy Shrew & Irish Stoat	Local Importance (Higher Value)	Suitable habitats present for these small native mammals at the Site. Therefore, Site has potential to support locally important populations of any of this species.	Yes

Species / Species Group	Evaluation	Rationale	Key Ecological Receptor (KER)
Amphibians	Local Importance (Higher Value)	Suitable habitats along the Ramparts Stream on Site for frogs. Therefore, Site has potential to support locally important populations of frogs.	Yes
Common Lizard	Local Importance (Higher Value)	Suitable habitats present particularly within grassland and scrub habitat. Therefore, Site has potential to support locally important populations of this species.	Yes
Fish assemblage	Local Importance (Higher Value)	Potential suitable habitat along the watercourse on and downstream of the Site, which is hydrologically linked to the Site, and may support locally important populations of aquatic species.	Yes

5 ECOLOGICAL IMPACT ASSESSMENT

5.1 Avoidance and Mitigation Embedded in Project Design

The Proposed Development includes several embedded design features that may act to avoid or mitigate negative impacts that would likely occur in the absence of these features. However, as opposed to typical mitigation measures, the implementation of these features is integral to the design and completion of the Proposed Development, and as such the impact assessments are performed with consideration of these features as integrated parts of the Proposed Development. All considered embedded design features that may act to mitigate negative impacts on local ecology and environment are listed in Table 11.

TABLE 11. EMBEDDED DESIGN FEATURES AND THEIR POTENTIAL TO ACT TO AVOID OR MITIGATE NEGATIVE IMPACTS ON THE LOCAL ECOLOGY AND ENVIRONMENT.

Embedded Design Feature	Avoidance / Mitigation Potential
SuDS: <ul style="list-style-type: none"> Pervious paving. Attenuation tanks. Fuel interceptors. 	The SuDS features included in the Project Design will ensure the surface water discharge from the Proposed Development is reduced to greenfield runoff rates and will protect the water quality of the Ramparts Stream. These features will be implemented as part of the surface water drainage design.
Landscape Design: <ul style="list-style-type: none"> Pollinator-friendly tree, shrub and ground planting. 	This will provide habitat for the biodiversity that currently exists on Site and will maintain riparian habitats and ground flora.

5.2 Construction Phase

5.2.1 Impacts on Habitats

The dry and wet grassland areas, along with the scrub habitat, on Site will be removed to facilitate the Proposed Development. This habitat loss is considered to have *negative, permanent, moderate* impact on the local ecology during the Construction Phase of the Proposed Development.

In the absence of appropriate mitigation, the spread of Japanese knotweed within the Site and along the Ramparts Stream to downstream environments has the potential to have a *negative, long-term, significant* impacts on the local ecology.

The CMEMP (OCSC, 2023a) accompanying this application has been prepared to ensure all works associated with the Construction Phase of the Proposed Development comply with relevant legislation and best practice guidelines, including:

- Control of Water Pollution from construction Sites, Guidance for consultants and contractors (C532).
- Guidelines on Protection of Fisheries During Construction Works in and Adjacent to Waters (2016).
- Environmental Good Practice on Site (3rd edition) (C692).

As such, the potential impact to the water quality of the Ramparts Stream as a result of surface water discharge during the Construction Phase of the Proposed Development is considered to be *imperceptible*.

5.2.2 Impacts on Native Fauna

5.2.2.1 Bats

Construction works will typically be confined to daylight hours and night-time lighting will therefore not be required during the Construction Phase of the Proposed Development. However, where portable lighting is required, there is potential for a *negative, short-term, moderate* impacts to local bats due to potential increased lighting associated with the Construction Phase of the Proposed Development, particularly if inadvertently directed to the scrub vegetation bounding the grassland habitats of the Site. Therefore, increased levels of lighting during the Construction Phase may deter bats from roosting and foraging within the vicinity of the Site.

There will be a potential loss of roost habitat on Site due to the felling of the dead tree on Site. As such, the loss of this tree from the Site has the potential to result in a *negative, permanent, slight* impact on bats on a local scale.

In the absence of appropriate tree-felling practises of the tree deemed to have Low roost potential, there will be a risk of injury or death of bats which may be actively roosting within this tree. This has the potential to result in *negative, permanent, slight* impacts on local bat populations.

5.2.2.2 Birds

There will be some loss of foraging and nesting habitat for birds at the Site of the Proposed Development through the removal of scrub and grassland habitat. This could have a *negative, permanent, moderate* impact on birds in the locality due to the loss of this foraging and nesting habitat.

The increased noise and dust levels associated with the Construction Phase of the Proposed Development may have the potential to disturb birds within the vicinity of the Site and cause *negative, short-term, slight* impacts to local bird populations.

5.2.2.3 Small Mammals

The Proposed Development could have a potential *negative, permanent, moderate* impact at a local level on mammals utilising the Site, such as hedgehog, pygmy shrew, and Irish stoat in the absence of mitigation measures, through the habitat loss of the scrub and grassland habitat within the Site of the Proposed Development.

Disturbance of small mammal species due to lighting, noise and dust generated during the Construction Phase, although unlikely, is possible and, as such, a precautionary approach is adopted with these disturbances representing potential *negative, short-term, slight* impacts at a *local* scale.

Small mammal species, particularly hedgehog, pygmy shrew, and Irish stoat, have the potential to become trapped in trenches and entangled in construction materials such as netting and plastic sheeting, as well as other waste materials, causing entrapment and injury or death. This constitutes a *negative, short-term, moderate* impact at a *local* level.

5.2.2.4 Amphibians

There will be some loss of potential foraging, commuting and hibernacula habitat for amphibians at the Site of the Proposed Development through the removal of the scrub and grassland habitats, and disturbance of amphibian species during the Construction Phase due to an increase in noise and dust is possible. This could have a *negative, permanent, moderate* impact on these species in the locality.

As outlined in section 5.2.1 above, the CMEMP has put in place the standard best practice measures to mitigate potential impacts to water quality of the Ramparts Stream via surface water discharges during the Construction Phase of the Proposed Development. As such, the potential impact to amphibian species within this watercourse as a result of surface water discharge during the Construction Phase is considered to be *imperceptible*.

5.2.2.5 Common Lizard

There will be some loss of potential foraging and commuting habitat for lizards at the Site of the Proposed Development through the removal of the scrub and grassland habitat on Site, and disturbance of species during the Construction Phase due to an increase in noise and dust is possible. This could have a *negative, permanent, moderate* impact on this species in the locality.

5.2.2.6 Fish

All works carried out as part of the Proposed Development will comply with all Statutory Legislation including the Local Government (Water Pollution) acts, 1977 and 1990 and the contractor will cooperate fully with the Environment Section of South Dublin County Council in this regard.

As outlined in section 5.2.1 above, the CMEMP has put in place the standard best practise measures to mitigate potential impacts to water quality of the Ramparts Stream via surface water discharges during the Construction Phase of the Proposed Development. As such, the potential impact to fish species within this watercourse as a result of surface water discharge during the Construction Phase is considered to be *imperceptible*.

5.3 Operational Phase

5.3.1 Impacts on Habitats and Flora

No negative significant impacts on KER habitats are anticipated during the Operational Phase of the Proposed Development.

In line with Objective 4 of the Louth Biodiversity Action Plan 2021 – 2026, the pollinator-friendly tree, perennial and wildflower planting on Site will provide commuting habitat and foraging resources for local wildlife after a period of establishment. This has the potential to result in a *positive, permanent, slight* impact. This positive impact will act to offset some of the negative impacts from habitat loss.

5.3.2 Impacts on Native Fauna

5.3.2.1 Bats

Given the relatively urban context of the Site, the increase in lighting could have a *negative, permanent, moderate* impact on bats on a local scale during the Operational Phase through the loss of dark foraging and commuting corridors, particularly along the Ramparts Stream.

The proposed tree planting included as part of the landscaping to take place on Site has the potential to offer commuting and foraging habitat for bats. As such, the likely impact is considered *positive, permanent, slight* at a *local* level.

5.3.2.2 Birds

No significant impacts on birds are anticipated during the Operational Phase. The proposed planting included as part of the landscaping to take place on Site will offer potential commuting, foraging, and nesting habitat for local birds. As such, the likely impact is considered *positive, permanent, slight* at a *local* level.

The Proposed Development entails building heights ranging from 1-5 storeys in height, and as such, the risk of migrating birds colliding with the structure due to its height is deemed to be negligible. Migrating species tend to commute far above this with Swans and Geese flying up to 2500ft (ca.750m) during migration along Irish Coasts (Irish Aviation Authority, 2020). Birds that fly over the Site to commute throughout the area or in order to reach feeding grounds at various locations would fly lower than these migration heights, however, as the proposed structures are made of visible materials i.e., not entirely comprised of reflective materials such as glass, the birds flying in the vicinity of the Site will simply fly around or over them.

5.3.2.3 Small Mammals

Noise, increase in light, and potential physical disturbance due to increased human presence associated with the Operational Phase has the potential to cause a *negative, permanent, moderate* impact to small mammals in the absence of suitable mitigation.

The proposed planting included as part of the landscaping to take place on Site will offer potential commuting and foraging habitat for local mammals. As such, the likely impact is considered *positive, permanent, slight* at a *local* level.

5.3.2.4 Amphibians

No significant impacts on amphibians within the drainage ditches or watercourses are anticipated during the Operational Phase. SuDS measures, including pervious paving, attenuation tanks, interception storage, and fuel interceptors, have been incorporated into the design to treat and minimise surface water runoff from the Site. Therefore, the potential impact on local amphibians within the Ramparts Stream during the Operational Phase of the Development via water quality deterioration is considered to be *imperceptible*.

5.3.2.5 Common Lizard

No significant impacts on lizards are anticipated during the Operational Phase. The proposed planting included as part of the landscaping to take place on Site will offer potential commuting, foraging, and nesting habitat for local reptiles. As such, the likely impact is considered *positive, permanent, slight* at a *local* level.

5.3.2.6 Fish

No significant effects on fish within the Ramparts Stream are anticipated during the Operational Phase. SuDS measures, including pervious paving, attenuation tanks, interception storage, and fuel interceptors, have been incorporated into the design to treat and minimise surface water runoff from the Site. Therefore, the potential impact on downstream fish species within this watercourse during the Operational Phase of the Development via water quality deterioration is considered to be *imperceptible*.

5.4 Do Nothing Impact

Under the do-nothing scenario, the habitats at the Site of the Proposed Development would continue to evolve. The scrub and riparian habitats would continue to serve as biodiversity corridors, providing habitat connectivity, along with nesting/roosting and foraging habitat for birds and mammals. The grasslands would also continue to provide foraging and commuting habitat for local wildlife and pollinators. The dead tree on Site would continue to offer potential roosting habitat for bats. The invasive species on Site would also continue to colonise, potentially spreading to downstream habitats via the Ramparts Stream.

5.5 Potential for In-Combination Effects

5.5.1 Relevant Plans and Policies

The following plans and policies were reviewed and considered for possible in-combination effects with the Proposed Development.

- Louth County Development Plan 2021 – 2027.
- Louth Biodiversity Action Plan 2021 – 2026.

No specific projects or plans within the Louth County Development Plan (CDP) 2021 – 2027 were identified that could act in-combination with the Proposed Development and cause adverse effects on the KERs identified in this Report. Additionally, the CDP has directly addressed the protection, enhancement and incorporation of biodiversity through specific Policies and Objectives, as well as through its Development Management Standards (see Appendix I for details). The Louth Biodiversity Action Plan 2021 – 2026 is set out to protect and improve biodiversity in the South Dublin area, and as such will not result in negative in-combination effects with the Proposed Development.

Therefore, on examination of the above, it is considered that there are no means for the Proposed Development to act in-combination with any plans or projects that would cause any likely significant effects to nearby ecological sensitivities.

5.5.2 Existing Planning Permissions

There are several existing planning permissions on record in the area, approximately 500m surrounding the Site, ranging from small-scale extensions and alterations to existing residential and commercial properties to larger-scale developments. The larger scale developments identified within 500m of the Proposed Development are described below in Table 12.

TABLE 12. ASSESSMENT OF POTENTIAL IN-COMBINATION EFFECTS OF THE PROPOSED DEVELOPMENT AND OTHER DEVELOPMENTS PENDING OR GRANTED PERMISSION IN THE LAST 5 YEARS (2018-2023). DEVELOPMENTS ALONG THE SAME IMPACT PATHWAYS AS PROPOSED DEVELOPMENT WERE CONSIDERED WITHIN A 500M RADIUS OF THE SITE.

Planning Reference	Planning Authority	Status	Location
191062	Louth County Council	Grant Permission	50m north of the Proposed Development
<p>Development Description</p> <p>The proposed development (12,228sq.m GFA) will consist of 114 no. apartments and ancillary commercial development involving 2 no. retail units (405sqm), medical centre (728sqm) & office (74sqm). The residential development is provided in 3 no. blocks; Block A (max.6 storeys with lift enclosure over), Block B (max.5 storeys with lift enclosure over) and Block C (max.5 storeys with lift enclosure over), each with private amenity roof gardens. The commercial element is all contained on the ground floor of Block A. The 114 no. apartments consist of 51.No. 1 Beds, 43 No. 2 Beds & 20 No. 3 Beds. All associated site and infrastructural works including new vehicular entrance off The Long Avenue, car parking (83 no. spaces), cycle parking (150 no. spaces), bin storage, landscaping, boundary treatments, foul and surface water drainage arrangements. The proposed landscaping involves a new linear water feature to the east created by deculverting the Rampart River and includes lands owned by Louth County Council. The proposed landscaping to the northern portion of the site is temporary in nature pending the future delivery of a road at this location. The application contains a statement setting out how the proposal will be consistent with the objectives of the relevant development plan or local area plan. A Natura Impact Statement has been prepared in respect of the proposed development.</p>			
23334	Louth County Council	Further Permission Requested	77m south of the Proposed Development
<p>Development Description</p> <p>Permission for 31 no. residential units consisting of: 1 no. three storey block of apartment/duplex units, comprising 7 no. two bedroom units and 7 no. three bedroom units (14 no. units in total). 2 no. three storey blocks of apartment/duplex units, each comprising of 2 no. two bedroom units and 2 no. three bedroom units (8 no. units in total). 1 no. two storey terraced block of houses, comprising of 7 no three bedroom units, 2 no. two storey semi-detached 4 bedroom houses, to include vehicular/pedestrian access from the Dublin Road (R132), bin store, bicycle store, private and public open spaces, car parking, landscaping and all associated site development works to facilitate the development.</p>			

The above-listed planning applications were all accompanied by the relevant environmental assessments that detail the potential impacts and the mitigation measures required to ensure the developments do not have a significant effect on local biodiversity, alone or in-combination with other developments. In addition, the Louth County Council granted permission for the above planning applications following evaluations of the potential ecological and environmental impacts of each application.

It is considered that there is no potential for the Proposed Development to act in-combination with other permitted developments in the vicinity that could cause likely significant effects on any nearby or linked KERs.

6 AVOIDANCE, MITIGATION, COMPENSATION AND ENHANCEMENT MEASURES

6.1 Construction Phase

Table 13 gives a summary of the best practice development standards and mitigation measures to be implemented during the Construction Phase of the Proposed Development.

The measures listed are outlined in more detail in the CEMP accompanying this application under separate cover.

TABLE 13. SUMMARY OF BEST PRACTICE STANDARDS AND MITIGATION OUTLINED IN THE OCMP. WHERE SPECIFIC DETAILS RELATING TO PROTECTION OF KEY ECOLOGICAL RECEPTORS IS REQUIRED UNDER THESE MEASURES, REFERENCE IS MADE TO THE APPROPRIATE SECTION IN THIS REPORT.

Theme	Best Practice Standards and Mitigation	Ecology Specific Mitigation
Soils and Geology	<p>Appropriate measures to store and handle stripped topsoil and subsoil; consideration of weather conditions to minimise silt/sediment entering surface water network and dust control; and appropriate fill material import, storage and handling away from surface water features.</p> <p>Surface water discharge points for rain and groundwater pumped from excavations and directed to settlement ponds during Construction to be agreed with LCC prior to works commencing.</p> <p>Appropriate storage of fuels, oils and other chemicals, designated refueling and maintenance area, and preparation of emergency response procedure.</p>	No.
Water - Hydrogeology	Measures for erosion and sediment control, prevention and control of accidental spills and leaks, and concrete handling.	No.
Water - Water Supply, Drainage & Utilities	Appropriate use of temporary drainage systems, foul water to be tankered off site for treatment until connection to foul network made, and all connections (wastewater, water supply, electrical, gas and telecommunications) to be made by authorized and qualified people.	No.
Site Compound Facilities and Parking	<p>Location to be agreed with LCC prior to works.</p> <p>Appropriate measures to handle foul water generated, protect potable water supply, health and safety, separate areas for (i) machinery and plant; (ii) concrete batching; and (iii) staff parking.</p>	No.
Construction Waste Management	Managed according to the Department of the Environment, Heritage and Local Government's 2006 Publication – ' <i>Best Practice Guidelines on the Preparation of Waste Management Plans for Construction and Demolition Projects</i> '.	Yes – See section 6.1.2.5
Landscape and Visual Impact	Appointment of an Arborist to oversee works relating to trees, and post-construction tree assessment.	No.

<p>Noise and Vibration</p>	<p>To comply with the requirements of BS 5228-1:2009+A1:2014 and BS 5228-2:2009+A1:2014 (Code of Practice for Noise and Vibration Control on Construction and Open Sites) as well as Safety, Health and Welfare at Work (General Application) Regulations 2007, Part 5 Noise and Vibration.</p>	<p>No.</p>
<p>Air Quality</p>	<p>Dust Management Plan to include suppression via watering of areas identified as potential dust sources; road sweeping to remove aggregate materials; appropriate cover of transported materials; wheel washing; maintenance of public roads in relation to dust; and appropriate monitoring.</p>	<p>No.</p>

In addition, to ensure the CEMP remains ‘fit for purpose’ for the duration of the project it should be reviewed and updated by the Project Manager in consultation with the Contractor’s Ecologist during the life of the project to ensure that it remains suitable to facilitate efficient and effective delivery of the project’s environmental commitments. The Contractor shall also designate a Site Engineer/Manager/Assistant Manager as the Construction Waste Manager and who will have overall responsibility for the implementation of the Project Waste Management Plan (WMP). This Plan will be prepared upon appointment of the Main Contractor.

Additional mitigation measures required for sufficient protection of the KERs identified in this Report, and/or details for the specific implementation of the mitigation measures as per the above table are given in the below sections.

6.1.1 Protection of Habitats

6.1.1.1 Mitigation 1: Japanese Knotweed

Japanese knotweed is a tall herbaceous perennial plant, widely recognised in the UK and Ireland as being a highly problematic invasive alien species. This is due to a variety of reasons including its vigorous growth, out-competing native species and the difficulty of complete eradication (Fennell *et al*, 2018). The eradication of this species is usually expensive and time consuming given that any soil containing Japanese knotweed material is classified as controlled waste (Hocking *et al*, 2023) and follow-up treatments are required across a number of years. According to TII (2020):

“Dispersal typically occurs through rhizome fragments being transported in soil by humans or to a lesser extent, through passive mechanical means such as in floodwaters. Dispersal is also achieved through vegetative reproduction from plant fragments. Japanese knotweed produces vigorous stands on rural and urban waste ground, in the riparian zones of rivers, along roadsides and even on coastal islands”.

Physical, chemical, and combined methods of eradication are outlined in the subsequent sections.

6.1.1.1.1 Physical Control

In the execution of all physical control methods, good Site hygiene practices are essential, including those listed in section 6.1.1.2 of this Report.

6.1.1.1.1.1 Excavation and Containment / Disposal

Excavation of the Japanese knotweed at the Site would comprise hand-pulling and using hand tools to dig up the entire plant including the rhizome. The rhizomes of Japanese knotweed may extend 7m from the visible above-ground plant and generally up to a depth of 2m. The Environment Agency recommend treatment with a 'non-persistent herbicide', such as glyphosate, two weeks prior to excavation. Persistent herbicides should **not** be used if plant material is to be buried or disposed of in a waste facility as persistent herbicides could potentially permeate into groundwater.

As outlined in section 6.1.1.2 of this Report, there should be no temporary storage onsite of Third Schedule waste material (vegetation or contaminated soil). Furthermore, the temporary storage of uninfected material should not occur within 25m of any watercourse or flood zone. Plant and machinery used in the control, excavation and transport of invasive material shall be subject to the biosecurity recommendations provided in section 6.1.1.2.

6.1.1.1.1.2 Excavation and Deep Burial

- Excavation should follow the above methodology outlined in *Section 6.1.1.1.1.1*. Following this, excavated material from the Site can be buried at a depth of at least 5m; and the area should be covered by an industry-rated invasive alien species-proof membrane and filled in with an inert fill or topsoil. Where burial on Site is proposed, all contaminated vegetation/soil material shall be removed from the excavated area and transported immediately to approved receptor area on Site. In using this methodology, consideration should be given to the following: Adherence to the Waste Management Acts 1996-2003;
- Buried material should be mapped and recorded;
- Permanent signs should be erected to inform the public of the nature of the buried material; and,
- Future landowners should be informed of the nature of the buried material.

6.1.1.1.1.3 Excavation and Disposal to Landfill

The Environment Agency suggests using this method as a last resort. This is due to the cost, the requirement to use valuable landfill capacity and the large-scale nature of the haulage required during particularly extensive infestations. Excavation should be undertaken as outlined in *Section 6.1.1.1.1* above. Following this, for disposal to landfill, small quantities can be double bagged in heavy duty waste bags, while larger quantities should be placed in a skip lined with an appropriate membrane. Waste can then be taken to a licensed waste facility who have been informed in advance. It should be noted that some invasive species plant material or soil (vector material) containing residual herbicides may be classified as either 'hazardous waste' or 'non-hazardous waste' under the terms of the Waste Management Acts, and both categories may require special disposal procedures or permissions. Advice should be sought from a suitably qualified waste expert regarding the classification of waste and the suitability of different disposal measures.

6.1.1.1.2 Chemical Control

The most widely recommended chemical for treating Japanese knotweed infestations is glyphosate, a non-persistent herbicide. This herbicide should be utilised in compliance with the Good Plant Protection Practice S.I. 83 (2003). A more persistent herbicide that can be used to treat smaller infestations of Japanese knotweed is 2,4-D Amine.

Some herbicides can pose a risk to human health, to non-target plants, or to wildlife. In order to ensure the safety of herbicide applicators and other users of the Site, a qualified and experienced contractor, registered with the DAFM³ must be employed to carry out all work.

Although it is the decision of the registered pesticide advisor on the efficacy and /or use of specific herbicide treatments, in general, the application of glyphosate should be undertaken in late September or early October. However, to increase the success of glyphosate application, plants should first be treated early in the growing season in May to reduce the amount of plant above ground. Additionally, the application of 2,4-D Amine should be undertaken in May, with a second follow-up application conducted in late September or early October. 2,4-D Amine cannot be used in conjunction with containment or disposal techniques, as it is a persistent herbicide, which when employed with these techniques, could lead to treated plant material to be deemed as 'hazardous waste', much more expensive to haul or dispose of.

Any chemical applications should be as targeted as possible to reduce any potential for impacting on adjacent non-invasive plants. Follow-up treatments will be required for a number of additional years (minimum 2 years, recommended 5 years) to ensure complete eradication.

6.1.1.1.3 Combined Physical and Chemical Control

The following is extracted from TII (2020):

"In the case of Japanese knotweed, physical methods, on their own, are unlikely to eradicate Japanese knotweed infestations. In all cases, chemical treatment, either on its own or in combination with physical treatment, will be required".

As such, it is generally recommended that a combination of physical and chemical control is utilised to treat Japanese knotweed. As per TII (2020):

"Physical methods of [Japanese knotweed] control include cutting, digging or excavating, hoeing and pulling by hand. Particular care shall be taken near watercourses as water is an effective conduit for the dispersal of plant fragments and seeds. Material that contains flower heads or seeds shall be disposed of either by composting (if appropriate), burial at a depth of no less than 2m, by incineration (having regard to relevant legislation, including the Waste Management Act, 1996–2011, the Waste Management (Prohibition of Waste Disposal by Burning) Regulations, 2009, and relevant local authority byelaws), or disposal to licensed landfill.

It should be noted that particular care is required in relation to the disposal of Japanese and other knotweed species. Where burial is being used to dispose of these species, a non-persistent herbicide shall be applied to the infestation prior to excavation. The material shall then be excavated and subsequently buried to a minimum depth of 5m. The waste shall be

³ Department of Agriculture, Fisheries and Marine (DAFM),

covered with a proprietary root barrier membrane layer and infilled with a minimum 5m depth of uncontaminated soil.

Any geotextile membranes used for burial must be undamaged, sealed securely, have a manufacturer's guarantee that it will remain intact for at least 50 years, and be UV resistant. Where burial to a depth of 5m is not possible, the infestation shall be treated with a non-persistent herbicide prior to excavation, excavated and then completely encapsulated in a proprietary root barrier membrane cell. The upper surface of the cell shall be buried to a depth of at least 2m with uncontaminated soil. It is essential that the methods used comply with the law and that all necessary licences, permits, consents, permissions, and other documentation are in place”.

“The current most widely recommended active ingredient for Japanese knotweed control is glyphosate, which breaks down in the soil relatively quickly. Glyphosate is a broad spectrum herbicide and, as such, is potentially damaging to non-target plants. Great care is, therefore, necessary when applying this herbicide and it may be appropriate to seek advice from a Registered Pesticide Advisor. A recent study has demonstrated that effective control of Japanese knotweed may be achieved by biannual (summer and autumn) foliar glyphosate applications or by annual application of glyphosate in autumn (after the flowering period but prior to senescence) using stem injection (at high concentrations) or foliar spray (Jones, et al., 2018).

Selective herbicides containing the active ingredients aminopyralid and fluroxypyr are increasingly being used to chemically control Japanese knotweed. However, these products are toxic to aquatic life and must not be used in or near water”.

6.1.1.1.4 Site-Specific Recommended Management

Based on the information outlined in this Report and the guidance material available, a combined physical and chemical method is recommended at the Site. Application of glyphosate on individual plants, followed by excavation and disposal in a licenced facility is recommended. All plant parts should be disposed of responsibly, as plant material left on the ground can resprout. These works will be carried out by licensed specialist, the management recommendations of which will supersede the mitigation measures outlined above, and in full agreement with the Local Planning Authority, namely Louth County Council.

6.1.1.2 Mitigation 2: Biosecurity

Ensuring that the further spread of invasive alien species (IAS) is curtailed is critical in respect of the Site. It is also necessary to ensure that the potential spread of IAS into areas/sites where they are not present is prevented. Equally, this applies to the risk of contaminated material being brought onto the Site.

Unwashed construction equipment, plant and vehicles, and footwear can provide a vector for the spread of IAS within a site and from areas outside the site where infestation is present or where vector material potentially containing seed/root material is attached to plant. The following hygiene measures shall be undertaken:

- Known or potentially infested areas within the Site shall be clearly fenced off in advance of works and access restricted, until such time that the appointed specialist has commenced treatment. In relation to Japanese knotweed, the guidance recommends an exclusion buffer of 7m in all directions and 3m vertically underground;

- Erection of clear signage at relevant fenced off areas. The signage and notification should be easily understood so that Site users are aware of the measures to be taken for known non-native invasive species on Site, or what they should do in the case of suspected non-native invasive species identified on Site;
- Where possible, dedicated footwear and wheel-wash facilities should be identified. Where a dedicated/bespoke wheel-wash cannot be installed owing to space limitations, no excavated loose material is allowed offsite from within an exclusion zone. Similarly, where plant is used to excavate soils, it shall be visually checked for loose soil before movement to another part of the site (where possible, the movements of tracked machinery should be restricted within the IAS exclusion zone. Loose soil shall be scraped off and disposed of, and a solution of Virkon© (or similar approved disinfectant) applied to machinery to ensure that no obscured seed/root material remains viable;
- Machinery which has been used for the transport and/or excavation of infected/suspected infected vector material shall be thoroughly washed down and the washings captured for disposal. All such machinery/plant shall not be permitted to commence work elsewhere on or off-site until confirmation of same has been undertaken;
- Dedicated wash down and solution capture should be set up on Site. All washings should be stored in a quarantined bunded container that is rated for such storage, until such time that they are removed offsite for disposal and a facility that is authorised to accept such waste;
- Except in very particular circumstances and with the approval of the specialist treatment contractor, there should be no temporary storage of infected/suspected infected soils on-site. They must be removed offsite as per guidance outlined within this Report;
- Where small volumes e.g., volume capable of being double bagged in quarantine bags rated for such cut plant, bulbs or loose soil occur, it may be practical to bag the material and bring it to a clearly demarcated and dedicated quarantine area within the construction compound until such time that the material is disposed of to an authorised facility, similar to the process of disposing of bulk excavated infected soil.

6.1.2 Protection of Fauna

6.1.2.1 Mitigation 3: Construction Phase Lighting

As a precautionary measure, no overnight lighting will be directed to the natural habitats bounding the Site. Where overnight lighting cannot be avoided in these areas due to health and safety concerns, the lighting within the Proposed Development will be designed and installed to minimise the impact on local wildlife as agreed with the Ecologist and in accordance with the Bat Conservation Trust guidelines on artificial lighting and bats (BCT 2018):

- There will be no light spill to the boundary habitats.
- All luminaires used will lack UV/IR elements to reduce impact.
- LED luminaires will be used due to the fact that they are highly directional, lower intensity, good colour rendition and dimming capability.
- A warm white spectrum (<2700 Kelvins will be used to reduce the blue light component of the LED spectrum).

- Luminaires will feature peak wavelengths higher than 550nm to avoid the component of light most disturbing to bats.
- Column heights should be carefully considered to minimise light spill. The shortest column height allowed should be used where possible.
- Only luminaires with an upward light ratio of 0% and with good optical control will be used.
- Luminaires will be mounted on the horizontal, i.e., with no upward tilt.
- Any external security lighting will be set on motion-sensors and short (1min) timers.
- As a last resort, accessories such as baffles, hoods or louvres will be used to reduce light spill and direct it only to where it is needed.

6.1.2.2 Mitigation 4: Tree Protection

Protective tree fencing in compliance with BS 5837:2012 'Trees in relation to design, demolition and construction – Recommendations' will be erected prior to any Construction works being undertaken to prevent damage to the canopy and root protection areas of existing trees at the Site. The fencing should be signed off by a qualified arborist prior to Construction to ensure it has been properly erected. No ground clearance, earthworks, stock-piling or machinery movement will be undertaken within these areas.

6.1.2.3 Mitigation 5: Protection of Bats

6.1.2.3.1 Lighting

To minimise potential disturbance to local bats due to lighting during the Construction Phase, construction works will be carried out during normal daylight working hours as follows:

- 7.00am to 7.00pm Monday to Friday.
- 8.00am to 2.00pm Saturday.
- No Sunday work will generally be permitted.

The vegetation abutting the north and south boundaries of the Site, along with the riparian habitat, will be maintained as dark corridors (1 lux or less) during the Construction Phase to preserve the high potential commuting and foraging ecological corridors currently on Site of the Proposed Development.

6.1.2.3.2 Tree Removal

Prior to the felling, an updated ground-based roost assessment will be carried out by a suitably qualified ecologist. Specifically, where the felling of Low roost potential trees is absolutely necessary, the following protocol should be followed:

- Tree-felling should be undertaken in the period **late August to late October/early November**. During this period bats are capable of flight and this may avoid risks associated with tree-felling.
- Felling during the winter months should be avoided as this creates the additional risk that bats may be in hibernation and thus unable to escape from a tree that is being felled. Additionally, disturbance during winter may reduce the likelihood of survival as the bats' body temperature is too low and they may have to consume too much body fat to survive.

- Tree-felling should be undertaken using heavy plant and chainsaw. There is a wide range of machinery available with the weight and stability to safely fell a tree. In order to ensure the optimum warning for any roosting bats that may still be present, an affected tree will be pushed lightly two to three times, with a pause of approximately 30 seconds between each nudge to allow bats to become active. **Any affected trees should then be pushed to the ground slowly and should remain in place for a period of at least 48 hours to allow bats/other wildlife to escape.** Trees felled should **never** be sawn up or mulched immediately in case protected wildlife is present.

Should any signs of roosting bats or suitable roost features be observed, or the trees to be removed are deemed to have Moderate or High roosting potential, then no works can take place until an aerial assessment or emergence surveys are conducted and bat absence is confirmed. Should bats be found at any stage of the works, a derogation licence shall be obtained from the National Parks and Wildlife Services prior to the continuation of any works.

6.1.2.4 Mitigation 6: Vegetation Clearance

Vegetation clearance of the trees and grassland habitat will need to be cognisant of any potentially present fauna. Table 14 provides guidance for when vegetation clearance is permissible in relation to wintering, hibernating and breeding fauna. Information sources include British Hedgehog Preservation Society's *Hedgehogs and Development* and *The Wildlife (Amendment) Act, 2000*. The preferred period for vegetation clearance is within the months of September and October to avoid the main breeding bird and bat maternity and roosting season as well as mammal, amphibian, and reptile hibernation.

Where this seasonal restriction cannot be observed, a check for active nests, will be carried out immediately prior to any Site clearance by an Ecological Clerk of Works (ECoW) and repeated as required to ensure compliance with legislative requirements. Where a breeding bird and an active nest is found, the nest will be protected, and no further works will take place in the vicinity of the nest until the young have fledged. Where continuance of works is critical, the NPWS will be consulted, and a derogation license obtained prior to continuing works.

TABLE 14. SEASONAL RESTRICTIONS ON VEGETATION REMOVAL. RED BOXES INDICATE PERIODS WHEN CLEARANCE/WORKS ARE NOT ADVISABLE.

Ecological Feature	Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec
Bats	Tree felling/demolition to be avoided unless confirmed to be devoid of bats by an ecologist.								Preferred period for tree-felling/building demolition if deemed appropriate by the ecologist or ECoW following further survey works.		Tree felling/demolition to be avoided unless confirmed to be devoid of bats by an ecologist.	
Breeding Birds	Vegetation clearance permissible		<p style="text-align: center;"><u>Nesting bird season</u></p> No clearance of vegetation or works to relevant structures permitted unless confirmed to be devoid of nesting birds by an ecologist.						Vegetation clearance permissible			

Ecological Feature	Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec
Hibernating small mammals	<u>Mammal hibernation season</u> No clearance of vegetation or works to relevant structures permitted unless confirmed to be devoid of hibernating mammals by an ecologist.			Vegetation clearance permissible		<u>Main Hedgehog birthing months</u> Vegetation clearance permissible under supervision of an ECoW		Vegetation clearance permissible			<u>Mammal hibernation season</u> No clearance of vegetation or works to relevant structures permitted unless confirmed to be devoid of hibernating mammals by an ecologist.	
Amphibians	<u>Amphibian Hibernation Season</u> No habitat clearance permissible unless deemed appropriate by the ECoW following further surveys	<u>Amphibian breeding season</u>						Vegetation / Site clearance permissible			<u>Amphibian Hibernation Season</u> No habitat clearance permissible unless deemed appropriate by the ECoW following further surveys	
Common Lizard	<u>Lizard Hibernation Season</u> No habitat clearance permissible unless deemed appropriate by the ECoW following further surveys			<u>Active period</u> Habitat (scrub, tall sward grass) clearance permissible						<u>Lizard Hibernation Season</u> No habitat clearance permissible unless deemed appropriate by the ECoW following further surveys		

Additionally, all vegetation clearance will be carried out in sections working in a consistent direction to prevent entrapment of protected fauna potentially present (e.g., hedgehog, pygmy shrew). A phased cutting approach under the supervision of a suitably qualified ECoW will be used to allow wildlife (namely, reptiles, amphibians and small mammals) to move away from any suitable habitat that will be removed:

- Phase 1 – Cutting vegetation to 150-200 mm and removing the arisings;
- Phase 2 – After a minimum of one hour, hand-searching the cut areas (conducted by an ECoW) and removing any sheltering habitat (e.g., logs or debris) then cutting vegetation to ground level and removing the arisings; and
- Phase 3 – Soil scrape.

Should any suitable refugia or day nesting habitats need to be removed, this will be carried out outside the most vulnerable breeding periods for hedgehogs wherever practicable (main hedgehog birthing months June and July) and will be supervised by the ECoW.

6.1.2.5 Mitigation 7: Waste and Site Management

As best-practice, all construction-related rubbish on-site e.g., plastic sheeting, netting etc. should be kept in a designated area on-site and kept off ground level so as to protect small fauna (such as small mammals, amphibians and reptiles) from entrapment and death.

Precautionary working practices will be implemented during the Construction Phase to ensure that small mammals are not indirectly harmed from falls into excavations such as trenches, holes and ditches. These will be covered outside of working hours or, where excavations are too large to cover, a means of escape will be provided, such as sloping banks or wooden planks. Pipes over 250mm in diameter should be capped overnight, this will reduce the possibility of mammals becoming trapped and injured.

6.2 Operational Phase

6.2.1 Protection of Habitats

6.2.1.1 Mitigation 8: Invasive Species Management

Certain plant species and their hybrids are listed as Invasive Alien Plant Species in Part 1 of the Third Schedule of the *European Communities (Birds and Natural Habitats) Regulations 2011* (SI 477 of 2011, as amended). In addition, soils and other material containing such invasive plant material, are classified in Part 3 of the Third Schedule as vector materials and are subject to the same strict legal controls.

As such, it is recommended that any newly landscaped areas, particularly where infill materials and soils have been imported for soft landscaping, are assessed during the Operational Phase within the next botanical season for the presence of any inadvertently introduced invasive species, with particular focus on those listed on Schedule III of SI 477 of 2011. If invasive species are detected, an Invasive Species Management Plan will be prepared, agreed with the Local Authority and implemented at the earliest possibility to limit the potential for further spread.

In many cases, it is not possible to control an established stand of Japanese knotweed with a single treatment. Therefore, repeated treatments over successive years are necessary. As such, after treating the Japanese knotweed, the Site will require continuation of monitoring to ensure there is no further regrowth of seedlings.

Monitoring at the Site will be carried out once a year during the Japanese knotweed growing season for 2 years following treatment; this survey will be undertaken by a suitably qualified ecologist. The Site may be considered remediated after two consecutive growing seasons with no sign of regrowth from all of the previously identified stands (TII, 2020b).

6.2.2 Protection of Fauna

6.2.2.1 Mitigation 9: Bats

In accordance with the best practise bat-friendly lighting guidelines (ILP, 2023), the below measures will be incorporated as part of the Lighting Design of the Proposed Development:

- All luminaires should lack UV elements when manufactured. Metal halide, compact fluorescent sources should not be used.

- LED luminaires should be used where possible due to their sharp cut-off, lower intensity, good colour rendition and dimming capability.
- A warm white light source (3000 Kelvin or lower) should be adopted to reduce blue light component.
- Light sources should feature peak wavelengths higher than 550nm to avoid the component of light most disturbing to bats.
- Internal luminaires can be recessed where installed in proximity to windows to reduce glare and light spill.
- Column heights should be carefully considered to minimise light spill and glare visibility. This should be balanced with the potential for increased numbers of columns and upward light reflectance as with bollards.
- Only luminaires with a negligible or zero Upward Light Ratio, and with good optical control, should be considered.
- Luminaires should always be mounted horizontally, with no light output above 90° and/or no upward tilt.
- Where appropriate, external security lighting should be set on motion sensors and set to as short a possible a timer as the risk assessment will allow. For most general residential purposes, a 1 or 2 minute timer is likely to be appropriate.
- Only if all other options have been explored, accessories such as baffles, hoods or louvres can be used to reduce light spill and direct it only to where it is needed. However, due to the lensing and fine cut-off control of the beam inherent in modern LED luminaires, the effect of cowls and baffles is often far less than anticipated and so should not be relied upon solely.
- The vegetation along the boundaries of the Proposed Development, along with the Ramparts Stream, will be maintained as dark ecological corridors (1 lux or less) during the Operational Phase of the Proposed Development so they may continue to provide foraging and commuting habitat for local wildlife.

6.3 Biodiversity Enhancement Plan

6.3.1 Enhancement 1: Pollinator Habitat

Pollinator/insect habitat, as seen in Figure 7, will be created on Site by:

- Creating an earth bank.
- Scraping back some bare earth.
- Leaving some areas to grow wild, and/or
- By drilling holes 10cm deep in unvarnished wood for solitary bees.



FIGURE 7. EXAMPLES OF SOLITARY BEE HABITAT. EXTRACTED FROM HOW-TO-GUIDE: CREATING WILD POLLINATOR NESTING HABITAT (NBDC, 2016).

Large bee or insect hotels will not be installed. Guidance from the All-Ireland Pollinator Plan states “Don’t install a large bee or insect hotel. Large bee hotels are attractive to humans, but not great for pollinators. They can encourage the spread of disease and attract predators. Avoid anything bigger than an average-sized bird box. There are many other ways to provide nesting habitats for pollinators, such as providing wild areas of undisturbed long grass, and scraping back some bare earth. If you want to make a bee hotel, make sure it is small, and position it away from bird feeders so the insects aren’t easy targets.” A link to a “How-to-guide Creating wild pollinator nesting habitat” is provided for the development management company to put these habitats in place: [How-to-guide-Nesting-2018-WEB.pdf \(pollinators.ie\)](https://www.pollinators.ie/wp-content/uploads/2018/07/How-to-guide-Nesting-2018-WEB.pdf). An appointed ecologist will oversee the creation of these habitats.

6.3.2 Enhancement 2: Bat Boxes

Four summer bat boxes (e.g., Woodcrete 1FF design) will be erected on Site as part of the Proposed Development. The number of boxes may increase should the pre-felling assessment and emergence surveys find evidence of roosting on Site to mitigate any loss of roost habitat. The boxes will be installed as part of the landscaping works, so as to not delay their deployment and potential positive impacts.

Bat boxes will be sited carefully, and this will be undertaken by a bat specialist. The bat ecologist will denote the locations, orientation and height of the bat boxes to be erected with assistance from the contractor. Some general points that will be followed include:

- Bat boxes will be erected on trees (or telegraph poles) with no crowding branches or other obstructions for at least 1 metre above and below the bat box.
- The diameter of the tree should be wide and strong enough to hold the required number of boxes.
- Locate bat boxes in areas where bats are known to forage or adjacent to suitable foraging areas. Locations will be sheltered from prevailing winds.
- Bat boxes will be erected at a height of 4-5 metres to reduce the potential for vandalism and predation of roosting bats.
- The recommended Woodcrete 1FF design is open at the bottom, allowing the droppings to fall out, and so does not need cleaning.

6.3.3 Enhancement 3: Swift Boxes/Bricks

It is recommended that swift boxes or bricks are incorporated into the Proposed Development where possible. The incorporation of swift boxes or bricks would help recover the declining swift population, which are now Red Listed in Ireland (Gilbert et al., 2021). The following recommendations are extracted from "Saving Swifts" by Birdwatch Ireland.

Swift bricks/boxes:

- will be constructed of long-lasting material and securely fixed in position.
- will be erected at least five metres above ground level.
- will be erected in sheltered cool areas out of the sun, or under an overhang and /or under the eaves. Bricks can be placed at any aspect, however, as they tend not to overheat the way that externally fitted boxes can.
- will have a clear airspace in front for access.
- will be grouped (side by side in rows) as swifts are colony nesters.
- will avoid sites which can be accessed by predators- cats, squirrels, magpies, rats.
- will avoid sites near plate glass windows because they are a known collision hazard for birds.
- will not be placed directly above ledges or other obstructions. Swifts drop before taking flight and can collide with obstacles below the nest entrance.
- will not be one above the other.
- will not be near spotlights or later fit spotlights near them.

It is advised to install a swift calling system to attract swifts and encourage them to take up residence at a new site.

6.3.4 Enhancement 4: Hibernacula

It is recommended to enhance the riparian habitat for amphibian and reptile use by providing suitable refuge and hibernacula adjacent to the Ramparts Stream, along with providing log and brush piles for smaller mammals, such as hedgehog, adjacent to the woodland and shrub habitats to be planted within the Site. It is recommended that 2-3 areas of hibernacula are provided along the banks at areas furthest removed from likely human activity.

Hibernacula for hedgehogs, amphibians and reptiles is relatively easy to create from logs and soil, all of which can likely be sourced from the Site during works. Wood in various sizes should be piled either in a shallow depression or on the slope of the attenuation pond in a disorganised way to create nooks and crevices. Larger tree trunks or rocks should be placed so that they will protrude through the final mound to provide open entrances to the mound. This pile should then be covered in soil to allow the inner crevices to maintain a stable temperature through the winter and allow for hibernation.

7 MONITORING

Table 15 below provides a summary of the required monitoring and pre-works inspections during the Construction Phase, as well as any surveys that should be completed during the Operational Phase. The monitoring, inspections and surveys will ensure that the identified mitigation measures are implemented and maintained efficiently and have the desired effect of protecting the local ecology from adverse impacts.

TABLE 15. MONITORING AND PRE-WORKS INSPECTIONS FOR THE IDENTIFIED MITIGATION MEASURES DURING THE CONSTRUCTION PHASE OF THE PROPOSED DEVELOPMENT. TO BE CARRIED OUT BY A SUITABLY QUALIFIED ECOLOGIST OR ECOLOGICAL CLERK OF WORKS (HIGHLIGHTED IN GREEN) OR BY THE DEVELOPMENT CONTRACTOR (NO HIGHLIGHT).

Measure	Monitoring
CONSTRUCTION PHASE	
Mitigation 1: Japanese Knotweed	Ongoing monitoring by contracted specialist and Ecologist.
Mitigation 2: Biosecurity	Ongoing monitoring by contractor.
Mitigation 3: Construction Phase Lighting	Ongoing monitoring by contractor.
Mitigation 4: Tree protection	Ongoing monitoring by contractor or arborist.
Mitigation 5: Protection of Bats	Ongoing monitoring by contractor, Ecologist to be contacted should evidence of bats on Site be encountered.
Mitigation 6: Vegetation Clearance	Any Site vegetation clearance is subject to supervision by an Ecologist and a phased approach.
Mitigation 7: Waste and Site Management	Ongoing monitoring by contractor.
Enhancement 1: Pollinator Habitat	The placement and construction of these structures should be carried out under the supervision of an Ecologist to ensure they are fit for purpose.
Enhancement 2: Bat Boxes	The placement and construction of these structures should be carried out under the supervision of an Ecologist to ensure they are fit for purpose.
Enhancement 3: Swift Boxes	The placement and construction of these structures should be carried out under the supervision of an Ecologist to ensure they are fit for purpose.
Enhancement 4: Hibernacula	The placement and construction of these structures should be carried out under the supervision of an Ecologist to ensure they are fit for purpose. Should any damage occur, the Ecologist will be contacted and appropriate repairs or replacements will be made.
OPERATIONAL PHASE	
Mitigation 8: Invasive Species Management	An Invasive Species Survey will be carried out by a qualified Ecologist during the next botanical season after soft landscaping has been completed.
Mitigation 9: Bats	Survey of lighting levels at the Site to be undertaken by a suitably qualified ecologist to ensure dark corridors have been maintained.

8 RESIDUAL IMPACTS

Residual impacts are impacts that remain once mitigation has been implemented or impacts that cannot be mitigated. Table 16 below provides a summary of the impact assessment for the identified KERs and details the nature of the impacts identified, the mitigation measures proposed, and the classification of any residual impacts.

Both standard Construction Phase control measures, and specific mitigation measures, have been outlined to ensure that the Proposed Development does not impact on any species, habitats or designated sites of conservation importance. It is essential that these measures are complied with, in order to ensure that the Proposed Development complies with National conservation legislation.

Provided all recommended measures are implemented in full and remain effective throughout the lifetime of the Proposed Development, no significant negative residual impacts on the local ecology, or on any designated nature conservation sites, will occur as a result of the Proposed Development.

TABLE 16. SUMMARY OF POTENTIAL IMPACTS ON KER(S), MITIGATION PROPOSED AND RESIDUAL IMPACTS.

Key Ecological Resource	Evaluation	Potential Impact	Impact Without Mitigation				Proposed Mitigation / Mitigating Factors	Proposed Enhancements	Residual Impact
			Quality	Magnitude / Extent	Duration	Significance			
HABITATS									
Eroding/Upland Rivers (FW1) Drainage ditches (FW4)	Local Importance (Higher Value)	<p>Construction Phase: Loss of habitat. Deterioration of water quality from construction-related pollutants.</p> <p>Operational Phase: None identified.</p>	Negative	Local	Permanent	Moderate	Best practice development standards outlined in various sections CEMP. SuDS measures.	None	Imperceptible
Scrub (WS1)	Local Importance (Higher Value)	<p>Construction Phase: Loss of habitat</p> <p>Operational Phase: None identified.</p>	Negative	Local	Permanent	Moderate	Mitigation 4: Tree Protection Landscape Design Plan	None	Imperceptible
All Habitats	Local Importance (Higher Value)	<p>Construction Phase: Spread of Invasive Flora</p> <p>Operational Phase: Creation of habitats</p>	Negative	Local	Long-term	Significant	Mitigation 1: Japanese Knotweed Mitigation 2: Biosecurity	Enhancement 1: Pollinator Habitat Enhancement 4: Amphibian and Lizard Hibernacula	Positive, Local, Permanent, Moderate

Key Ecological Resource	Evaluation	Potential Impact	Impact Without Mitigation				Proposed Mitigation / Mitigating Factors	Proposed Enhancements	Residual Impact
			Quality	Magnitude / Extent	Duration	Significance			
		Spread of Invasive Flora	<i>Negative</i>	<i>Local</i>	<i>Long-term</i>	<i>Moderate</i>	Mitigation 8: Invasive Species Management		
FAUNA									
Bat Assemblage	Local Importance (Higher Value)	Construction Phase: Disturbance from lighting.	<i>Negative</i>	<i>Local</i>	<i>Short-term</i>	<i>Moderate</i>	Mitigation 3: Construction Phase Lighting	Enhancement 2: Bat Boxes	Negative, Local, Slight
		Loss of potential roost habitat in trees.	<i>Negative</i>	<i>Local</i>	<i>Permanent</i>	<i>Slight</i>			
		Risk of injury/death from demolition on roosting bats.	<i>Negative</i>	<i>Local</i>	<i>Permanent</i>	<i>Slight</i>			
		Operational Phase: Disturbance from lighting	<i>Negative</i>	<i>Local</i>	<i>Permanent</i>	<i>Moderate</i>			
		Creation of habitat	<i>Positive</i>	<i>Local</i>	<i>Permanent</i>	<i>Slight</i>			
Potential Breeding Bird Assemblage	Local Importance (Higher Value)	Construction Phase: Habitat loss.	<i>Negative</i>	<i>Local</i>	<i>Permanent</i>	<i>Moderate</i>	Mitigation 6: Vegetation Clearance Best practice development	Enhancement 3: Swift Boxes.	Imperceptible
		Disturbance from noise & dust.	<i>Negative</i>	<i>Local</i>	<i>Short-term</i>	<i>Slight</i>			

Key Ecological Resource	Evaluation	Potential Impact	Impact Without Mitigation				Proposed Mitigation / Mitigating Factors	Proposed Enhancements	Residual Impact
			Quality	Magnitude / Extent	Duration	Significance			
		Operational Phase: Habitat creation providing new suitable breeding bird habitat.	<i>Positive</i>	<i>Local</i>	<i>Permanent</i>	<i>Slight</i>	standards as per CEMP.		
Small Mammals	Local Importance (Higher value)	Construction Phase: Habitat loss.	<i>Negative</i>	<i>Local</i>	<i>Permanent</i>	<i>Slight</i>	Mitigation 6: Vegetation Clearance Mitigation 7: Waste and Site Management Best practice development standards as per CEMP.	Enhancement 4: Hibernacula	Imperceptible
		Risk of injury or death during vegetation clearance and / or entrapment in construction-related rubbish.	<i>Negative</i>	<i>Local</i>	<i>Short-term</i>	<i>Moderate</i>			
		Disturbance from noise, dust and/or lighting.	<i>Negative</i>	<i>Local</i>	<i>Short-term</i>	<i>Slight</i>			
		Operational Phase: Disturbance from lighting	<i>Negative</i>	<i>Local</i>	<i>Permanent</i>	<i>Moderate</i>			
		Habitat creation.	<i>Positive</i>	<i>Local</i>	<i>Permanent</i>	<i>Slight</i>			
Amphibians	Local Importance (Higher Value)	Construction Phase: Loss of habitats.	<i>Negative</i>	<i>Local</i>	<i>Permanent</i>	<i>Moderate</i>	Mitigation 6: Vegetation Clearance	Enhancement 4: Hibernacula	Imperceptible
		Risk of injury or death during vegetation	<i>Negative</i>	<i>Local</i>	<i>Short-term</i>	<i>Moderate</i>			

Key Ecological Resource	Evaluation	Potential Impact	Impact Without Mitigation				Proposed Mitigation / Mitigating Factors	Proposed Enhancements	Residual Impact
			Quality	Magnitude / Extent	Duration	Significance			
		clearance or from other construction activities. Risk of deterioration of water quality from construction-related pollutants. Operational Phase: Risk of deterioration of water quality from construction-related pollutants Habitat creation.	<i>Negative</i>	<i>Local</i>	<i>Short-term</i>	<i>Imperceptible</i>	Mitigation 7: Waste and Site Management Best practice development standards as per CEMP. SuDS measures.		
Common Lizard	Local Importance (Higher Value)	Construction Phase: Habitat loss Operational Phase: Habitat creation	<i>Negative</i>	<i>Local</i>	<i>Permanent</i>	<i>Moderate</i>	Mitigation 6: Vegetation Clearance Mitigation 7: Waste and Site Management Best practice development standards as per CEMP.	Enhancement 4: Hibernacula	Imperceptible

Key Ecological Resource	Evaluation	Potential Impact	Impact Without Mitigation				Proposed Mitigation / Mitigating Factors	Proposed Enhancements	Residual Impact
			Quality	Magnitude / Extent	Duration	Significance			
Fish assemblage	Local Importance (Higher Value)	<u>Construction Phase:</u> Risk of deterioration of water quality from construction-related pollutants.	<i>Negative</i>	<i>Local</i>	<i>Short-term</i>	<i>Imperceptible</i>	Best practice development standards as per CEMP.	None.	Imperceptible
		<u>Operational Phase:</u> Water quality deterioration.	<i>none</i>	<i>none</i>	<i>none</i>	<i>none</i>	SuDS measures.		

9 CONCLUSION

The habitats and species recorded on Site are common and widespread throughout the surrounding landscape, and as such, residual impacts are not considered significant.

It is considered that, provided the mitigation measures proposed within this Report together with all best practice development standards as outlined in the CEMP are carried out in full, the mitigation and monitoring measures outlined by the invasive species treatment specialist, and the subsequent appropriate mitigation measures and monitoring practises are put in place, there will be no significant negative impact to any KER habitat, species group or biodiversity as a result of the Proposed Development.

The newly created habitats will also provide an enhancement in local foraging and roosting resources for some of the identified KERs, such as local wildlife, including birds, small mammals, bats, amphibians and lizard. The riparian habitat created on Site will establish itself into the existing ecological corridors connecting the Site to the wider environment.

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APPENDIX I – LEGISLATION AND POLICY

International Legislation

EU Birds Directive

The Birds Directive constitutes a level of general protection for all wild birds throughout the European Union. Annex I of the Birds Directive includes a total of 194 bird species that are considered rare, vulnerable to habitat changes or in danger of extinction within the European Union. Article 4 establishes that there should be a sustainable management of hunting of listed species, and that any large scale non-selective killing of birds must be outlawed. The Directive requires the designation of Special Protection Areas (SPAs) for: listed and rare species, regularly occurring migratory species and for wetlands which attract large numbers of birds. There are 25 Annex I species that regularly occur in Ireland.

EU Habitats Directive

The Habitats Directive aims to protect some 220 habitats and approx. 1000 species throughout Europe. The habitats and species are listed in the Directives annexes where Annex I covers habitats and Annex II, IV and V cover species. There are 59 Annex I habitats in Ireland and 33 Annex IV species which require strict protection wherever they occur. The Directive requires the designation of Special Areas of Conservation (SACs) for areas of habitat deemed to be of European interest. The SACs together with the SPAs from the Birds Directive form a network of protected sites called Natura 2000.

Bern and Bonn Convention

The Convention on the Conservation of European Wildlife and Natural Habitats (Bern Convention 1982) was enacted to conserve all species and their habitats. The Convention on the Conservation of Migratory Species of Wild Animals (Bonn Convention 1979, enacted 1983) was introduced in order to give protection to migratory species across borders in Europe.

Ramsar Convention

The Ramsar Convention on Wetlands is an intergovernmental treaty signed in Ramsar, Iran, in 1971. The treaty is a commitment for national action and international cooperation for the conservation of wetlands and their resources. In Ireland there are currently 45 Ramsar sites which cover a total area of 66,994ha.

Water Framework Directive

The EU Water Framework Directive (WFD) 2000/60/EC is an important piece of environmental legislation which aims to protect and improve water quality. It applies to rivers, lakes, groundwater, estuaries, and coastal waters. The Water Framework Directive was agreed by all individual EU member states in 2000, and its first cycle ran from 2009 – 2015. The Directive runs in 6-year cycles; the second cycle ran from 2016 – 2021, and the current (third) cycle runs from 2022-2027. The aim of the WFD is to prevent any deterioration in the existing status of water quality, including the protection of good and high-water quality status where it exists. The WFD requires member states to manage their water resources on an integrated basis to achieve at least 'good' ecological status, through River Basin Management Plans (RBMP), by 2027.

National Legislation

Wildlife Act 1976 and amendments

The Wildlife Act 1976 was enacted to provide protection to birds, animals, and plants in Ireland and to control activities which may have an adverse impact on the conservation of wildlife. With regard to the listed species, it is an offence to disturb, injure or damage their breeding or resting place wherever these occur without an appropriate licence from the National Parks and Wildlife Service (NPWS). This list includes all wild birds along with their nests and eggs. Intentional destruction of an active nest from the building stage up until the chicks have fledged is an offence. This includes the cutting of hedgerows from the 1st of March to the 31st of August. The act also provides a mechanism to give statutory protection to Natural Heritage Areas (NHAs). The Wildlife Amendment Act 2000 widened the scope of the Act to include most species, including the majority of fish and aquatic invertebrate species which were excluded from the 1976 Act.

The current list of plant species protected by Section 21 of the Wildlife Act, 1976 (and amendments) is set out in the Flora (Protection) Order, 2015 (S.I. No. 356/2015). The Flora (Protection) Order affords protection to several species of plant in Ireland, including 68 vascular plants, 40 mosses, 25 liverworts, 1 stonewort and 1 lichen. This Act makes it illegal for anyone to uproot, cut or damage any of the listed plant species and it also forbids anyone from altering, interfering, or damaging their habitats. This protection is not confined to within designated conservation sites and applies wherever the plants are found.

EU Habitats Directive 1992 and EC (Birds and Natural Habitats) Regulations 2011

The EU Directive on the Conservation of Natural Habitats and of Wild Fauna and Flora (Habitats Directive 1992) provides protection to particular species and habitats throughout Europe. The Habitats Directive has been transposed into Irish law through the EC (Birds and Natural Habitats) Regulations 2011.

Annex IV of the EU Habitats Directive provides protection to a number of listed species, wherever they occur. Under Regulation 23 of the Habitats Directive, any person who, in regard to the listed species, “Deliberately captures or kills any specimen of these species in the wild, deliberately disturbs these species particularly during the period of breeding, rearing, hibernation and migration, deliberately takes or destroys eggs from the wild or damages or destroys a breeding site or resting place of such an animal shall be guilty of an offence.”

Invasive Species Legislation

Certain plant species and their hybrids are listed as Invasive Alien Plant Species in Part 1 of the Third Schedule of the *European Communities (Birds and Natural Habitats) Regulations 2011* (SI 477 of 2011, as amended). In addition, soils and other material containing such invasive plant material, are classified in Part 3 of the Third Schedule as vector materials and are subject to the same strict legal controls.

Failure to comply with the legal requirements set down in this legislation can result in either civil or criminal prosecution, or both, with very severe penalties accruing. Convicted parties under the Act can be fined up to €500,000.00, jailed for up to 3 years, or both.

Extracts from the relevant sections of the regulations are reproduced below.

“49(2) Save in accordance with a licence granted [by the Department of Arts, Heritage and the Gaeltacht], any person who plants, disperses, allows or causes to disperse, spreads or otherwise causes to grow in anyplace [a restricted non-native plant], shall be guilty of an offence.

49(3) ... it shall be a defence to a charge of committing an offence under paragraph (1) or (2) to prove that the accused took all reasonable steps and exercised all due diligence to avoid committing the offence.

50(1) Save in accordance with a licence, a person shall be guilty of an offence if he or she [...] offers or exposes for sale, transportation, distribution, introduction, or release—

(a) an animal or plant listed in Part 1 or Part 2 of the Third Schedule,

(b) anything from which an animal or plant referred to in subparagraph (a) can be reproduced or propagated, or

(c) a vector material listed in the Third Schedule, in any place in the State specified in the third column of the Third Schedule in relation to such an animal, plant or vector material.”

National Biodiversity Action Plan 2017-2021

The National Biodiversity Plan (NBAP) 2017-2021, the third such plan for Ireland, captures the objectives, targets and actions for biodiversity that will be undertaken by a wide range of government, civil society and private sectors to achieve Ireland’s Vision for Biodiversity. The NBAP provides a framework to track and assess progress towards Ireland’s Vision for Biodiversity over a five-year timeframe from 2017 to 2021. To achieve the Vision, seven strategic objectives were identified in the second NBAP “Actions for Biodiversity 2011-2016”. The continued implementation of the objectives from the second NBAP has been retained for the new NBAP of 2017-2021. Actions required to achieve the strategic objectives as well as the lead and key partners responsible for their implementation are set out for each of the objectives and their targets (Table A1).

TABLE A1: OBJECTIVES AND TARGETS OF THE NATIONAL BIODIVERSITY ACTION PLAN 2017-2021.

Objective	Target
1: Mainstream biodiversity into decision-making across all sectors	1.1: Shared responsibility for the conservation of biodiversity and the sustainable use of its components is fully recognised, and acted upon, by all sectors.
	1.2: Strengthened legislation in support of tackling biodiversity loss in Ireland.
2: Strengthen the knowledge base for conservation, management and sustainable use of biodiversity	2.1: Knowledge of biodiversity and ecosystem services has substantially advanced our ability to ensure conservation, effective management, and sustainable use by 2021.
3: Increase awareness and appreciation of biodiversity and ecosystems services	3.1: Enhanced appreciation of the value of biodiversity and ecosystem services amongst policy makers, businesses, stakeholders, local communities, and the general public.
4: Conserve and restore biodiversity and ecosystem services in the wider countryside	4.1: Optimised opportunities under agriculture and rural development, forestry and other relevant policies to benefit biodiversity.
	4.2: Principal pollutant pressures on terrestrial and freshwater biodiversity substantially reduced by 2020.
	4.3: Optimised benefits for biodiversity in Flood Risk Management Planning and drainage schemes.
	4.4: Harmful invasive alien species are controlled and there is reduced risk of introduction and/or spread of new species

Objective	Target
	4.5: Improved enforcement of wildlife law
5: Conserve and restore biodiversity and ecosystem services in the marine environment	5.1: Progress made towards good ecological and environmental status of marine waters over the lifetime of this Plan.
	5.2: Fish stock levels maintained or restored to levels that can produce maximum sustainable yield, where possible, no later than 2020.
6: Expand and improve management of protected areas and species	6.1: Natura 2000 network designated and under effective conservation management by 2020.
	6.2: Sufficiency, coherence, connectivity, and resilience of the protected areas network substantially enhanced by 2020.
	6.3: No protected species in worsening status by 2020; majority of species in, or moving towards, favourable status by 2021.
7: Strengthen international governance for biodiversity and ecosystem services	7.1: Strengthened support for biodiversity and ecosystem services in external assistance.
	7.2: Enhanced contribution to international governance for biodiversity and ecosystem services.
	7.3: Enhanced cooperation with Northern Ireland on common issues.
	7.4: Reduction in the impact of Irish trade on global biodiversity and ecosystem services.

Louth County Development Plan 2021-2027

Chapter 8 of the Louth County Development Plan (CDP) 2021-2027 outlines the policies and objectives for Natural Heritage, Biodiversity and Green Infrastructure, including a number of policies addressing the importance of protecting biodiversity and ecological corridors. The policies relevant to this EclA are outlined below:

NBG2: *“To promote and implement the objectives of the Local Biodiversity Action Plan for County Louth 2021 - 2026 and any subsequent Louth Biodiversity Action Plan published during the life of this Plan.”*

NBG3: “To protect and conserve Special Areas of Conservation (SACs) and Special Protection Areas (SPAs) designated under the EU Habitats and Birds Directives.”

NBG8: “To consult with the National Parks and Wildlife Service, taking account of their views and any licensing requirements, when undertaking, approving or authorising development, which is likely to affect plant, bird or other animal species protected by law.”

NBG9: “To ensure that proposals for development, where appropriate, protect and conserve biodiversity sites outside designated sites and require an appropriate level of ecological assessment by suitably qualified professionals to accompany development proposals likely to impact on such sites.”

NBG11: “Where feasible, ensure that no ecological networks, or parts thereof, which provide significant connectivity between areas of local biodiversity, are lost without remediation as a result of implementation of this Plan.”

NBG12: “Prevent and control the spread of invasive plant and animal species within the County.”

NBG13: “Development sites must be investigated for the presence of invasive species, which if present must be treated and/or eradicated in accordance with best practice. Where appropriate, Invasive Species Management Plans will be prepared for such sites.”

NBG19: “To ensure that an appropriate level of ecological assessment is carried out for proposals involving drainage, infill or reclamation of wetland habitats.”

NBG20: “To protect and enhance wetland sites that have been rated A (International), B (National), C+ (County), C and D importance in the Louth Wetland Surveys and any subsequent versions thereof.”

NBG31: “Where in exceptional circumstances, trees and or hedgerows are required to be removed in order to facilitate development, this shall be done outside nesting season and there shall be a requirement that each tree felled is replaced at a ratio of 10:1 with native species and each hedgerow removed is to be replaced with a native species. In Drogheda and Dundalk, replacement trees will be required at a ratio of 5:1 where the removal of trees is required in order to facilitate development.”

NBG33: “To assess the implications of proposed development on significant trees and hedgerows located on lands that are being considered for development, seeking their incorporation into design proposals where appropriate and in compliance with procedures detailed in Appendix 6.”

NBG41: “To support the green infrastructure network of County Louth and ensure its implementation in the assessment of all development proposals to prevent adverse impact on the ecological connectivity of County Louth’s Core Areas.”

NBG42: “To require the use of and develop the green infrastructure network, and support re-establishing connectivity to ensure the conservation and enhancement of biodiversity and as a supplementary guide for the protection and conservation of the European Sites in County Louth.”

NBG44: “To protect, maintain, and enhance the natural and organic character of the watercourses in the County, including opening up to daylight where safe and feasible. The creation and/or enhancement of riparian buffer zones will be required where possible. All proposed coastal walkways will be required to comply with the Habitats, EIA and SEA Directives.”

NBG46: “To develop linear parks, particularly along waterways, and to link existing parks and open spaces in order to provide green chains that promote permeability for pedestrians and cyclists in the Regional Growth Centres of Drogheda and Dundalk.”

NBG49: “To require the integration of green infrastructure and inclusion of native planting schemes in all development proposals in landscaped areas, open spaces and areas of public space.”

NBG57: “To ensure that no development, including clearing or storage of materials, takes place within a minimum distance of 10m measured from each bank of any river, stream or watercourse.”

In addition, the CDP 2021-20278 provides a suite of objectives to support plans aimed at enhancing and protecting biodiversity at a local and national level, such as the National Biodiversity Action Plan 2017-2021 and the Louth Biodiversity Action Plan 2021 – 2026. The biodiversity objectives also outline a number of measures to protect the County’s biodiversity, through supporting measures to prevent invasive species introduction and spread, and recognising and protecting important County Geological Sites.

Louth Biodiversity Action Plan 2021 – 2026

Louth Biodiversity Action Plan 2021 – 2026 is set out to protect and improve biodiversity through specific actions:

- **Objective 1:** Mainstream biodiversity into decision-making across all sectors.
- **Objective 2:** Strengthen the knowledge base for conservation, management, and sustainable use of biodiversity.
- **Objective 3:** Increase awareness and appreciation of biodiversity and ecosystem services.
- **Objective 4:** Conserve and restore biodiversity and ecosystem services in the wider countryside.
- **Objective 5:** Conserve and restore biodiversity and ecosystem services in the marine environment.
- **Objective 6:** Expand and improve management of protected areas and species.

APPENDIX II – VALUE OF ECOLOGICAL RESOURCES

The criteria outlined in the table below, taken from the *Guidelines for Assessment of Ecological Impacts of National Road Schemes* published by the NRA, were used for assigning value to designated sites, habitats and species within the Site of the Proposed Development and surrounding area.

TABLE B1. DESCRIPTION OF VALUES FOR ECOLOGICAL RESOURCES BASED ON GEOGRAPHIC HIERARCHY OF IMPORTANCE (NRA, 2009B).

Importance	Criteria
International Importance	<ul style="list-style-type: none"> - 'European Site' including Special Area of Conservation (SAC), Site of Community Importance (SCI), Special Protection Area (SPA) or proposed Special Area of Conservation. - Proposed Special Protection Area (pSPA). - Site that fulfils the criteria for designation as a 'European Site' (see Annex III of the Habitats Directive, as amended). - Features essential to maintaining the coherence of the Natura 2000 Network - Site containing 'best examples' of the habitat types listed in Annex I of the Habitats Directive. - Resident or regularly occurring populations (assessed to be important at the national level) of the following: <ul style="list-style-type: none"> o Species of bird, listed in Annex I and/or referred to in Article 4(2) of the Birds Directive; and/or o Species of animal and plants listed in Annex II and/or IV of the Habitats Directive - Ramsar Site (Convention on Wetlands of International Importance Especially Waterfowl Habitat 1971). - World Heritage Site (Convention for the Protection of World Cultural & Natural Heritage, 1972). - Biosphere Reserve (UNESCO Man & The Biosphere Programme) - Site hosting significant species populations under the Bonn Convention (Convention on the Conservation of Migratory Species of Wild Animals, 1979). - Site hosting significant populations under the Berne Convention (Convention on the Conservation of European Wildlife and Natural Habitats, 1979). - Biogenetic Reserve under the Council of Europe. - European Diploma Site under the Council of Europe. - Salmonid water designated pursuant to the European Communities (Quality of Salmonid Waters) Regulations, 1988, (S.I. No. 293 of 1988).
National Importance	<ul style="list-style-type: none"> - Site designated or proposed as a Natural Heritage Area (NHA). - Statutory Nature Reserve. - Refuge for Fauna and Flora protected under the Wildlife Acts. - National Park. - Undesignated site fulfilling the criteria for designation as a Natural Heritage Area (NHA); Statutory Nature Reserve; Refuge for Fauna and Flora protected under the Wildlife Act; and/or a National Park. - Resident or regularly occurring populations (assessed to be important at the national level) of the following: <ul style="list-style-type: none"> o Species protected under the Wildlife Acts; and/or o Species listed on the relevant Red Data list. o Site containing 'viable areas' of the habitat types listed in Annex I of the Habitats Directive
County Importance	<ul style="list-style-type: none"> - Area of Special Amenity. - Area subject to a Tree Preservation Order. - Area of High Amenity, or equivalent, designated under the County Development Plan. - Resident or regularly occurring populations (assessed to be important at the County level) of the following:

Importance	Criteria
	<ul style="list-style-type: none"> ○ Species of bird, listed in Annex I and/or referred to in Article 4(2) of the Birds Directive; ○ Species of animal and plants listed in Annex II and/or IV of the Habitats Directive; ○ Species protected under the Wildlife Acts; and/or ○ Species listed on the relevant Red Data list. ○ Site containing area or areas of the habitat types listed in Annex I of the Habitats Directive that do not fulfil the criteria for valuation as of International or National importance. <ul style="list-style-type: none"> - County important populations of species; or viable areas of semi-natural habitats; or natural heritage features identified in the National or Local BAP; if this has been prepared. - Sites containing semi-natural habitat types with high biodiversity in a county context and a high degree of naturalness, or populations of species that are uncommon within the county. - Sites containing habitats and species that are rare or are undergoing a decline in quality or extent at a national level.
Local Importance (higher value)	<ul style="list-style-type: none"> - Locally important populations of priority species or habitats or natural heritage features identified in the Local BAP, if this has been prepared; - Resident or regularly occurring populations (assessed to be important at the Local level) of the following: <ul style="list-style-type: none"> ○ Species of bird, listed in Annex I and/or referred to in Article 4(2) of the Birds Directive; ○ Species of animal and plants listed in Annex II and/or IV of the Habitats Directive; ○ Species protected under the Wildlife Acts; and/or ○ Species listed on the relevant Red Data list. ○ Sites containing semi-natural habitat types with high biodiversity in a local context and a high degree of naturalness, or populations of species that are uncommon in the locality; - Sites or features containing common or lower value habitats, including naturalised species that are nevertheless essential in maintaining links and ecological corridors between features of higher ecological value.
Local Importance (lower value)	<ul style="list-style-type: none"> - Sites containing small areas of semi-natural habitat that are of some local importance for wildlife; - Sites or features containing non-native species that is of some importance in maintaining habitat links.

APPENDIX III – EPA IMPACT ASSESSMENT CRITERIA

In line with the EPA Guidelines (EPA, 2022), the following terms are defined when quantifying the quality of effects:

Quality	Definition
Positive Effects	A change which improves the quality of the environment (for example, by increasing species diversity, or improving the reproductive capacity of an ecosystem, or by removing nuisances or improving amenities)
Neutral Effects	No effects or effects that are imperceptible, within normal bounds of variation or within the margin of forecasting error.
Negative/adverse Effects	A change which reduces the quality of the environment (for example, lessening species diversity or diminishing the reproductive capacity of an ecosystem, or damaging health or property or by causing nuisance).

Criteria used to define significance of effects.

In line with the EPA Guidelines (EPA, 2022), the following terms are defined when quantifying significance of impacts:

Significance of Effects	Definition
Imperceptible	An effect capable of measurement but without significant consequences.
Not significant	An effect which causes noticeable changes in the character of the environment but without significant consequences.
Slight	An effect which causes noticeable changes in the character of the environment without affecting its sensitivities.
Moderate	An effect that alters the character of the environment in a manner that is consistent with existing and emerging baseline trends.
Significant	An effect which, by its character, magnitude, duration or intensity, alters a sensitive aspect of the environment.
Very significant	An effect which, by its character, magnitude, duration or intensity, significantly alters most of a sensitive aspect of the environment.
Profound	An effect which obliterates sensitive characteristics.

Criteria used to define duration of effects.

In line with the EPA Guidelines (EPA, 2022), the following terms are defined when quantifying duration and frequency of effects:

Quality of Effects	Definition
Momentary	Effects lasting from seconds to minutes
Brief	Effects lasting less than a day
Temporary	Effects lasting less than a year
Short-term	Effects lasting one to seven years
Medium term	Effects lasting seven to fifteen years
Long-term	Effects lasting fifteen to sixty years

Quality of Effects	Definition
Permanent	Effects lasting over sixty years
Reversible	Effects that can be undone, for example through remediation or restoration.
Frequency of Effects	Describe how often the effect will occur (once, rarely, occasionally, frequently, constantly – or hourly, daily, weekly, monthly, annually).

APPENDIX IV – SITE PHOTOGRAPHS



Dry Meadows and Grassy Verges (GS2) and Scrub (WS1) habitat within the west of the Site.



Densely vegetated Ramparts Stream (Eroding/Upland Rivers (FW1)) along the north boundary of the Site.



Wet grassland (GS4) within the east of the Site.



Dead tree with crevices and peeling bark along the bank of the Ramparts Stream.



Japanese knotweed recorded within the Site.



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