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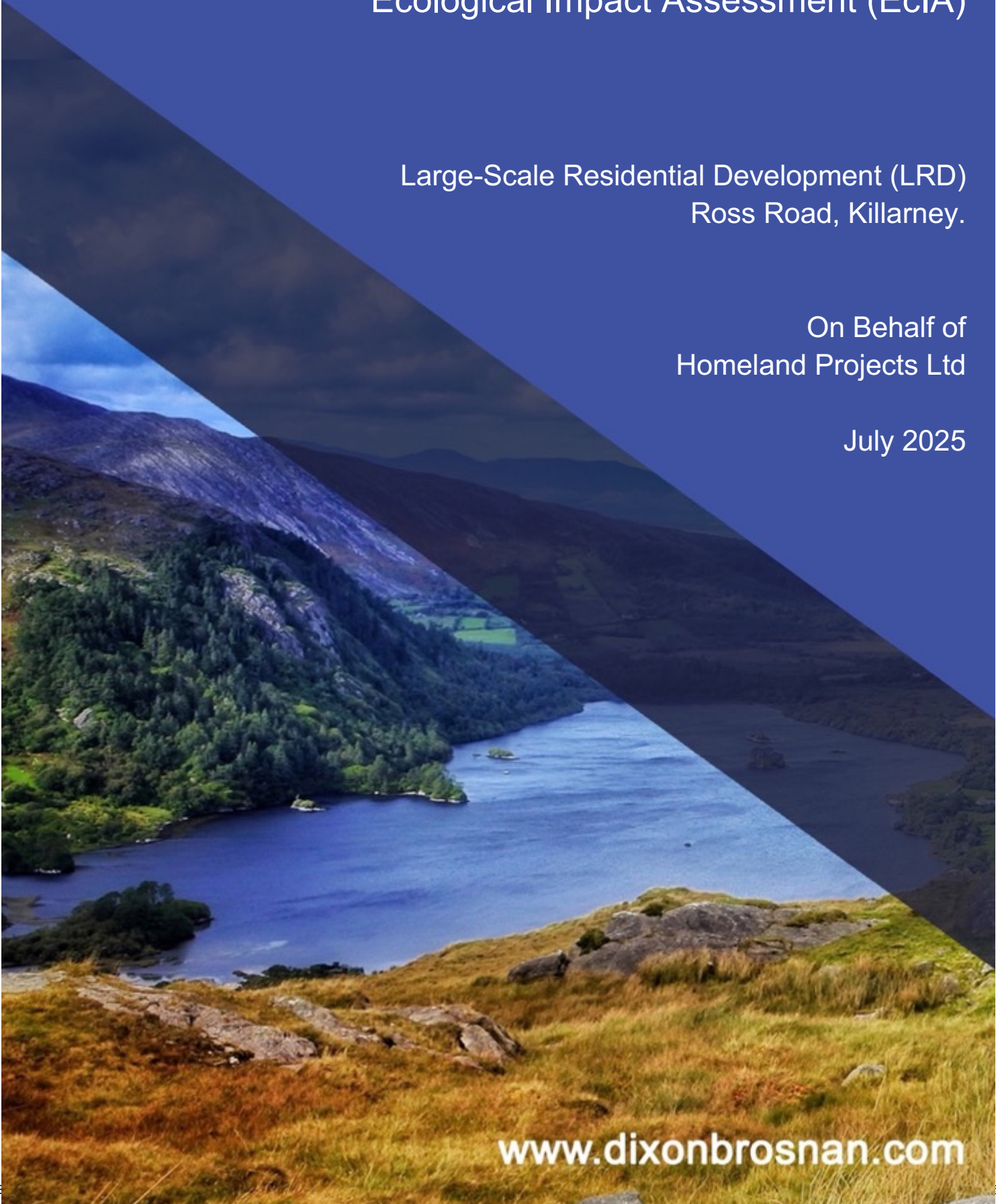
Ecological Impact Assessment (EcIA)

Large-Scale Residential Development (LRD)
Ross Road, Killarney.

On Behalf of
Homeland Projects Ltd

July 2025

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1. Introduction

DixonBrosnan Environmental Consultants were commissioned to assess the potential impacts of a proposed Large-Scale Residential Development (LRD) at Ross Road, Killarney, Co. Kerry, and all associated site works on flora and fauna. This report describes and evaluates the habitats with their representative flora and fauna and addresses the potential impacts of the development on the ecology of the site and the surrounding area.

2. Methodology

2.1 Introduction

This appraisal is based on surveys of the proposed development site and a review of desktop data. Although not part of an environmental impact assessment report (EIAR) this report follows the structure and protocols detailed in *Advice notes for preparing Environmental Impact Statements* (EPA Draft, 2015) and *Guidelines on the Information to be Contained in Environmental Impact Assessment Reports* (EPA 2022).

2.2 Desktop Review

A desktop study was carried out to identify features of ecological value occurring within the proposed development site and in close proximity to it. A desktop review also allows the key ecological issues to be identified early in the appraisal process and facilitates the planning of surveys. Sources of information utilised for this report include the following:

- National Parks & Wildlife Service (NPWS) - www.npws.ie
- Environmental Protection Agency (EPA) – www.epa.ie
- National Biodiversity Data Centre (NBDC)– www.biodiversityireland.ie
- Kerry County Council Biodiversity Action Plans 2022-2028;
- Kerry County Council County Development Plan 2022-2028.
- Bat Conservation Ireland – <http://www.batconservationireland.org>;
- Birdwatch Ireland - <http://www.birdwatchireland.ie/>
- Invasive Species Ireland - <http://www.invasivespeciesireland.com/>
- National Parks & Wildlife Service – Scientific Unit and
- Killarney D0037-01 Wastewater Treatment Plant (WWTP) Annual Environmental Report 2023.

This report follows the Environmental Protection Agency's *Guidelines on the information to be contained in Environmental Impact Assessment Reports* (EPA 2022). It also takes account of the *Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment* (Department of Environment, Community and Local Government, August 2018), *Assessment of Ecological Impacts of National Road Schemes* (National Roads Authority, 2009) Chartered Institute of Ecology and Environmental Management *Guidelines*

on *Ecological Impact Assessment in the UK and Ireland, 2nd edition* (CIEEM 2016) and *Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater and Coastal, Version 1.1* (CIEEM, 2019).

Although not forming part of an EIAR, this report generally follows the Environmental Protection Agency's *Guidelines on the information to be contained in Environmental Impact Assessment Reports* (EPA 2022). It also takes account of the Draft Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment (Department of Environment, Community and Local Government, August 2018), Assessment of Ecological Impacts of National Road Schemes (National Roads Authority, 2009) Chartered Institute of Ecology and Environmental Management *Guidelines on Ecological Impact Assessment in the UK and Ireland, 2nd edition* (CIEEM 2016) and *Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater and Coastal, Version 1.1* (CIEEM, 2019).

Reference was also made to the following key documents where relevant:

- *Best Practice Guidance for Habitat Survey and Mapping* (Heritage Council, 2011)
- *A Guide to Habitats in Ireland* (Fossitt, 2000)
- *Guidelines for the treatment of Badgers prior to the construction of National Road Schemes. National Roads Authority, Dublin* (National Roads Authority (NRA) 2005a)
- *Best Practice Guidelines for the Conservation of Bats in the Planning of National Road Schemes* (National Roads Authority (NRA) 2005b)
- *Guidelines for the treatment of bats during the construction of national road schemes* (National Roads Authority (NRA) 2005c)
- *Guidelines for the protection and preservation of trees, hedgerows and scrub prior to, during and post construction of national road schemes.* (National Roads Authority (NRA) 2006)
- *Guidelines for the treatment of Otters prior to the construction of National Road Schemes* (National Roads Authority (NRA) 2008)
- *Bat Surveys for Professional Ecologists: Good Practice Guidelines (4th edn)*' (Collins, J. (ed.), 2023)
- *Bat mitigation guidelines for Ireland v2.* Marnell, F., Kelleher, C. & Mullen, E. (2022) *Irish Wildlife Manuals, No. 134. National Parks and Wildlife Service, Department of Housing, Local Government and Heritage, Ireland*
- NPWS & VWT (2022) *Lesser Horseshoe Bat Species Action Plan 2022-2026. National Parks and Wildlife Service, Department of Housing, Local Government and Heritage, Ireland.*
- *Bird Census Techniques* Bibby, C.J., Burgess, N.D., Hill, D.A. & Mustoe, S.H. (2000) and

- *Bird Monitoring Methods - a Manual of Techniques for Key UK Species*. Gilbert, G., Gibbons, D.W. & Evans, J. (1998)

2.2 Legislative Context

Flora and fauna in Ireland are protected at a national level by the Wildlife Act 1976, as amended, and the European Communities (Birds and Natural Habitats) Regulations 2011. They are also protected at a European level by the EU Habitats Directive (92/43/EEC) and the EU Birds Directive 2009/147/EC.

Under this legislation, sites of nature conservation importance are designated in order to legally protect faunal and floral species and important/vulnerable habitats. The relevant categories of designation are as follows:

- Special Areas of Conservation (SACs) are designated under the European Communities (Birds and Natural Habitats) Regulations 2011 to comply with the EU Habitats Directive (92/43/EEC);
- Special Protection Areas (SPAs) are designated under the EU Birds Directive (79/409/EEC) amended in 2009 as Directive 2009/147/EC; and
- Natural Heritage Areas (NHAs) and proposed Natural Heritage Areas (pNHAs) are listed under the Wildlife (Amendment) Act, 2000, as amended. A NHA is designated for its wildlife value and receives statutory protection. A list of pNHAs was published on a non-statutory basis in 1995, but these have not since been statutorily designated. Consultation with the NPWS is still required if any development is likely to impact on a pNHA.

2.2.1 Relevant European Legislation

- Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora (The Habitats Directive);
- Directive 2009/147/EC of the European Parliament and of the Council on the conservation of wild birds (The Birds Directive);
- Directive 2000/60/EC of the European Parliament and of the Council establishing a framework for the Community action in the field of water policy (The Water Framework Directive);
- Directive 2006/44/EC of the European Parliament and of the Council of 6 September 2006 on the quality of fresh waters needing protection or improvement in order to support fish life (The Fish Directive (consolidated)).

2.2.2 Relevant Irish Legislation

- Wildlife Act 1976 as amended by Wildlife Act 1976 (Protection of Wild Animals) Regulations 1980, Wildlife (Amendment) Act 2000, Wildlife (Amendment) Act 2010, Wildlife (Amendment) Act 2012, European Communities (Wildlife Act, 1976) (Amendment) Regulations 2017 (The Wildlife Act);

- European Communities (Conservation of Wild Birds) Regulations 1985 (S.I. No. 291/1985) as amended by S.I. No. 31/1995 (The Wild Birds Regulations);
- European Communities (Natural Habitats) Regulations 1997 (S.I. No. 94/1997 as amended by S.I. No. 233/1998 and S.I. No 378/2005) (The Habitats Regulations);
- Fisheries (Consolidation) Act, 1959 (as amended) (The Fisheries Act);
- European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. No. 477/2011) (The Habitats Regulations); and
- The Flora (Protection) Order 2022 (S.I. No. 235 of 2022).

2.3 Survey Overview

This assessment is based on surveys at the proposed development site. Site surveys were carried out on the 23rd of September 2024 and 15th of January 2025.

The following surveys were conducted:

- Habitats were mapped according to the classification scheme outlined in the Heritage Council publication *A Guide to Habitats in Ireland* (Fossitt, 2000) and following the guidelines contained in *Best Practice Guidance for Habitat Survey and Mapping* (Heritage Council, 2011). Habitats were cross referenced with Habitats Directive Annex I habitats. The site was also surveyed for invasive species and rare floral species (Wyse *et al.*, 2016; Stace 2019).
- A general mammal survey was carried out in conjunction with the habitat survey following NRA guidelines (NRA 2005b, NRA 2005c, NRA 2008) and
- A night time bat emergence/activity survey was carried out on the 23rd of September 2024, using Elekon batloggers (x 2), Echotouch Touch 2 PRO bat detector and a Pulsar Helion 2 XP50 Pro Thermal Imaging Camera. Surveyors walked along linear features and other habitat features within the proposed development site concentrating on areas which might support bats. The surveys were carried out 15 minutes before sunset. A daytime assessment of tree suitability for roosting bats and Potential Roost Features (PRFs) was carried out on 15th of January 2025. Surveys followed the guidelines set out in Collins (2023). All surveys were carried out during favourable weather conditions.
- The survey was conducted outside the breeding bird season, but general observation on birds present at the site were recorded during site surveys. Birds were identified by sight and song.

This report was prepared by Carl Dixon MSc (Ecological Monitoring) and Dr. Sorcha Sheehy PhD (Ecology/ornithology). Surveys were carried out by Carl Dixon MSc.

Carl Dixon holds an Honours Degree (BSc) in Ecology and a Masters (MSc) in Ecological Monitoring from UCC. He is a senior ecologist who has over 25 years' experience in ecological assessment. Prior to setting up DixonBrosnan Environmental Consultants in 2000, Carl set up

and ran Core Environmental Services which included REPS planning for landowners and ecological assessments.

Carl has particular experience in freshwater ecology, including electrofishing fish stock assessments and water quality assessments. He also has considerable experience in habitat mapping and mammal ecology including survey work and reporting in relation to Badgers and bats. Other competencies include surveys for invasive species and bird surveys.

Carl has extensive experience with regards to EIAR and NIS mitigation and impact assessment. He has experience in large-scale industrial developments with extensive experience in complex assessments as part of multi-disciplinary teams. Such projects include gas pipelines, incinerators, electrical cable routes, oil refineries and quarries.

Sorcha Sheehy PhD (Ecology/ornithology) is an ecologist and ornithologist who has worked for 15 years in environmental consultancy. She has worked on Screening/NISs for a range of small and large-scale projects with expertise in assessing impacts on birds.

Sorcha's PhD research focused on bird behaviour at airports, where she studied bird avoidance behaviour and collision risk to aircraft. Her research involved field observations, post-mortem analysis and radar surveys. Sorcha has worked on bird collision risk assessments at airports throughout Ireland including Dublin airport, Cork airport, Shannon airport and Kerry airport.

During her consultancy work Sorcha carried out field-based surveys and environmental reports including NIS, AA screening and EIARs. Notable projects include the Arklow Bank Wind Park, Indaver Ireland Waste Management Facility at Ringaskiddy, Irving Oil Whitegate Refinery (IOWR), Shannon LNG and Greenlink Interconnector.

3. Receiving Environment

3.1 Existing site

The proposed development site, of c3.8 hectares, is located at the south-west of Killarney town (**Figure 1**). The Ross Road runs along the northern boundary of the site, connecting to the national route N71 to the northeast. Land use in the vicinity of the site is dominated by residential development with existing housing estates located to the east, south and west as well as individual dwellings to the north along the Ross Road.

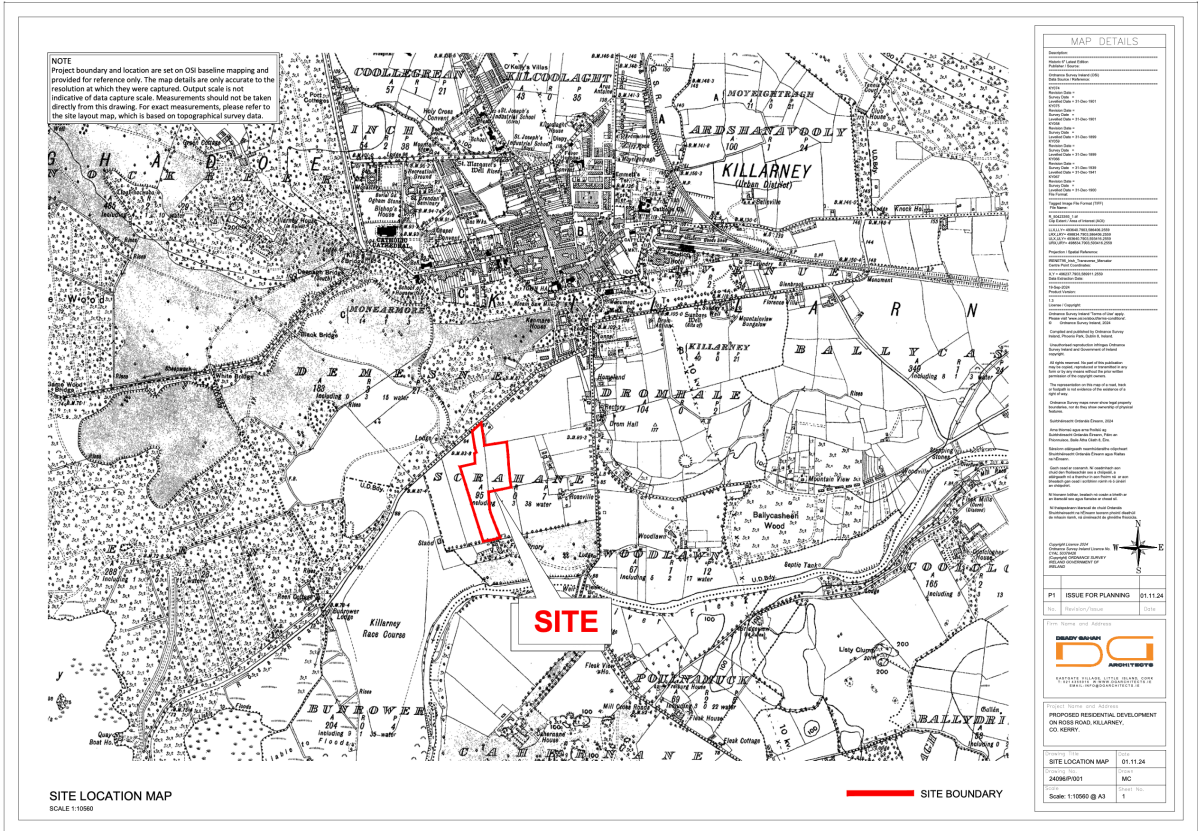


Figure 1. Proposed development site location | Source Deady Gahan

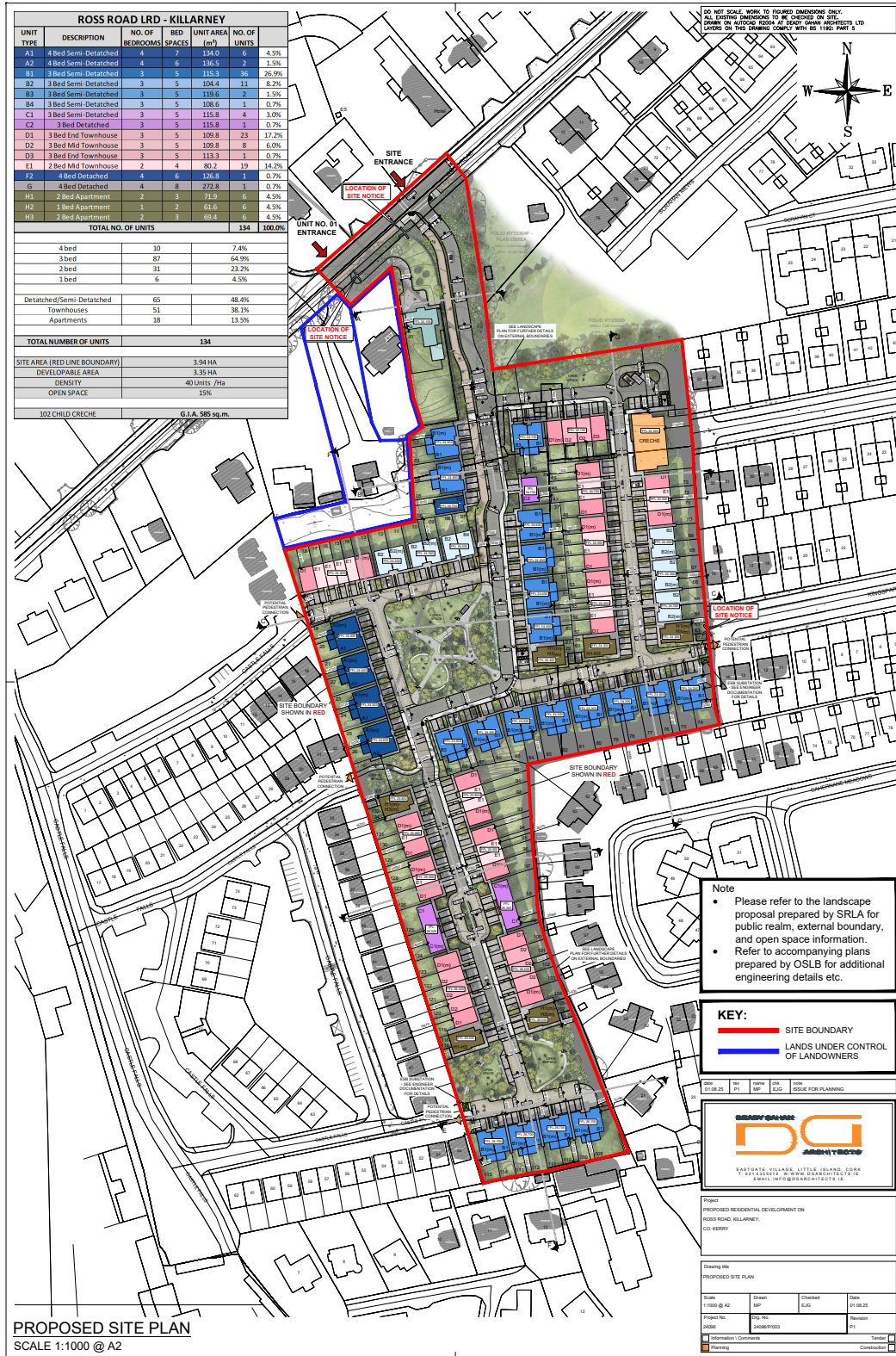


Figure 2. Proposed site layout | Source Deady Gahan Architects

3.2 Proposed development

Homeland Projects Ltd., intend to apply for Permission for a Large-Scale Residential Development (LRD) at a site at the Ross Road, Scrahane, Killarney, County Kerry.

The proposed development will consist of a largescale residential development (LRD), comprising of 134no. residential dwellings as follows: 65no. houses consisting of 10no. 4-bed dwellings and 55no 3-bed dwellings; 51no. townhouses consisting of 32no. 3-bed units and 19no. 2-bed units; and 18no. apartments consisting of 12no. 2-bed units and 6no. 1-bed units.

The proposed development also includes a crèche with capacity to accommodate 102no. children.

The proposed development will include the demolition of existing agricultural sheds; provision for car parking, including EV charging points and bicycle parking. The proposed development will also include the provision of private, communal, and public open spaces; internal roads and pathways; pedestrian and cyclist routes; hard and soft landscaping and boundary treatments; waste storage; plant; signage; a new vehicular and pedestrian access with raised table and pedestrian crossing onto the Ross Road to serve the development; connection to the existing vehicular access serving the dwelling Blossom Gate to provide vehicular access to proposed unit G fronting onto the Ross Road; public lighting; 2no. substations; all associated site development works; and all drainage and foul sewer infrastructure and network works including connections to the existing networks and nature-based SuDS measures.

The proposed site layout is included in **Figure 2**.

3.3 Wastewater

There is an existing 525mm diameter foul line located within the subject site. This foul line is located in close proximity to the northern site boundary, adjacent to Ross Road. This existing foul line services the lands adjacent to Ross Road as well as the neighbourhoods and estates adjacent to the proposed development.

This existing foul line and receiving network eventually discharges to the Killarney Wastewater Treatment Plant. There is an existing 200mm diameter foul sewer that cross the subject site. This sewer will be diverted in coordination with the Uisce Éireann Diversions Team.

A pre-connection feasibility enquiry was made to Uisce Éireann to confirm whether there is adequate capacity in the public network to accommodate the proposed Large-scale Residential Development (CDS 24008215). The proposed connection was deemed feasible with upgrades. The upgrade works required includes the upsizing of approximately 450m of the existing 525mm diameter to a 750mm diameter foul sewer.

It is proposed that this development will be serviced internally by 150mm and 225mm diameter foul sewers and will include the provision of services connections, inspection chambers etc. throughout the site.

Foul sewers have been designed in accordance with the Uisce Éireann 'Standard Details for Wastewater infrastructure' and 'Code of Practice for Wastewater Infrastructure'. In addition, foul sewers have been designed to the Building Regulations 1997, as amended, (referred to within as 'the Building Regulations') and specifically in accordance with the principles and

methods set out in EN 752:2008 and DOE 'Recommendations for Site Development Works' (1998).

In addition, HR Wallingford 'Tables for the Hydraulic Design of Pipes, Sewers and Channels' and Water UK/WRC 'Sewers for Adoption – 6th Edition' have been applied. Values for roughness of uPVC pipes were obtained from Wallingford "Tables for the Hydraulic Design of Pipes, Sewers and Channels" and Wavinsewer systems catalogue.

Using the Uisce Éireann guidelines and parameters, the estimated peak discharge from the development has been calculated as 4,61 l/s with the average discharge being 0,77 l/s.

Foul sewer shall be constructed to comply with the requirements of the Building Regulations 1997 in accordance with the recommendations contained in the Technical Guidance Documents, Section H (revised 2005) and the Uisce Éireann Code of Practice and Standard Details for Wastewater Infrastructure.

3.4 Surface Water

There is no formal surface water network within the subject lands. There is an existing 300mm diameter surface water sewer to the north of the site, within Ross Road. This surface water sewer drains westward and eventually discharges into Lough Leane.

It is proposed to service the proposed development by means of a connection to the existing 300mm diameter surface water pipe to the north.

A number of SuDS features are proposed as part of this development. These have been designed in accordance with CIRIA documents C753, C697 and C609 as follows:

- **Petrol Interceptors:** A proprietary oil/water separator which prevents hazardous chemical and petroleum products from entering watercourses and public sewers. Where deemed appropriate, petrol interceptors have been included and adequately sized as part of the design proposal.
- **Swales:** Broad, shallow drainage channels covered in grass which can treat, convey and attenuate runoff, at source, and can infiltrate to the ground where the subgrade is suitable. Swales also can promote biodiversity. These are located adjacent to roads and shared surfaces.
- **Bioretention Raingardens:** Bioretention Raingardens employs an engineered topsoil and is used to manage polluted urban rainfall runoff in street locations and car parks. These features can contribute significantly to the urban scene and will be designed to meet urban design standards.
- **Tree Pits:** Trees can be planted within a range of infiltration SuDS components to improve their performance, as root growth and decomposition increase soil infiltration capacity. Alternatively, they can be used as standalone within soil-filled tree pits, tree planters or structural soils, collecting and storing runoff and providing treatment via filtration and phytoremediation. Tree pits and planters will be designed to collect and attenuate runoff by providing additional storage within the underlying structure. The soils around trees can also be used to filter out pollutants from runoff directly.

- Tree pits are proposed to be in green space areas to treat and control runoff, while at the same time providing amenity value to adjacent pedestrian, and residential zones. It is also proposed, where possible to fit tree pits along the estate road to drain and treat surface water runoff from the road network. This will allow for treatment of first flush and low flows while high flows will discharge into the surface water network during extreme rainfall events. Rainwater gullies will still be provided downstream of any tree pit to drain runoff during an extreme rainfall event.
- Permeable Pavers: Porous surfacing (paving block or open graded material) which can treat rainwater, at source, and allow infiltration through to an underlying porous subbase where water can be stored within the voids of the subbase before being slowly released to the drainage collection system through natural flow via the porous medium. Partial infiltration systems are proposed and includes a permeable geotextile at its base as well as an outlet to the surface water system. These systems will allow some form of storage for small rainfall events and will result in infiltration, water evaporation and adsorption in small quantities, therefore there will be less runoff from these areas in small rainfall events thus mimicking the natural response for this catchment. Permeable Pavers are proposed for the public car park areas (e.g. creche, amenity parking) as well as in private driveways.
- Rainwater Harvesting: In relation to rainwater harvesting, an option is to provide a rainwater butts at each individual dwelling. This could be located to the rear of each unit. This rainwater butt will only have the ability to catch the rear sloping side of the dwelling and the reuse would be for watering plants. The intention would be that these are provided retrospectively by the homeowner.
- Cellular Attenuation System: Proprietary modular block or arch structure with a maintenance/inspection tunnel for providing underground surface water attenuation storage and can infiltrate run off to the ground where subgrade is suitable.

The site has a number of the existing trees which are to be retained. This has reduced the amount of open space in the development, therefore careful consideration was required in the location of the attenuation systems. There are 3no. Attenuation systems proposed throughout the proposed development, each responsible for managing a sub-catchment within the larger development.

- Basins, wetlands and ponds: Basins, wetlands and ponds on any site allows safe and contained storage for excess rain and storm water as it allows for its release over time into the sewer system at a controlled rate. This removes much of the potential flooding risk caused by the inability for excess water to drain safely. Furthermore, basins, wetlands and ponds can treat, convey and attenuate runoff, at source, and can infiltrate to the ground where the subgrade is suitable. It can also promote biodiversity.

It is proposed to incorporate detention basins in green spaces to compliment the SuDs strategy. These are vegetated depressions designed to store runoff on the surface and infiltrate it gradually into the ground. They are dry except in periods of heavy rainfall.

The detention basins proposed will be located in green areas and will cater for some runoff from adjacent roadways but primarily the open spaces areas where they are situated. The surface water design includes for 2 no detention basins as an initial interception measure,

prior to entering the main network, for surface water run off management of some of the sub-catchments within the larger development.

- **Flow Control Device:** It is proposed to provide a flow control device at strategic locations within the sub-catchments (described above) to restrict the outflow of water from the subject site. The flow control devices will be fitted with a pull cord bypass and a penstock valve, installed on the inlet to the manhole for maintenance purposes.

Surface water runoff will be treated by means of the measures discussed above prior to entering the below ground attenuation system. A manhole with a 450mm deep sump will be provided to intercept and trap silt/sediment, located upstream of each of the attenuation tanks and detention basins.

The proposed SuDS features will reduce the runoff volume through evaporation, transpiration, infiltration and depression storage of the water within each system.

4. Designated Conservation Areas

4.1 European (Natura 2000) Sites

Special Areas of Conservation (SACs) and candidate SACs are protected under the Habitats Directive 92/43/EEC and the European Communities (Birds and Natural Habitats) Regulations 2011, as amended. Special Protection Areas (SPAs) are protected under the Birds Directive 2009/147/EC and European Communities (Birds and Natural Habitats) Regulations 2011, as amended. Collectively, these sites are referred to as Natura 2000 or European sites.

The proposed development site does not form part of any SPA or SAC. Determination of this project's likely Zone of Impact (Zoi) was achieved by assessing all elements of the proposed project against the ecological receptors within the project footprint, in addition to all ecological receptors that could be connected to and subsequently impacted by the proposed project through impact pathways. To this end, the Zoi extends outside of the proposed development footprint to include ecological receptors connected to the project through overlap /intersection, proximity and connectivity to features such as waterbodies. The proposed development site is located within the likely Zoi of two designated sites i.e. Killarney National Park, Macgillycuddy's Reeks and Caragh River Catchment SAC (120m northwest at closest point) and Killarney National Park SPA (280m northeast at closest point) (**Table 1** and **Figure 3** and **Figure 4**).

There are no watercourses within the proposed development site. The River Flesk, part of the Killarney National Park, Macgillycuddy's Reeks and Caragh River Catchment SAC, is located c.175m south of the proposed development site. During operation, surface water will discharge to an existing surface water network along the Ross Road which ultimately discharges to Lough Leane (1.5km west). Surface water run-off/discharges during the construction or operational phases could potentially impact on water quality within the River Flesk and Lough Leane.

Wastewater from the site will ultimately discharge into the Folly Stream (a tributary of Lough Leane) via the Killarney Wastewater treatment plant (WWTP). This could potentially impact on water quality within the Killarney National Park, Macgillycuddy's Reeks and Caragh River Catchment SAC and Killarney National Park SPA.

Therefore, surface water run-off/discharges during the construction or operational phases as well as wastewater discharges from the proposed development could potentially impact on Killarney National Park, Macgillicuddy's Reeks and Caragh River Catchment SAC and Killarney National Park SPA via the River Flesk and Lough Leane. Given the proximity of these European sites, habitats within or near the proposed development area could also potentially provide *ex-situ* foraging grounds for QI/SCI species outside the Killarney National Park, Macgillicuddy's Reeks and Caragh River Catchment SAC and Killarney National Park SPA.

Killarney National Park, Macgillicuddy's Reeks and Caragh River Catchment SAC is a very large site encompasses the mountains, rivers and lakes of the Iveragh peninsula, and the Paps Mountains, which stretch eastward from Killarney towards Millstreet. It is the most mountainous region in Ireland and includes Carrauntoohil (1039m), the highest peak in the country. The underlying geology is almost entirely Old Red Sandstone, although Carboniferous Limestone occurs on the eastern shores of Lough Leane and rhyolitic lavas occur above Lough Guitane. The site is of great ecological interest, with at least ten habitats which are listed on Annex I of the EU Habitats Directive. The site is a SAC selected for blanket bog, yew wood and alluvial woodlands, all priority habitats on Annex I of the E.U. Habitats Directive. The site is also selected as SAC for lowland oligotrophic lakes, upland oligotrophic lakes, floating river vegetation, alpine heath, dry heath, wet heath, molinia meadows, old oak woodlands, rhynchosporion, calaminarian grassland and juniper scrub, all habitats listed on Annex I of the E.U. Habitats Directive. The site is selected for the following species listed on Annex II of the same directive – Killarney fern, slender naiad, freshwater pearl mussel, Kerry slug, marsh fritillary, Killarney shad, Atlantic salmon, brook lamprey, river lamprey, sea lamprey, lesser horseshoe bat and otter. Overall, the site is of high ecological value because of the diversity, quality and extensiveness of many of the habitats and impressive list of rare species of flora and fauna. In recognition of its importance the Killarney National Park has been designated a World Biosphere Reserve.

Killarney National Park SPA is a large site encompasses the lakes and part of the Macgillicuddy's Reeks in the vicinity of Killarney. The underlying geology is Old Red Sandstone, although Carboniferous limestone occurs on the eastern shores of Lough Leane. Lough Leane is the most important and largest (8.6 km along its long axis) of the lakes and is classified as a mesotrophic system. The site is of importance as it supports a good diversity of upland and woodland birds, as well as wintering waterfowl. It is a traditional site for a population of *Anser albifrons flavirostris* - while the numbers are now low, the population is still of importance as it is the most southerly in the country and also feeds entirely on bogs. Upland species which breed within the site include *Falco peregrinus*, *Falco columbarius*, *Lagopus lagopus* and *Turdus torquatus* - the latter two species are Red-listed in Ireland. The extensive woodlands support some scarce breeding birds, notably *Phoenicurus phoenicurus*, *Phylloscopus sibilatrix* and *Sylvia borin*.

Table 1. Designated sites and their location relative to the proposed development site

European Site	Site Code	Distance at Closest Point and potential source-pathway-receptor link	QIs/SCIs
SAC			
Killarney National Park, Macgillicuddy's Reeks and Caragh River Catchment SAC	000365	<p>120m northwest.</p> <p>A source-pathway-receptor link exists between the source (proposed development) and the receptors (Killarney National Park, Macgillicuddy's Reeks and Caragh River Catchment SAC) via a potential pathway (impacts on water quality, disturbance to <i>ex situ</i> foraging habitat, spread of invasive species).</p>	<p>Habitats</p> <p>3110 Oligotrophic waters containing very few minerals of sandy plains (<i>Littorelletalia uniflorae</i>)</p> <p>3130 Oligotrophic to mesotrophic standing waters with vegetation of the <i>Littorelletea uniflorae</i> and/or <i>Isoeto-Nanojuncetea</i></p> <p>3260 Water courses of plain to montane levels with the <i>Ranunculion fluitantis</i> and <i>Callitricho-Batrachion</i> vegetation</p> <p>4010 Northern Atlantic wet heaths with <i>Erica tetralix</i></p> <p>4030 European dry heaths</p> <p>4060 Alpine and Boreal heaths</p> <p>5130 <i>Juniperus communis</i> formations on heaths or calcareous grasslands</p> <p>6130 Calaminarian grasslands of the <i>Violetalia calaminariae</i></p> <p>6410 <i>Molinia</i> meadows on calcareous, peaty or clayey-silt-laden soils (<i>Molinion caeruleae</i>)</p> <p>7130 Blanket bogs (* if active bog)</p> <p>7150 Depressions on peat substrates of the <i>Rhynchosporion</i></p> <p>91A0 Old sessile oak woods with <i>Ilex</i> and <i>Blechnum</i> in the British Isles</p> <p>91E0 Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> (<i>Alno-Padion</i>, <i>Alnion incanae</i>, <i>Salicion albae</i>)*</p> <p>91J0 <i>Taxus baccata</i> woods of the British Isles*</p>

European Site	Site Code	Distance at Closest Point and potential source-pathway-receptor link	QIs/SCIs
			<p>Species</p> <p>1024 Kerry Slug (<i>Geomalacus maculosus</i>)</p> <p>1029 Freshwater Pearl Mussel (<i>Margaritifera margaritifera</i>)</p> <p>1065 Marsh Fritillary (<i>Euphydryas aurinia</i>)</p> <p>1095 Sea Lamprey (<i>Petromyzon marinus</i>)</p> <p>1096 Brook Lamprey (<i>Lampetra planeri</i>)</p> <p>1099 River Lamprey (<i>Lampetra fluviatilis</i>)</p> <p>1106 Salmon (<i>Salmo salar</i>)</p> <p>1303 Lesser Horseshoe Bat (<i>Rhinolophus hipposideros</i>)</p> <p>1355 Otter (<i>Lutra lutra</i>)</p> <p>1421 Killarney Fern (<i>Trichomanes speciosum</i>)</p> <p>1833 Slender Naiad (<i>Najas flexilis</i>)</p> <p>5046 Killarney Shad (<i>Alosa fallax killarnensis</i>)</p>
Sheree Bog SAC	000382	<p>2.4km southwest.</p> <p>No hydrological or pathway exists to terrestrial qualifying habitats.</p>	<p>Habitats</p> <p>7110 Active raised bogs*</p> <p>7120 Degraded raised bogs still capable of natural regeneration</p>
Castlemaine Harbour SAC	000343	<p>6.1km northwest.</p> <p>Located in a separate catchment. Therefore, there is no hydrological pathway.</p> <p>Given the distance from this SAC and the absence of a hydrological pathway, no pathway for disturbance or ex-situ impacts on QI species have been identified.</p>	<p>Habitats</p> <p>1130 Estuaries</p> <p>1140 Mudflats and sandflats not covered by seawater at low tide</p> <p>1210 Annual vegetation of drift lines</p> <p>1220 Perennial vegetation of stony banks</p> <p>1230 Vegetated sea cliffs of the Atlantic and Baltic coasts</p>

European Site	Site Code	Distance at Closest Point and potential source-pathway-receptor link	QIs/SCIs
			<p>1310 Salicornia and other annuals colonising mud and sand</p> <p>1330 Atlantic salt meadows (<i>Glauco-Puccinellietalia maritima</i>)</p> <p>1410 Mediterranean salt meadows (<i>Juncetalia maritimi</i>)</p> <p>2110 Embryonic shifting dunes</p> <p>2120 Shifting dunes along the shoreline with <i>Ammophila arenaria</i> (white dunes)</p> <p>2130 Fixed coastal dunes with herbaceous vegetation (grey dunes)*</p> <p>2170 Dunes with <i>Salix repens</i> ssp. <i>argentea</i> (<i>Salicion arenariae</i>)</p> <p>2190 Humid dune slacks</p> <p>91E0 Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> (Alno-Padion, <i>Alnion incanae</i>, <i>Salicion albae</i>)*</p> <p>Species</p> <p>1095 Sea Lamprey (<i>Petromyzon marinus</i>)</p> <p>1099 River Lamprey (<i>Lampetra fluviatilis</i>)</p> <p>1106 Salmon (<i>Salmo salar</i>)</p> <p>1355 Otter (<i>Lutra lutra</i>)</p> <p>1395 Petalwort (<i>Petalophyllum ralfsii</i>)</p>
Old Domestic Building, Curraglass Wood SAC	002041	<p>13.7km southeast.</p> <p>Lesser horseshoe will forage within 2.5km (up to 5km) from roosts. Given the distance from this SAC, no pathway has been identified.</p>	<p>Species</p> <p>1303 Lesser Horseshoe Bat (<i>Rhinolophus hipposideros</i>)</p>
SPA			

European Site	Site Code	Distance at Closest Point and potential source-pathway-receptor link	QIs/SCIs
Killarney National Park SPA	004038	<p>280m northeast.</p> <p>A source-pathway-receptor link exists between the source (proposed development) and the receptors (Killarney National Park SPA) via a potential pathway (impacts on water quality, disturbance to <i>ex situ</i> foraging habitat, spread of invasive species).</p>	<p>Birds</p> <p>A098 Merlin (<i>Falco columbarius</i>)</p> <p>A395 Greenland White-fronted Goose (<i>Anser albifrons flavirostris</i>)</p>

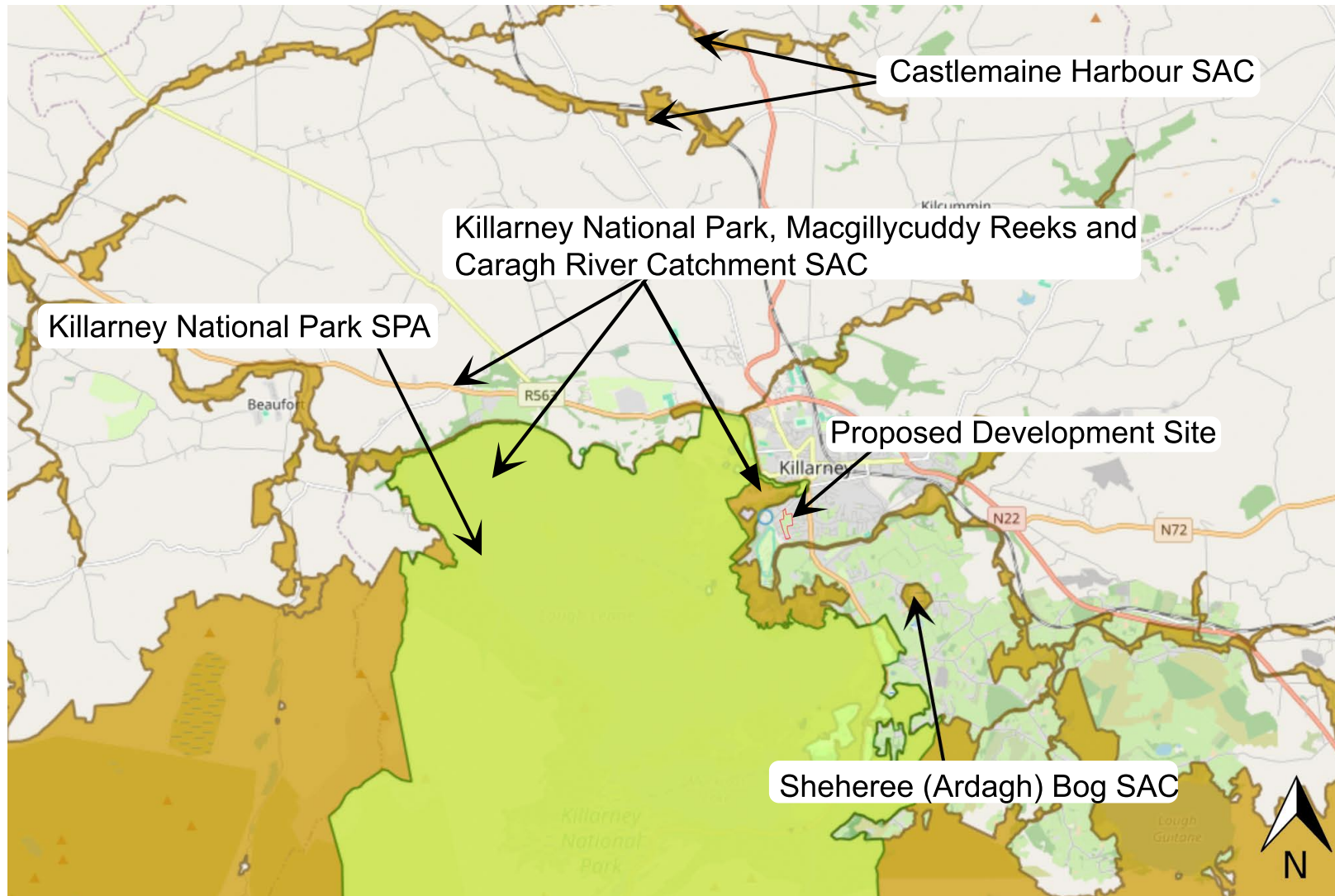
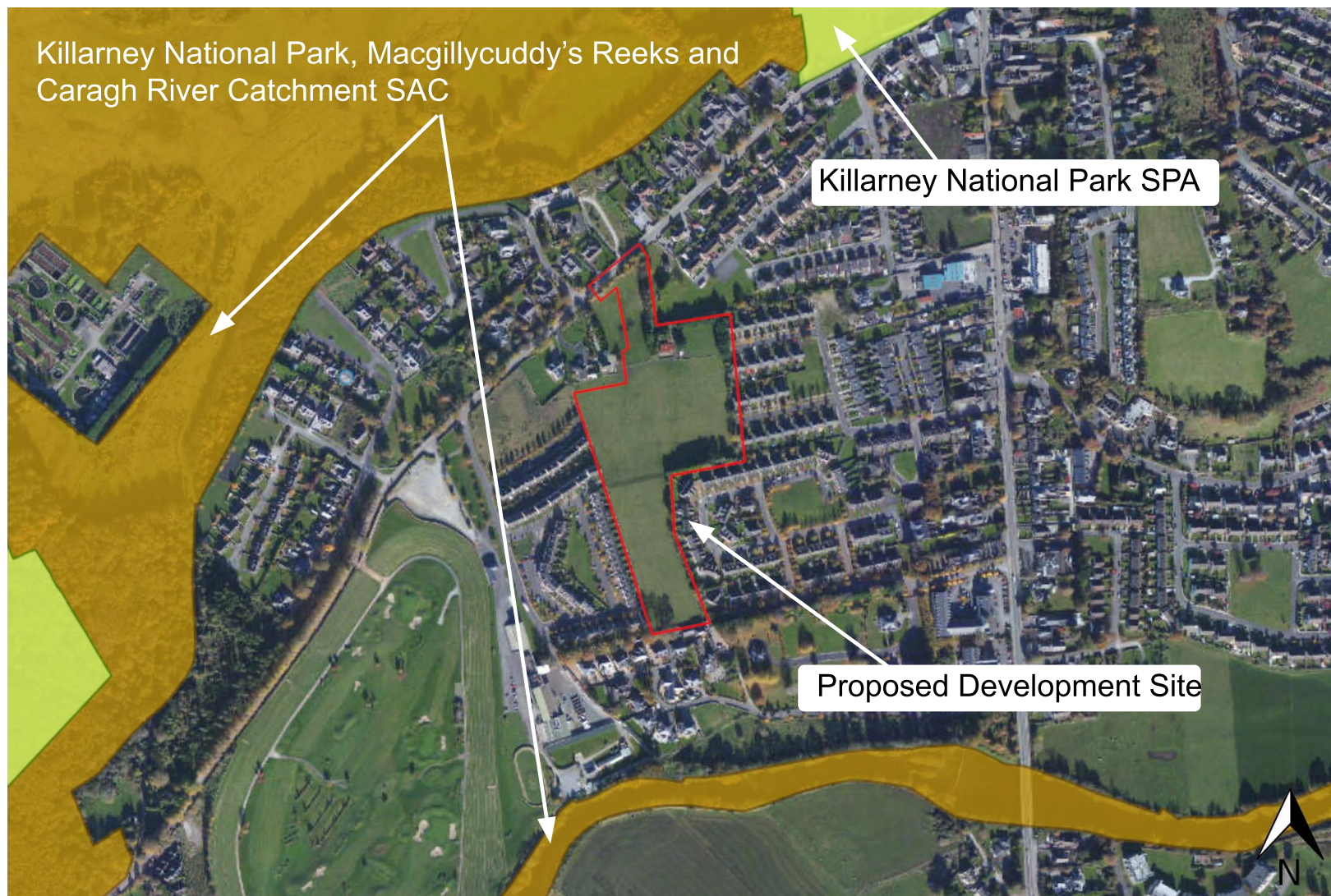


Figure 3. Location of the development site boundary and Natura 2000 sites located within potential likely zone of impact of the site | Source: EPA Envision mapping <https://gis.epa.ie/EPAMaps/> | Not to scale



Killarney National Park, Macgillycuddy's Reeks and Caragh River Catchment SAC

Killarney National Park SPA

Proposed Development Site



Figure 4. Location of the development boundary relative to Killarney National Park, Macgillycuddy Reeks and Caragh River Catchment SAC and Killarney National Park SPA | Source: EPA Envision mapping <https://gis.epa.ie/EPAMaps/> | Not to scale

Table 2. Natural Heritage Areas (NHA) and proposed Natural Heritage Areas (pNHAs) in the vicinity of the proposed development site

NHAs & NHAs/pNHAs	Site Code	Overlaps with European site		Distance at closest point and potential source-pathway-receptor link
Killarney National Park, Macgillycuddy Reeks and Caragh River Catchment pNHA	000365	Yes. Killarney National Park, Macgillycuddy's Reeks and Caragh River Catchment SAC and Killarney National Park SPA	See Table 1 for details on site	120m northwest. No potential pathway identified.
Sheheree (Ardagh) Bog pNHA	000382	Yes. Sheheree (Ardagh) Bog SAC	See Table 1 for details on site	2.4km southwest. No pathway exists to terrestrial qualifying habitats.
Doo Loughs pNHA	000350	Yes. Killarney National Park, Macgillycuddy's Reeks and Caragh River Catchment SAC	See Table 1 for details on site	5.8km southeast. Upstream of site. No hydrological connection.

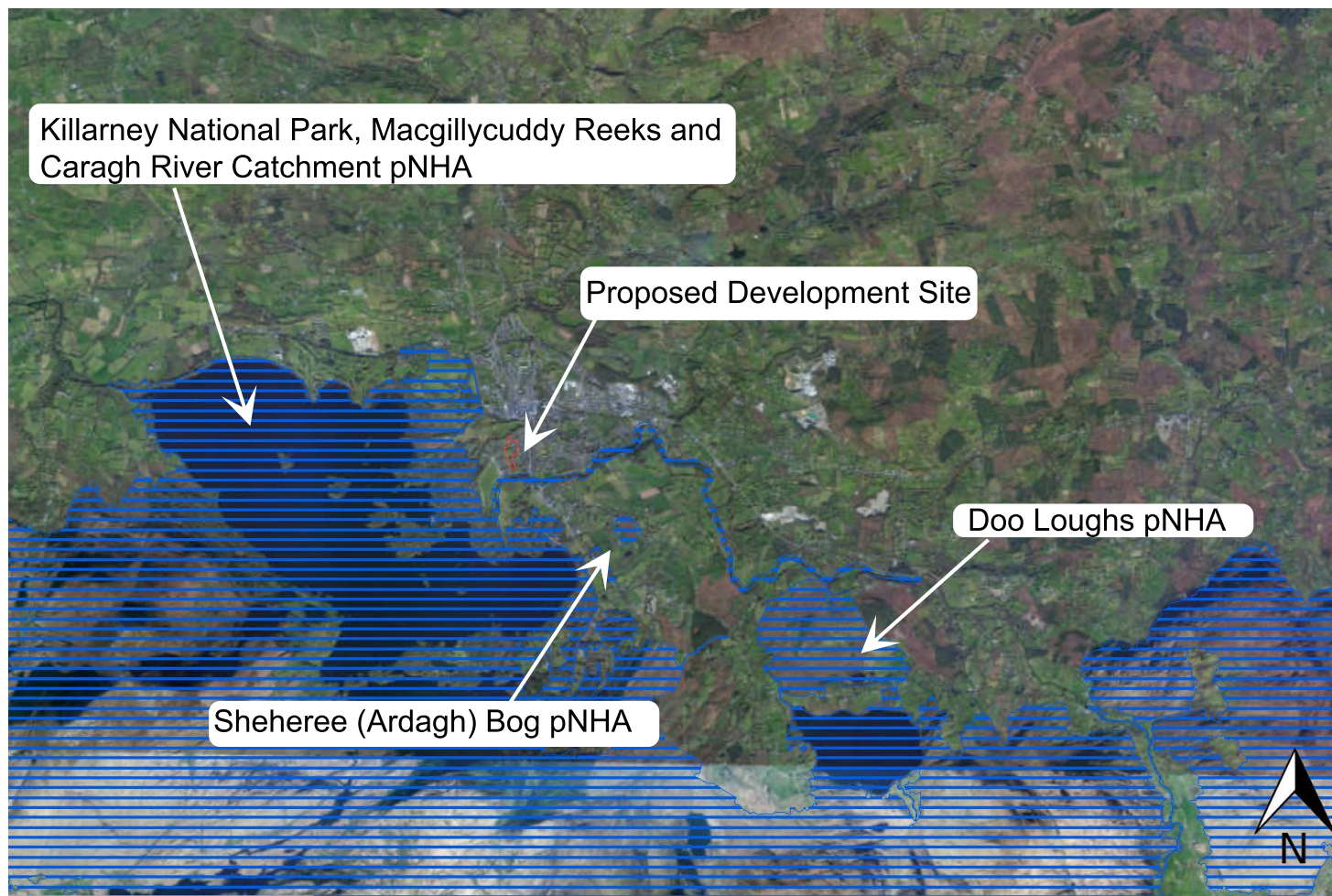


Figure 5. Proposed Natural Heritage Areas (pNHAs) in the vicinity of the proposed development site | Source: EPA Envision mapping <https://gis.epa.ie/EPAMaps/> | Not to scale

4.2 Nationally Protected Sites

Natural Heritage Areas (NHAs) and proposed Natural Heritage Areas (pNHAs) are national designations under the Wildlife Act 1976, as amended. A Natural Heritage Area (NHA) is designated for its wildlife value and receives statutory protection. These areas are considered nationally important for the habitats present or which holds species of plants and animals whose habitats needs protection. Under the Wildlife Amendment Act (2000), NHAs are legally protected from damage from the date they are formally proposed for designation.

Proposed Natural Heritage Areas (pNHA) were published on a non-statutory basis in 1995 and have not since been statutorily proposed or designated. These sites are also of significance for wildlife and habitats. Prior to statutory designation, pNHAs are still subject to limited protection, in the form of:

- Agri-environmental farm planning schemes support the objective of maintaining and enhancing the conservation status of pNHAs;
- There is a requirement for the Forest Service to gain NPWS approval before they will pay afforestation grants on pNHA lands; and,
- A recognition of the ecological value of pNHAs by Planning and Licensing Authorities.

The NHAs and pNHAs located in the vicinity of the proposed development site are listed in **Table 2** and are shown in **Figure 5**.

The proposed development site is located c. 120m southeast of the Killarney National Park, Macgillycuddy Reeks and Caragh River Catchment pNHA. This site overlaps largely with the Killarney National Park, Macgillycuddy Reeks and Caragh River Catchment SAC and the same potential effects may occur i.e. Impacts on water quality, disturbance to ex situ foraging habitat, spread of invasive species.

No potential pathway to any other NHA/pNHA has been identified.

4.3 Killarney National Park (Kerry) UNESCO Biosphere Reserve

Biosphere reserves are areas comprising terrestrial, marine and coastal ecosystems. They promote solutions reconciling the conservation of biodiversity with its sustainable use. They are internationally recognised for their biological diversity yet also actively managed to promote a balanced relationship between people and nature. A Biosphere is a special designation awarded by the United Nations Educational, Scientific and Cultural Organisation (UNESCO) but managed in partnership by communities, NGOs and local and national governments.

Biosphere reserves are 'Science for Sustainability support sites' – special places for testing interdisciplinary approaches to understanding and managing changes and interactions between social and ecological systems, including conflict prevention and management of biodiversity.

Biosphere reserves have three interrelated zones that aim to fulfil three complementary and mutually reinforcing functions:

The core area(s) comprises a strictly protected ecosystem that contributes to the conservation of landscapes, ecosystems, species and genetic variation.

The buffer zone surrounds or adjoins the core areas and is used for activities compatible with sound ecological practices that can reinforce scientific research, monitoring, training and education.

The transition area is the part of the reserve where the greatest activity is allowed, fostering economic and human development that is socio-culturally and ecologically sustainable.

Killarney National Park was awarded UNESCO Biosphere Reserve status in 1982. To meet criteria for UNESCO Biosphere reserves under Article 4 of the Seville Strategy, it is proposed to extend the Killarney National Park UNESCO Biosphere Reserve to include areas hydrologically and ecologically connected to the existing Core Area. With the support and involvement of local communities, zonation is proposed that reflects legal protections and sustainable management practices in place in Co. Kerry. The UNESCO Biosphere Reserve will be known as the Kerry UNESCO Biosphere Reserve.

4.4 Important Bird Areas – Killarney National Park

Important Bird and Biodiversity Areas (IBAs) are sites selected as important for bird conservation because they regularly hold significant populations of one or more globally or regionally threatened, endemic or congregator bird species or highly representative bird assemblages. The European IBA programme aims to identify, monitor and protect key sites for birds all over the continent. It aims to ensure that the conservation value of IBAs in Europe (now numbering more than 5,000 sites or about 40% of all IBAs identified globally to date) is maintained, and where possible enhanced. The programme aims to guide the implementation of national conservation strategies, through the promotion and development of national protected-area programmes. Through their designation they aim to form a network of sites ensuring that migratory species find suitable breeding, stop-over and wintering places along their respective flyways.

The function of the Important Bird Area (IBA) Programme is to identify, protect and manage a network of sites that are important for the long-term viability of naturally occurring bird populations, across the geographical range of those bird species for which a site-based approach is appropriate. The proposed development site lies in close proximity to the Killarney National Park IBA (Site Code: IE079) which spans an area of 10,329 ha.

The Killarney National Park IBA site qualifies for designation under the following IBA Criteria (2000):

- C7 - The site has been designated as a Special Protection Area (SPA) or selected as a candidate SPA based on ornithological criteria (similar to but not equal to C1–C6) in recognized use for identifying SPAs.


5. Habitats

Site surveys, including habitat surveys, were carried out the 23rd of September 2024 and 15th of January 2025. Habitat mapping was carried out in line with the methodology outlined in the Heritage Council Publication, *Best Practice Guidance for Habitat Survey and Mapping*

(Heritage Council, 2011). The terrestrial and aquatic habitats within or adjacent to the proposed development site was classified using the classification scheme outlined in the Heritage council publication *A Guide to Habitats in Ireland* (Fossitt, 2000) and cross referenced with Annex I Habitats where required.


A current overview of habitats recorded within the site is shown in **Figure 6** and the habitats recorded on site are described in **Table 3**. Photographs of the site are also included below. The ecological value of habitats has been defined using the classification scheme outlined in the *Guidelines for Assessment of Ecological Impacts of National Road Schemes* (National Roads Authority, 2009) which is included in **Appendix 1**. It should be noted that the value of a habitat is site specific and will be partially related to the amount of that habitat in the surrounding landscape. Habitats that are considered to be good examples of Annex I and Priority habitats are classed as being of International or National Importance. Semi-natural habitats with high biodiversity in a county context and that are vulnerable, are considered to be of County Importance. Habitats that are semi-natural, or locally important for wildlife, are considered to be of Local Importance (higher value) and sites containing small areas of semi-natural habitat or maintain connectivity between habitats are considered to be of Local Importance (lower value).



Table 3. Habitat present within proposed development site and their relative value



Habitats	Comments	Ecological value (NRA guidelines)
Improved agricultural grassland GA1	<p>The proposed development site is dominated by improved agriculture grassland with common grassland and herbaceous species.</p> <p>This is a managed habitat with low diversity.</p>  <p>Plate 1. Improved low diversity grassland dominates the site</p>	Local importance (Lower value)

Habitats	Comments	Ecological value (NRA guidelines)
	 <p data-bbox="427 831 1072 862">Plate 2. Improved low diversity grassland dominates the site</p>	
<p data-bbox="204 898 405 1014">Treeline WL2/Stone walls and other stonework BL1</p>	<p data-bbox="427 898 1141 954">There are mature treelines present along the northern and eastern boundaries of the site, with some remnants of old stone wall.</p> <p data-bbox="427 987 1141 1070">Along the roadside at the northern side of the site, the trees appear to be planted. Species recorded here include Poplar, Alder and Horse chestnut.</p> <p data-bbox="427 1104 1141 1227">Widely spaced mature trees are present along the north-eastern boundary with mature Multi-stemmed Sycamore, mature Ash and mature Lawson’s cypress (around the buildings). Further detail on mature trees is provided in Section 7.2.</p> <p data-bbox="427 1261 1141 1384">The Lawson’s cypress treeline around the buildings is dense and form a woodland like structure. There is little understory vegetation, but occasional Holly and Elder are present alongside Bramble and Ivy.</p> <p data-bbox="427 1417 1141 1473">Where the stonewalls are vegetated species recorded include Polypody, Rusty back fern, Sorrel, Maidenhair fern and Spring wort.</p> <p data-bbox="427 1507 1141 1590">A dense treeline of mature Cypress trees runs along the central-eastern boundary. This area is heavily shaded with little or no understory species.</p>	<p data-bbox="1166 898 1391 981">Local importance (higher value) Native treeline</p> <p data-bbox="1166 1077 1391 1200">Local importance (lower value) non- native/Lawson’s Cypress treeline</p>

Habitats	Comments	Ecological value (NRA guidelines)
	 <p data-bbox="429 725 978 757">Plate 3. Treeline and wall along northern boundary</p>  <p data-bbox="429 1310 1098 1341">Plate 4. Lawson's cypress around building</p>  <p data-bbox="429 1856 1046 1888">Plate 5. Lawson's cypress treeline at eastern side of site</p>	

Habitats	Comments	Ecological value (NRA guidelines)
	 <p data-bbox="427 913 858 947">Plate 6. Mature sycamore at east of site</p>  <p data-bbox="427 1518 1042 1552">Plate 7. Mature Cyprus trees at central/eastern boundary</p>	
Scrub WS1	<p data-bbox="427 1585 1142 1704">Along the eastern boundary there is a section of low growing scrub with occasional semi-mature Holly and Hawthorn as well as Gorse. This area is dominated by thickets of Bramble scrub with Cleavers, Dandelion as well as common grass and herbaceous species.</p>	Local importance (lower value)

Habitats	Comments	Ecological value (NRA guidelines)
	 <p data-bbox="427 824 845 857">Plate 8. Scrub along eastern boundary</p>	
<p data-bbox="204 891 391 947">Hedgerow WL1/Scrub WS2</p>	<p data-bbox="427 891 1142 947">Along the southern side of the eastern boundary there is an untidy line of hedgerow/scrub habitat which borders adjoining gardens.</p> <p data-bbox="427 981 1142 1104">It includes a managed section of Cherry Laurel hedgerow. Other areas include a mosaic of Bramble, Gorse, Hawthorne, Holly, Cleavers, Nettle and dense tickets of Bramble. Other species note include immature Sycamore and widely scattered Blackthorn.</p> <p data-bbox="427 1137 1142 1193">One mature Oak and one mature Ash are present along this boundary. Further detail on mature trees is provided in Section 7.2.</p>  <p data-bbox="427 1783 1023 1816">Plate 9. Scrub/hedgerow along south-eastern boundary</p>	<p data-bbox="1165 891 1388 947">Local importance (lower value)</p>

Habitats	Comments	Ecological value (NRA guidelines)
	 <p data-bbox="427 819 1038 853">Plate 10. Scrub/hedgerow along south-eastern boundary</p>	
Buildings and artificial surfaces BL3	<p data-bbox="427 884 1142 943">A concrete block wall runs along the southern boundary. Two mature trees are present along this section of wall</p> <p data-bbox="427 972 1142 1061">The concrete wall extends along the western boundary. Some vegetation growth is present along the wall with Ivy and Bramble dominating.</p>  <p data-bbox="427 1673 1142 1731">Plate 11. Mature trees along southern boundary with concrete block wall beneath</p>	Local importance (lower value)



Habitats	Comments	Ecological value (NRA guidelines)
	 <p data-bbox="427 786 1007 813">Plate 12. Concrete block wall along western boundary</p>	
Buildings and artificial surfaces BL3 (structures)	<p data-bbox="427 846 1142 936">At the northeastern edge of the site, there is a complex of large, corrugated iron buildings (roof). The walls are a mixture of corrugated and concrete.</p> <p data-bbox="427 965 1142 1025">The buildings are currently used for storage with chopped wood, bagged wood, planks, wire, pipework, barrels, etc.</p> <p data-bbox="427 1055 1142 1115">The corrugated iron roof is in good condition with some minor holes. The walls are partially clad leaving the building open and draughty.</p> <p data-bbox="427 1144 1142 1205">A more detailed discussion on the site buildings is included in Section 7.2.</p>  <p data-bbox="427 1700 711 1727">Plate 13. Onsite buildings.</p>	Local importance (lower value)



Figure 6. Habitat map

6. Flora

The site of the proposed development lies within Ordnance Survey National Grid 10km square V99 and V98 (hectads).

The National Biodiversity Data Centre (NBDC) online database provides data on the distribution of mammals, birds, and invertebrates within Irish 10km grid squares. A number of rare and threatened plant species have been recorded within these hectads (**Table 4**).

Table 4. Rare and threated plant species recorded in V98 and V99

Species name	Designation
Alder Buckthorn (<i>Frangula alnus</i>)	Threatened Species: Least concern
Allseed (<i>Radiola linoides</i>)	Threatened Species: Near threatened
Betony (<i>Stachys officinalis</i>)	Protected Species: Flora Protection Order Protected Species: Flora Protection Order >> Flora Protection Order Threatened Species: Near threatened
Brown Beak-sedge (<i>Rhynchospora fusca</i>)	Threatened Species: Near threatened
Chaffweed (<i>Anagallis minima</i>)	Threatened Species: Near threatened
Chamomile (<i>Chamaemelum nobile</i>)	Threatened Species: Near threatened
Dwarf Willow (<i>Salix herbacea</i>)	Threatened Species: Near threatened
English Whitebeam (<i>Sorbus anglica</i>)	Threatened Species: Endangered
Ivy-leaved Bellflower (<i>Wahlenbergia hederacea</i>)	Threatened Species: Near threatened
Rock Whitebeam (<i>Sorbus rupicola</i>)	Threatened Species: Vulnerable
Six-stamened Waterwort (<i>Elatine hexandra</i>)	Threatened Species: Near threatened
Slender Naiad (<i>Najas flexilis</i>)	Protected Species: EU Habitats Directive Protected Species: EU Habitats Directive >> Annex II Protected Species: EU Habitats Directive >> Annex IV Protected Species: Flora Protection Order Protected Species: Flora Protection Order >> Flora Protection Order Threatened Species: Vulnerable
<i>Sorbus scannelliana</i>	Threatened Species: Critically Endangered
Strawberry-tree (<i>Arbutus unedo</i>)	Threatened Species: Near threatened
Whorled Caraway (<i>Carum verticillatum</i>)	Threatened Species: Near threatened
Yellow Bartsia (<i>Parentucellia viscosa</i>)	Threatened Species: Near threatened

Source NBDC 26/03/24

No rare, uncommon or red list species were recorded during the site survey, nor are they expected to occur given that the habitats within the proposed development site are dominated by managed agricultural habitats.

7. Fauna

7.1 Otter

Otters, along with their breeding and resting places are protected under the provisions of the Wildlife Act 1976, as amended by the Wildlife (Amendment) Act, 2000. Otters have additional protection because of their inclusion in Annex II and Annex IV of the Habitats Directive which is transposed into Irish law in the European Communities (Natural Habitats) Regulations (S.I 94 of 1997), as amended. Otters are also listed as requiring strict protection in Appendix II of the Berne Convention on the Conservation of European Wildlife and Natural Habitats and are included in the Convention on International Trade of Endangered species (CITES).

Although rare in parts of Europe they are widely distributed in the Irish countryside in both marine and freshwater habitats. Otters are solitary and nocturnal and as such are rarely seen. Thus, surveys for Otters rely on detecting signs of their presence. These include spraints (faeces), anal gland secretions, paths, slides, footprints and remains of prey items. Spraints are of particular value as they are used as territorial markers and are often found on prominent locations such as grass tussocks, stream junctions and under bridges. In addition, they are relatively straightforward to identify.

Otters occasionally dig out their own burrows but generally they make use of existing cavities as resting places or for breeding sites. Suitable locations include eroded riverbanks, under trees along rivers, under fallen trees, within rock piles or in dry drainage pipes or culverts etc. If ground conditions are suitable the holt may consist of a complex tunnel and chamber system. Otters often lie out above ground especially within reed beds where depressions in the vegetation called “couches” are formed (NRA, 2008). Generally, holts or resting areas can be located by detecting signs such as spraints or tracks.

In contrast natal holts which are used by breeding females can be extremely difficult to locate. They are often located a considerable distance from any aquatic habitats and Otters may also use habitats adjoining small streams with minimal or no fish populations. In addition, natal holts are usually carefully hidden and without obvious sprainting sites. Otters do not have a well-defined breeding season. It is noted that Otters are largely nocturnal, particularly in areas subject to high levels of disturbance as evidenced by the presence of Otters in the centre of Cork City (Sleeman and Moore 2005).

A review of existing records showed that Otter or signs of Otter have been recorded on 84 occasions within grid square V98, the most recent being in May 2017 (Source NBDC March 2025). The River Flesk and Lough Leane form valuable habitats for Otter and there are a large number of records of Otter around Lough Leane and along the River Flesk. There are also several records of Otter along the Deenagh River c.780m northwest.

However, the built up urban setting in which the proposed development site is located is of negligible value for Otter. There are no watercourses within the proposed development site and no wetland habitats which could provide potential foraging habitat for Otter. No signs of Otter recorded within the proposed development site.

7.2 Bats

7.2.1 Bat Background Data

In Ireland, nine species of bat are currently known to be resident. These are classified into two Families: *Rhinolophidae* (Horseshoe bats) and *Vespertilionidae* (Common bats). The Lesser Horseshoe Bat *Rhinolophus hipposideros* is the only representative of the former Family in Ireland. All the other Irish bat species are of the latter Family and these include three pipistrelle species: Common *Pipistrellus pipistrellus*, Soprano *Pipistrellus pygmaeus* and Nathusius' *Pipistrellus nathusii*, four *Myotids*: Natterer's *Myotis nattereri*, Daubenton's *Myotis daubentonii*, Whiskered *Myotis mystacinus*, Brandt's *Myotis brandtii*, the Brown Long-eared *Plecotus auritus* and Leisler's *Nyctalus leisleri* bats.

A review of existing bat records within grid squares V98 and V99 (sourced NBDC) showed that nine of the nine regularly occurring Irish bat species have been recorded within these hectads (**Table 5**). Brandt's Bat (*Myotis brandtii*) has also been recorded within V98.

Table 5. Presence of Irish bat species within V98 and V99

Common name	Scientific name	Presence
Brown Long Eared Bat	<i>Plecotus auritus</i>	Present
Daubenton's Bat	<i>Myotis daubentonii</i>	Present
Leisler's Bat/ Lesser Noctule	<i>Nyctalus leisleri</i>	Present
Lesser Horseshoe Bat	<i>Rhinolophus hipposideros</i>	Present
Nathusius' Pipistrelle	<i>Pipistrellus nathusii</i>	Present
Natterer's Bat	<i>Myotis nattereri</i>	Present
Pipistrelle	<i>Pipistrellus pipistrellus sensu lato</i>	Present
Soprano Pipistrelle	<i>Pipistrellus pygmaeus</i>	Present
Whiskered Bat	<i>Myotis mystacinus</i>	Present

NBDC 26/03/25

A study by Lundy *et al.* (2011) examined the relative importance of landscape and habitat associations across Ireland. Maximum Entropy Models (MEM) were constructed for each bat species using records from the National Bat Database from 2000-2009. This method allows species' records that have not been collected in a systematic survey to be analysed. The results help explain patterns of species' occurrence and predict where species might occur. Landcover (CORINE), topography, climate, soil pH, riparian habitat and human bias factors were incorporated into the models. The analyses provide a picture of the broad scale geographic patterns of occurrence and local roosting habitat requirements for Irish bat species. This also provides a 'habitat suitability' index. The index ranges from 0 to 100, with 0 being least favourable and 100 most favourable for bats. The habitat indices for all Irish bats for the landscape around the proposed development site is shown in **Table 6**.

Table 6. Model Predicted Habitat suitability indices for All Irish bat species

Bat species	Common Name	Habitat indices
All Bats		58.56
<i>Pipistrellus pygmaeus</i>	Soprano pipistrelle	59
<i>Plecotus auratus</i>	Brown long-eared bat	68
<i>Pipistrellus pipistrellus</i>	Common pipistrelle	50
<i>Rhinolophus hipposideros</i>	Lesser horseshoe	71
<i>Nyctalus leisleri</i>	Leisler's bat	65
<i>Myotis mystacinus</i>	Whiskered bat	35
<i>Myotis daubentoniid</i>	Daubenton's bat	55
<i>Pipistrellus nathusii</i>	Nathusius' pipistrelle	59
<i>Myotis nattereri</i>	Natterer's bat	65

Source: NBDC 26/03/25

Lesser Horseshoe Bat are a qualifying interest for Killarney National Park, Macgillycuddy Reeks and Caragh River Catchment SAC. Within V98 there have been 197 records and within V99 there are 104 records of Lesser Horseshoe Bat (Source NBDC 26/03/25).

Killarney National Park, Macgillycuddy's Reeks and Caragh River Catchment SAC is of international importance for both summer and winter roosts of Lesser Horseshoe Bat. Lesser Horseshoe Bat normally travel short distances (approximately 2km) between roosts and foraging grounds. Consequently, linear features such as hedgerows, treelines and stone walls provide vital connectivity for this species, most importantly within 2.5km around each roost and these buffer zones have been mapped around qualifying roosts within the SAC. Figures of 100 bats for summer roosts and 50 bats for winter roosts were set as the minimum qualifying standards (MQS) when SACs were being selected for lesser horseshoe bat. NPWS conduct annual counts at each qualifying roost.

The proposed development site is located within the 2.5km buffer zone for the qualifying roosts ID 623 and ID 296 (See **Figure 7**). The target for roost ID 623 is set at a minimum number of 127 in winter and 358 in summer. The target for roost ID 296 is minimum number of 176 in winter and 315 in summer.

The application site is within this 2.5km buffer and the area surrounding the proposed development is considered potential foraging habitat (NPWS 2017). Lesser horseshoe bat populations will use a variety of roosts during the year besides the main roosts listed in NPWS (2017). Such additional roosts within the SAC may be important as night roosts/satellite roosts etc. It is noted that there are several field observations or roving records of Lesser Horseshoe bat in the area around Lough Leane to the west of the proposed development site.

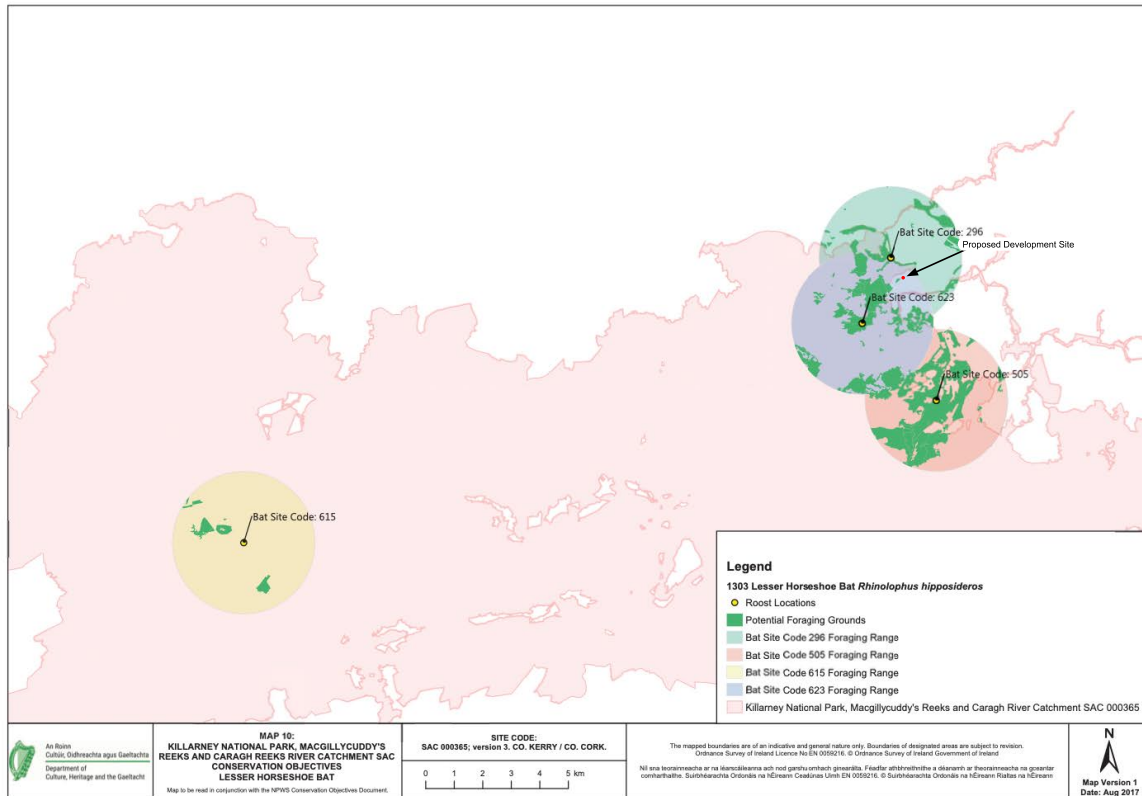


Figure 7. Conservation objectives map for Lesser Horseshoe Bat (Source NPWS 2017)

7.2.2 Bat Building Survey

There is an existing complex of farm buildings at the site, in various states of disrepair. A detailed building inspection was carried out, looking for potential access points and ‘potential roosting features (PRFs)’ that bats could use and any evidence indicating the presence of bats using the building, such as rub marks, staining or droppings on the 15th of January 2025. This included a ground-based external inspection around the site buildings and internal inspection of any enclosed loft spaces or roof voids, where safe access was possible. During the surveys, all structures within the proposed development site were surveyed to assess their ability to support roosting bats using a torch to inspect any suitable features.

The value of buildings as potential bat roosts was classified using the criteria specified in Collins (2023) to assess the potential value of structures as bat roosts (Potential Roost Features (PRF)). Evidence of bat activity associated with potential roost sites includes bat droppings, urine staining, feeding remains and dead/alive bats. Indicators that potential roost locations and access points are likely to be inactive include the presence of cobwebs and general detritus within the apertures.


The site is located in a built-up area with housing to the north, south, east and west. The western boundary consists of a block wall which separates the site from neighbouring housing developments. There is a complex of agricultural buildings in the northern section of the site which include old stables and open sheds. These buildings are primarily used for storage of equipment, wood tools, etc.


A search of the buildings for evidence of bats such as staining and droppings was carried out on the 23rd of September 2024 and the 15th of January 2025. In general, the buildings are quite open and draughty and considered of low potential value for bats. A description of the buildings onsite is included in **Table 7**.

An internal search of the buildings did not reveal any evidence of bat usage such as droppings staining, prey remains, etc.

Table 7. Details on onsite buildings.

Buildings Photos	Building description
	<p>Front of building 1. Currently used for storage with chopped wood, bagged wood, planks, wire, pipework, barrels, etc.</p> <p>The corrugated iron roof is in good condition with some minor holes. The walls are only partially clad leaving the building open and draughty.</p> <p>No evidence of bat usage</p> <p>Low potential for bats</p>

Buildings Photos	Building description
 	<p>Small freestanding block concrete shed. Open at the front and with large cracks and crevices where the beams rest on the outside wall roof but starting to deteriorate with gaps.</p> <p>Draughty and cold use for storing timber including chopped logs. No evidence of usage. Some poor quality fascia on outside of building. No evidence of usage</p> <p>No evidence of bat usage</p> <p>Low potential for bats</p>
	<p>Building 3 is a block and corrugated iron building in relatively good condition. Large gaps open at the front. Previously as a cattle shed with dung on the floor.</p> <p>No evidence of bat usage</p> <p>Low potential for bats</p>

Buildings Photos	Building description
	

7.2.3 Bat Tree Survey

A ground level tree assessment (GLTA) on all trees within the proposed development site, with binoculars used where required utilising guidelines set out in '*Bat Surveys for Professional Ecologists: Good Practice Guidelines (4th ed)*' (Collins 2023) on the 29th of February 2024. This is a ground level inspection of the exterior of the trees to look for features that could be used by roosting bats i.e. PRFs. The aim of this survey is to determine the available roosting resources and the need (if any) for further survey and/or mitigation. This survey was carried out on the 15th of January 2025.



Evidence indicating bat presence within trees, includes dark stains running below holes or cracks, bat droppings, odours, or scratch marks. PRFs that can occur in trees as detailed in Collins (2023) include the following:



- rot holes
- hazard beams
- other vertical or horizontal cracks and splits (such as frost cracks) in stems or branches
- partially detached/loose bark



- knot holes arising from naturally shed branches, or branches previously pruned back to the branch collar
- man-made holes (e.g. cavities that have developed from flush cuts) other cavities created by branches tearing from the parent stems
- cankers (caused by localised bark death) in which cavities have developed
- other hollows or cavities including butt rot
- double-leaders forming compression forks which included bark and potential cavities
- gaps between over lapping stems or branches
- partially detached ivy with stem diameters in excess of 50mm bat or bird boxes.

A ground level tree assessment (GLTA) on all trees within the proposed development site, with binoculars used where required, was carried out using the guidelines set out in ‘*Bat Surveys for Professional Ecologists: Good Practice Guidelines (4th ed)*’ (Collins 2023). A summary of the trees at the site and their potential value for roosting bats is included in **Table 8**. No signs of roosting bats were recorded in any of the trees onsite.

Table 8. Potential roosting value of trees at the site.

Tree number/group	Photographs	Description
Trees earmarked for removal		
T3-T7		Semi-mature trees with no significant PRFs. No value for roosting bats
Group 1 Lawsons cypress		Mature treeline. Non-native No potential roost features
Group 2 Lawsons cypress		
Group 3 Lawsons cypress		
Group 4 Lawsons cypress		
T11	An early mature sycamore that is being suppressed	

Tree number/group	Photographs	Description
	No potential for roosting bats	
T12	An early mature sycamore that is being suppressed. No potential for roosting bats	
T19		<p>One mature ash at the end of the Conifer line. Isolated. Considerable ivy cover.</p> <p>Low potential for roosting bats</p>
Trees for retention		
T7		<p>Mature sycamore, Some ivy cover. Small number of PRF-I.</p> <p>Low potential for roosting bats.</p>
T6		
T5		

Tree number/group	Photographs	Description
T13		<p>Mature oak with dense ivy along the main stem and also some of the side stems quite thick in diameter. Isolated in the context of this linear feature considered</p> <p>Low potential for roosting bats</p>
T16		<p>Mature Ash with some cracks and crevices in the higher sections. Ivy covering is moderately dense with some relatively thick stems</p> <p>Low to moderate potential</p>

Tree number/group	Photographs	Description
T18 and T19		<p>Mature sycamore. Moderate IV coverage extending quite a long way from base . Occasional small cracks and crevices</p> <p>Low to moderate potential for roosting bats</p>

7.2.4 Bat Activity Survey

A bat activity and emergence survey was carried out by DixonBrosnan on the 23rd of September 2024 using EchoMeter Touch 2 PRO bat detectors, Elekon Batloggers and a Pulsar Halion thermal imaging camera.

The focus of the bat survey was to determine the presence, species composition and potential usage by bats of the proposed development site. A particular emphasis was placed on the buildings within site boundary and treelines along the eastern boundary of the site as these had been identified as having the highest potential value for foraging/commuting bats.

Five bat species were recorded during the site survey i.e. Common pipistrelle, Soprano pipistrelle, Leisler's, an unidentified *Myotis* sp. and Brown Long-eared bat. Foraging activity by Common pipistrelle and Soprano pipistrelle was recorded along the eastern treeline. Levels of activity were moderate. Signals for Leisler's and *Myotis* sp. were also recorded and results were generally indicative of low level foraging along the eastern treeline boundary. No signs of Lesser Horseshoe Bat were recorded.

Throughout the survey there was continuous foraging by Soprano pipistrelle along the conifer treeline along the eastern boundary. Although conifers are generally of limited value, the bats were observed foraging along the periphery of the treeline where light levels were relatively low. Sporadic signals for Common pipistrelle were also recorded. Brief signals for Leisler's bat were indicative of overflying bats within the wider landscape. Two brief signals for Brown long-eared bat were recorded relatively late in the survey, post the emergence period. This is indicative of 1 to 2 bats commuting through the site or very briefly foraging.

Overall, the site is utilised primarily for foraging by a small number of relatively common bat species. No evidence of roosting bats was recorded in the buildings or in the mature trees along the site boundaries. No signs of Lesser Horseshoe bats were recorded. The location of the proposed development site, with a lit up, sub-urban setting, with no significant treelines/linear foraging features, means it is unlikely to provide suitable foraging/commuting habitat for Lesser Horseshoe Bat.

7.3 Other terrestrial mammals

Nine other mammal species which are protected under the Irish Wildlife Act; namely Badger *Meles meles*, Red Squirrel *Sciurus vulgaris*, Irish Hare *Lepus timidus subsp. hibernicus*, Irish Stoat *Mustela erminea subsp. hibernica*, Sika Deer *Cervus nippon*, Hedgehog *Erinaceus europaeus*, Pygmy Shrew (*Sorex minutus*), Pine Marten (*Martes martes*) and Red Deer (*Cervus elaphus*) have been recorded within V98 and V99.

7.3.1 Badger

Badgers and their setts are protected under the provisions of the Wildlife Act 1976, as amended, and it is an offence to intentionally, knowingly or unknowingly kill or injure a protected species, or to willfully interfere with or destroy the breeding site or resting place of a protected wild animal. Badger setts are formed by a complex group of interlinked tunnels, and therefore works in proximity to setts can potentially cause damage a protected species. Badgers are also protected under Appendix III of the Berne. Badgers are known to occur within the wider landscape (NBDC). However, no signs of badger were recorded during site surveys.

7.3.2 Irish Hare

Irish Hare is one of three lagomorphs found on the Island of Ireland and the only native lagomorph. It is listed on Appendix III of the Berne Convention, Annex V(a) of the EC Habitats Directive (92/43/EEC) and as an internationally important species in the Irish Red Data Book. The grassland at the site is largely unsuitable for Irish hare and this species is unlikely to occur.

7.3.3 Hedgehog

Hedgehog is also listed on Appendix III of the Berne Convention can be found throughout Ireland, with male hedgehogs having an annual range of around 56 hectares. Generally, hedgehogs prefer edge habitat and pasture but in recent years have begun to colonize urban areas. Due to the habitats recorded within the proposed development site, hedgehog could potentially occur.

7.3.4 Irish Stoat

Irish Stoat is one of the species protected under regulations (Protection of Wild Animals) in 1980 which enabled Ireland to comply with the provisions of the Bern Convention of European Wildlife and Natural Habitats, which was ratified by Ireland in April 1982. Given its broad habitat use, Irish Stoat could potentially occur in the proposed development site.

7.3.5 Red Squirrel

Red Squirrel is also listed on Appendix III of the Berne Convention can be found throughout Ireland. Red squirrels feed mainly on tree seeds, although they can utilise fungi, fruit and buds as they become available in the woodland. Due to the habitats recorded within the site, it is unlikely that Red Squirrel occurs.

7.3.6 Sika Deer

Sika Deer is a non-native species to Ireland. They prefer forest with dense understorey, thickets, natural woodlands and commercial plantations, but will also forage in open grassy

areas with dense cover nearby. Sika Deer are highly opportunistic feeders, foraging on grasses to a range of shrubs and tree species. Sika Deer were introduced to Killarney Valley in 1865. Today there are approximately 900-1100 sika deer in the National Park. Sika deer was recorded within the site during the January site survey.

7.3.7 Pygmy Shrew

Pygmy Shrew is common throughout mainland Ireland and has a preference for habitats such as hedgerows and grasslands. Due to the habitats present within the proposed site Pygmy Shrew could potentially occur.

7.3.8 Pine Marten

The Pine marten is protected in Ireland by both national and international legislation. Under the Irish Wildlife Acts it is an offence, except under licence, to capture or kill a Pine Marten, or to destroy or disturb its resting places. The European Union's Habitats & Species Directive further obliges Ireland to maintain the favourable conservation status of the Pine Marten throughout its range. Pine marten is unlikely to occur at the site given the absence of suitable habitats.

7.3.9 Red Deer

Red Deer are the largest land mammal found on the island of Ireland. Populations of red deer are found in the west, northwest, east and southwest regions of Ireland, with smaller populations found scattered throughout Northern Ireland and certain parts of the midlands. The red deer population living in the National Park and adjoining lands is the only indigenous wild herd in the country. Although this species could potentially use the site the isolated nature of the site within and sub-urban setting means this would not provide a critical foraging resource and they are unlikely to occur.

7.4 Reptiles and Amphibians

According to records held by the NBDC, Common Frog (*Rana temporaria*) and Smooth Newt (*Lissotriton vulgaris*) have been recorded within grid squares V98 and V99.

Common Frog is listed on Annex V of the EU Habitats Directive and is protected under the Wildlife Acts. The Smooth Newt is the only member of the Urodela (the tailed amphibians) found in Ireland. While commonly encountered near water bodies, adult newts are actually terrestrial, only returning to water bodies to breed. There is no suitable habitat for this species within the site boundary.

Smooth Newt is the only member of the Urodela (the tailed amphibians) found in Ireland. While commonly encountered near water bodies, adult newts are actually terrestrial, only returning to water bodies to breed. There are no suitable waterbodies for this species within the proposed development site.

There are no wetland habitats within the proposed development site and it is of negligible value for amphibian species.

Common Lizard (*Zootoca vivipara*) is Ireland's only native terrestrial reptile and is so protected under the Wildlife Act. Ideal habitats for the species are south-facing, damp tussocky

grassland, scrub covered hillsides, dunes or banks, and woodland tracks, and it also resides in peat bogs, dry grasslands and heathlands. The species has not been recorded in the surrounding landscape (NBDC) and it is unlikely that the species occurs within or in proximity to the proposed development site. The site of negligible value for reptiles.

7.6 Birds

The National Biodiversity Centre online data base lists a number of Annex I of the Birds Directive, namely, Kingfisher (*Alcedo atthis*), Corn Crane (*Crex crex*), Dunlin (*Calidris alpina*), Golden Plover (*Pluvialis apricaria*), Nightjar (*Caprimulgus europaeus*), Great Northern Diver (*Gavia immer*), Greater White-fronted Goose (*Anser albifrons*), Hen Harrier (*Circus cyaneus*), Little Egret (*Egretta garzetta*), Merlin (*Falco columbarius*), Peregrine Falcon (*Falco peregrinus*), Ruff (*Philomachus pugnax*) and Whooper Swan (*Cygnus cygnus*). There are no suitable habitats for these Annex I bird species within the proposed development site.

The proposed development site is likely to provide breeding habitat for a range of common bird species. An old swallow nest was recorded within the site buildings earmarked for demolition. Swallow are classified as an Amber list by the Birds of Conservation Concern in Ireland (BOCCI).

During the site visit common species such as Robin, Blackbird, Wren, Chaffinch, Rook, Jackdaw and House Sparrow were recorded. The site surveys were completed outside the breeding bird season and therefore a dedicated breeding bird survey was not carried out. While it is unlikely that the proposed development, which is dominated by intensive agricultural grassland and non-native tree species, would provide habitat for rare or threatened bird species the treelines, hedgerows and scrub at the site will provide nesting habitat for common bird species.

7.7 Invasive Species

Non-native plants are defined as those plants which have been introduced outside of their native range by humans and their activities, either purposefully or accidentally. Invasive non-native species are so-called as they typically display one or more of the following characteristics or features: (1) prolific reproduction through seed dispersal and/or re-growth from plant fragments; (2) rapid growth patterns; and, (3) resistance to standard weed control methods.

Where a non-native species displays invasive qualities and is not managed it can potentially: (1) out compete native vegetation, affecting plant community structure and habitat for wildlife; (2) cause damage to infrastructure including road carriageways, footpaths, walls and foundations; and, (3) have an adverse effect on landscape quality.

The Birds and Natural Habitats Regulations 2011 (SI 477 of 2011), Section 49(2) prohibits the introduction and dispersal of species listed in the Third Schedule, which includes Japanese Knotweed and Himalayan Balsam, as follows: “any person who plants, disperses, allows or causes to disperse, spreads or otherwise causes to grow [...] shall be guilty of an offence.”

No third schedule species were recorded within the proposed development site.

The high-risk invasive species (as classified by the NBDC), Cherry Laurel has been planted at the site (along the hedgerow/scrub habitat at the south-eastern boundary). This species can

outcompete native species and suppresses regeneration by forming thick stands and avoids herbivory by wildlife. Cherry Laurel often grows in association with *Rhododendron ponticum*. This species is not included in the Third Schedule of the Birds and Natural Habitats Regulations 2011 (SI 477 of 2011). Therefore, its presence at the site does not have the potential to lead to an offence under the Birds and Natural Habitats Regulations 2011 (S.I. 477 of 2011).

7.8 Other species

Whilst no site is without invertebrate interest, it is considered unlikely, given the managed agricultural grassland and non-native trees which dominates the site, that the proposed development site would provide valuable habitat for protected invertebrate species.

The proposed development site does have aquatic habitat for fish species, but is potentially hydrologically connected to watercourses in the vicinity. While there is no formal surface water network within the subject lands. There is an existing 300mm diameter surface water sewer to the north of the site, within Ross Road. This surface water sewer drains westward and eventually discharges into Lough Leane. There are a number of watercourses in the vicinity of the site which support Salmonids and other fish species i.e. to the north (Deenagh, EPA Code 22D01), to the west (Folies Stream, EPA Code 22F10) and to the south (Flesk [Kerry], EPA Code 22F02) of the subject site. Lough Leane is located approximately 1.5km to the west. Lough Leane itself is the largest of the Killarney lakes, with a surface area of 1,978ha, a mean depth of 13m and a maximum depth of 66m. Lough Leane contains a variety of fish species, including Brown trout, Sea trout, Ferox trout, Salmon, Perch, Flounder, Eel, Rudd, Tench and Arctic char. A landlocked sub-species of the twaite shad known as the Killarney shad (*Alosa fallax killarnensis*) is also present and is unique to this lake. The Killarney shad is listed in Annex II of the EU Habitats Directive.

8. Water Quality

8.1 River Basin Management Plan for Ireland 2022-2027 (3rd Cycle)

The Water Framework Directive (WFD) sets out the environmental objectives which are required to be met through the process of river basin planning and implementation of those plans. Specific objectives are set out for surface water, groundwater and protected areas. The challenges that must be overcome in order to achieve those objectives are very significant. Therefore, a key purpose of the River Basin Management Plan (RBMP) is to set out priorities and ensure that implementation is guided by these priorities.

The EPA has published an updated draft Catchment Assessment for each of our 46 catchments. These assessments provide an overview of the situation in the catchment, draw comparison between Cycle 2 and Cycle 3, and will help support the draft River Basin Management Plan 2022-2027 public consultation process. The third cycle RBMP, which was published in July 2022, aims to build on the progress made during the second cycle. Key measures during the first cycle included the licensing of urban waste-water discharges (with an associated investment in urban waste-water treatment) and the implementation of the Nitrates Action Programme (Good Agricultural Practice Regulations). The former measure has resulted in significant progress in terms both of compliance levels and of the impact of urban wastewater on water quality. The latter provides a considerable environmental baseline which all Irish farmers must achieve and has resulted in improving trends in the level of nitrates and

phosphates in rivers and groundwater. It is acknowledged, however, that sufficient progress has not been made in developing and implementing supporting measures during the first and second cycles.

Overall, RBMP assesses the quality of water in Ireland and presents detailed scientific characterisation of our water bodies. The characterisation process also takes into account wider water quality considerations, such as the special water-quality requirements of protected areas. The characterisation process identifies those water bodies that are *At Risk* of not meeting the objectives of the WFD, and the process also identifies the significant pressures causing this risk. Based on an assessment of risk and pressures, a programme of measures has been developed to address the identified pressures and work towards achieving the required objectives for water quality and protected areas. Data relating to the watercourses in the vicinity of the proposed development site are provided in **Table 9** and the location of these shown in **Figure 8**.

Table 9. WFD Status

Catchment: Laune-Maine-Dingle Bay (Code 22)			
<p>This catchment includes the area drained by the Rivers Laune and Maine and all streams entering tidal water between Glanearagh Head and Clogher Head, Co. Kerry, draining a total area of 2,036km². The largest urban centre in the catchment is Killarney. The other main urban centres in this catchment are Cahersiveen, Kilorglin, Castleisland and Dingle. The total population of the catchment is approximately 62,006 with a population density of 30 people per km².</p> <p>This catchment is dominated by the east–west trending series of sandstone ridges and limestone valleys that dominate the landscape of south and west Munster. In this catchment, the limestone valley is nearly completely submerged by the sea – having been preferentially eroded compared to the sandstone ridges lying either side of it and the valley is now filled by Dingle Bay while the sandstone ridges on either side form the Iveragh and Dingle Peninsulas.</p> <p>The Laune-Maine-Dingle Bay catchment comprises 19 sub-catchments with 93 river water bodies, 44 lakes, two transitional and six coastal water bodies, and eight groundwater bodies. There are no heavily modified or artificial water bodies in the Laune-Maine-Dingle Bay Catchment.</p> <p>The River Flesk flows into Lough Leane flowing from the northern slopes of the Derrynasaggart Mountains. It then flows north, being joined by the River Loo. The Flesk is also joined by the Ownykeagh, which, drains much of the eastern edge of the catchment. The Woodford River then flows into the Flesk from the east before the river flows through Killarney and into Lough Leane.</p> <p>The proposed development site is located within the Laune_SC_010 sub-catchment. According to the 2nd cycle data, Ross Bay is under REVIEW due to its unassigned status. The remaining water bodies within this sub-catchment were NOT AT RISK. However during the 3rd cycle, the status of Laune_010 has been changed to Poor and At risk.</p>			
Laune-Maine-Dingle Bay – River/Lake Waterbodies relevant to the proposed project (3 rd cycle)			
<p>In Cycle 3 (2022-2027) of the WFD, Lough Leane remains in Good ecological status, however, Ross Bay has been classed as Moderate status because of diffuse urban pressures. Ross Bay has been recommended as an Area for Restoration in Cycle 3 of the WFD.</p>			
Waterbody	Status 2016-2021	WFD Risk 2016-2021	Significant issues (significant pressures)
Laune_010	Poor	At risk	Unknown

Catchment: Laune-Maine-Dingle Bay (Code 22)			
Ross Bay	Moderate	At risk	Nutrients, organic (Urban runoff, urban wastewater)
Leane – Represents Lough Leane	Good	Not at risk	NA

Source: EPA envision mapping and www.catchments.ie

8.2 Urban Wastewater Treatment Directive

The Wastewater Discharge (Authorisation) Regulations 2007 (S.I. 684 of 2007) gives effect to the requirements of the Urban Wastewater Treatment Directive (Directive 91/271/EEC) and the Water Framework Directive (2000/60/EC) in Ireland. The Urban Wastewater Treatment Directive (UWWTD) lays down the requirements for the collection, treatment and discharge of urban wastewater and specifies the quality standards which must be met — based on agglomeration size — before treated wastewater is released into the environment.

The priority objective for this river basin planning cycle is to secure compliance with the Urban Wastewater Treatment Directive and to contribute to the improvement and protection of waters in keeping with the water-quality objectives established by this Plan. Achieving this objective entails addressing waste-water discharges and overflows where protected areas (i.e., designated bathing waters, shellfish waters and Freshwater Pearl-Mussel sites) or high-status waters are at risk from urban waste-water pressures.

As part of the proposed development wastewater discharging from the proposed development will be conveyed to the Killarney WWTP (D0037) for treatment prior to discharging into the Folly Stream and Lough Leane.

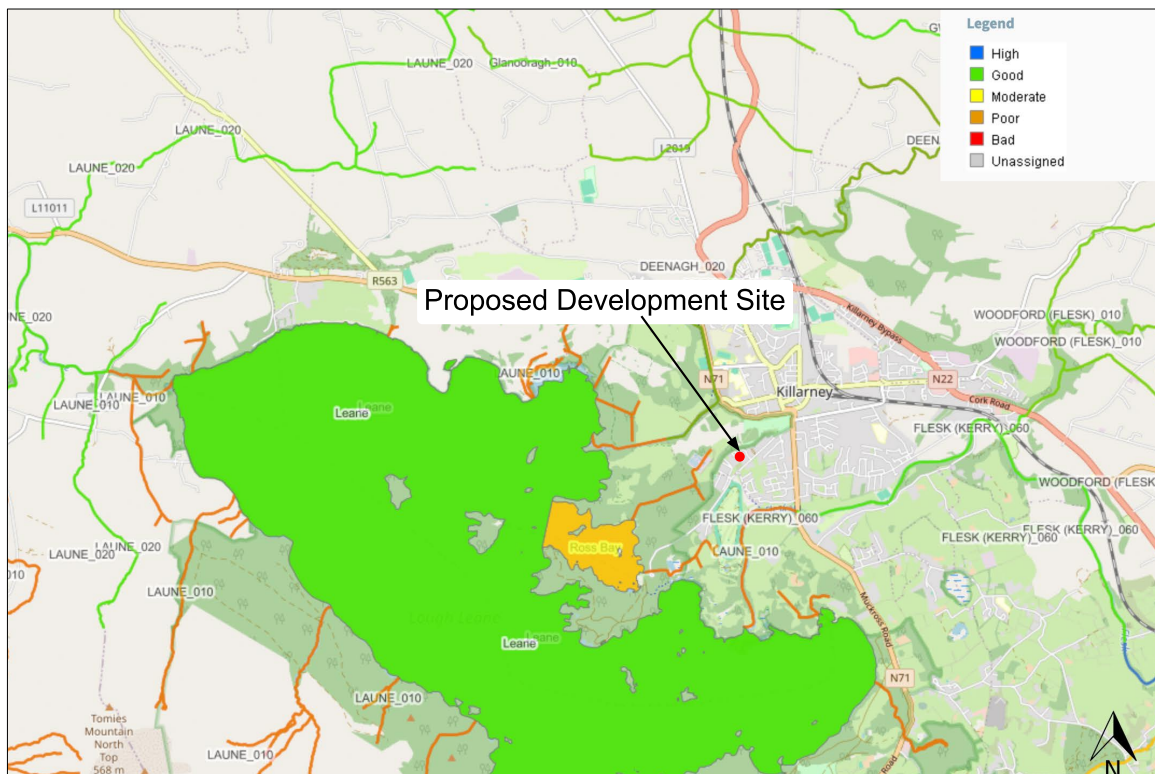


Figure 8. WFD waterbodies in the vicinity of the proposed development WFD Status | Source: EPA Envision mapping <https://gis.epa.ie/EPAMaps/> | not to scale

9. Evaluation of Potential Impacts

During construction and operation, potential impacts could arise from increased noise and disturbance which could result in the disturbance/displacement of birds and mammals. There will be a loss of relatively common habitats i.e., largely improved agricultural grassland as well as non-native treeline. Increased traffic and noise associated with the site works could potentially increase levels of disturbance which could result in the disturbance/displacement of birds and mammals. Increased dust levels during construction could have localised impacts on vegetation and habitats. During occupancy of the residential development and use of the pedestrian/cycle path, there will be increased activity and disturbance in line with current background levels.

Discharges of silt, were they to occur through inadequate control of surface water run-off, could impact on fisheries habitat and aquatic ecology in local waterbodies. Minor spills of hydrocarbons during construction could impact on groundwater or surface water quality with resultant impacts on aquatic ecology. Wastewater discharges during operation may also impact on water quality with the Lough Leane.

Potential impacts on designated European sites (SAC/cSAC/SPA) are specifically addressed in an Appropriate Assessment (AA) Screening and Natura Impact Statement (NIS) Reports which have been submitted as part of this application.

9.1 Do Nothing' Impact

Most of the habitats to be affected have been significantly modified from the natural state by human activity. If habitats were left unmanaged a general pattern of succession from grassland to scrub would be expected to occur. If sufficient time elapsed without development, the unused areas of the proposed development area would be expected to develop a covering of woodland with a mix of native and introduced species. In the absence of development, the site semi-natural habitats i.e. treeline/hedgerow and scrub areas would continue to provide potential habitat for a locally common of flora and fauna.

9.2 Impact Appraisal

When describing changes/activities and impacts on ecosystem structure and function, important elements to consider include positive/negative, extent magnitude, duration, frequency and timing, and reversibility (IEEM, 2018).

Section 3.7 of the *Guidelines on the Information to be Contained in Environmental Impact Assessment Reports*, (EPA 2022) provides standard definitions which have been used to classify the effects in respect of ecology. This classification scheme is outlined below in **Table 10**.

Table 10. EPA Impact Classification

Impact characteristic	Term	Description
Quality	Positive	A change which improves the quality of the environment.
	Neutral	No effects or effects that are imperceptible, within normal bounds of variation or within the margin of forecasting error.
	Negative	A change which reduces the quality of the environment.
Significance	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 consistent with existing and emerging 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.
Duration	Momentary Effects	Effects lasting from seconds to minutes.
	Brief Effects	Effects lasting less than a day.
	Temporary Effects	Effects lasting less than a year.
	Short-term	Effects lasting one to seven years.
	Medium-term	Effects lasting seven to fifteen years.
	Long-term	Effects lasting fifteen to sixty years.
	Permanent	Effects lasting over sixty years.
	Reversible Effects	Effects that can be undone.
	Frequency	Describe how often the effect will occur. (once, rarely, occasionally, frequently, constantly – or hourly, daily, weekly, monthly, annually)
	Irreversible	When the character, distinctiveness, diversity, or reproductive capacity of an environment is permanently lost.
	Residual	Degree of environmental change that will occur after the proposed mitigation measures have taken effect.

impact characteristic	Term	Description
	Synergistic	Where the resultant effect is of greater significance than the sum of its constituents.
	'Worst Case'	The effects arising from a development in the case where mitigation measures substantially fail.

9.3 Potential Impacts on Designated Sites

DixonBrosnan prepared a screening for Appropriate Assessment (AA) and Natura Impact Statement (NIS) report (which accompanies this planning application). This report investigated the potential for the proposed development to have significant effects on Natura 2000 sites (SAC/cSAC/SPA) either alone or in combination with other plans or projects. The screening report identified the potential for significant effects on Killarney National Park, Macgillicuddy's Reeks and Caragh River Catchment SAC and Killarney National Park SPA arising from the proposed development in the absence of mitigation via impacts on water quality during construction and operation and lighting on Lesser Horseshoe Bat.

Following the implementation of mitigation measures during construction and design measures during operation. The NIS report concluded the following:

It has been objectively concluded following an examination, analysis and evaluation of the relevant information, including in particular the nature of the predicted effects from the proposed development and with the implementation of the mitigation measures proposed, that the construction, operation and decommissioning of the proposed development will not adversely affect (either directly or indirectly) the integrity of any European site, either alone or in combination with other plans or projects. There is no reasonable scientific doubt in relation to this conclusion. The competent authority will make the final determination in this regard.

No significant effects from wastewater discharges have been identified and therefore, there is no potential for adverse effects on the Killarney National Park, Macgillicuddy's Reeks and Caragh River Catchment pNHA (See **section 10.1** for further details).

9.4 Potential Impacts on Flora

9.4.1 Habitats/Rare Species

Impacts on terrestrial habitats are generally restricted to direct removal of habitats. Indirect impacts may occur via damage and disturbance arising from vehicular activities and storage of overburden and materials. Levels of dust during construction are predicted to be low and effectively managed by mitigation. The impact on vegetation in adjoining habitats from wind-blown dust is predicted to be imperceptible. No rare floral species were recorded within the study area. Based on the criteria outlined by EPA 2022, as described above, the predicted impacts are detailed in **Table 11**.

No Annex I terrestrial habitats or other high value terrestrial habitats will be directly or indirectly impacted. The floral species recorded during the site surveys are common species which are typical of managed grassland and treeline/hedgerow present at the site. No rare species were recorded. The habitats earmarked for removal do not contain specialist flora.

Table 11. Predicted impacts as a result of the proposed development

Habitats	Ecological value (NRA guidelines)	
Improved agricultural grassland GA1	Local importance (Lower value)	This habitat will be removed. Negative, imperceptible, long-term
Treeline WL2/Stone walls and other stonework BL1	Local importance (higher value) Native treeline Local importance (low value) non-native/Lawson's Cypress treeline	Two areas of Lawson's Cypress treeline will be removed from the eastern boundary of the site. A small section of treeline/stone wall will be removed at the site entrance as outlined in landscape masterplan. These non-native trees are of low local value (although they do provide some commuting/foraging habitat for common bat species). Mature, broadleaved trees at the site will be largely retained. Detail on tree removal/replanting is provided in the SRLA Landscape plan which accompanies this application. Tree protection measures have been prescribed to prevent damage to retained treelines (including mature trees) and hedgerow within the site boundary. Negative, slight, short-medium term. Neutral, imperceptible in long-term as native replacement planting matures.
Scrub WS1	Local importance (lower value)	This scrub will be retained and trimmed. Neutral, imperceptible, long-term.
Hedgerow WL1/Scrub WS2	Local importance (lower value)	This habitat will be retained and trimmed. Neutral, imperceptible, long-term.
Buildings and artificial surfaces BL3	Local importance (lower value)	No impact
Buildings and artificial surfaces BL3 (structures)	Local importance (lower value)	These buildings will be demolished. No impact (See section 9.6 for potential impacts on bats)

9.4.2 Invasive Species

It is noted that while there is a statutory obligation under S.I. 477 of 2011 of the European Communities (Birds and Natural Habitats) Regulations 2011 to address invasive species in Ireland including Japanese and Himalayan Knotweed. As noted in **Section 7.7**, Cherry Laurel is not listed under these regulations and there is no statutory obligation to remove this species. However, mitigation measures will be implemented as outlined in **Section 12.5** of this report to ensure these species are not spread during construction works and there are no impacts on nearby habitats. Following the implementation of these measures, the effects from the spread of invasive species is predicted to be neutral, imperceptible and long-term.

9.6 Potential Impacts on Fauna

9.6.1 Bats

The proposed development site supports foraging/commuting bats, with the most valuable habitats along the eastern boundary of the site. Two areas of non-native Lawson's Cypress will be removed along this boundary as well as a small number of semi-mature trees i.e. Ash and Sycamore. Although this type of non-native treeline is considered of low value for bats, foraging/commuting bats were recorded using this treeline during the site survey.

Lesser horseshoe bats were not recorded during the site survey. Lesser horseshoe bats forage on flying insects predominantly in deciduous woodland and riparian vegetation normally within a couple of kilometres of their roosts (Bontadina *et al.*, 2002; Motte and Libois, 2002). The bats rely on linear landscape features (e.g. treelines, stonewalls and hedgerows) to navigate and commute from roosts to feeding sites and they are reluctant to fly out in the open (Schofield, 2008). Lesser horseshoe bats are very sensitive to light pollution and will avoid brightly lit areas. Treelines within the boundary of the SAC c.120m northwest and the riparian corridor along the River Flesk (c.175m south) are likely to be the closest suitable location for foraging/commuting Lesser Horseshoe Bat. These areas separated from the proposed development site by continuous residential development and/or roads. While Lesser Horseshoe bats are likely to use the woodland and treeline habitats within the SAC boundary to the northwest and south of the site, the habitat within the proposed development site, with non-native treeline, patchy hedgerow and considerable light spillage from existing residential development, is of negligible value for Lesser Horseshoe Bats.

Full details on habitat removal and replacement are provided in the SRLA Landscape Concept, which accompanies this application. Overall, non-native treeline removal will result in the loss of low value foraging habitat for bats. While replacement planting with native trees and hedgerow will take place, in the short-medium term there will be a loss of low value habitat for bats. As the newly planted habitats mature, in the medium-long-term, the lost habitat will be replaced with more valuable native hedgerow and treelines foraging habitats.

While no PRFs were recorded during the ground level assessment, it is noted that the presence of occasional roosting bats in trees earmarked for removal cannot be altogether excluded. Therefore, mitigation measures have been prescribed during tree removal to ensure that direct injury or mortality of bats is prevented. Biodiversity enhancement measures, including bat boxes will be provided which will provide bat roosting habitat which is likely to be of higher value for bats than that provided by the trees to be removed.

Lighting deters some bat species in particular *Myotis* species, from foraging (Azam *et al.* 2018). Studies have shown that illumination levels as low as 0.06 lux can influence the behaviour of bats. Even a full moon night (0.02 lux) can reduce bat activity within more sheltered, darker wildlife corridors and foraging areas (e.g., woodlands). It is noted that *Pipistrelle* species appear to be more tolerant of light and disturbance (Speakman 1991; Stones *et al.* 2009; Haffner 1986). Leisler's Bats will also opportunistically feed on such insect gatherings in lit areas (Bat Conservation Ireland 2010). However, it is noted that more recently research suggests that even in light opportunistic foraging species such as Common *Pipistrelle*, foraging activity may be impacted by increased lighting (Hooker *et al.* 2022).

As construction works will largely be confined to daytime hours, lighting during the construction phase will be minimal and there will no impact on foraging bats. However, as a precautionary measure construction lighting mitigation measure have been specified in **Section 12.3** of this report.

During operation, lighting within the proposed development site will increase from current levels which is likely to reduce the foraging value of retained and newly planted boundary habitats. However, the proposed development is already surrounded by residential development and light spillage onto boundary habitats will remain comparable to existing levels. Operational lighting has been designed in line with bat lighting guidelines (in compliance with lighting requirements) to minimise impacts on local bat populations. The lighting plan has been designed to ensure there is no significant light spillage outside the site boundary (See Lighting reality light contour drawing submitted with this application). Further detail on operational lighting is included in **Section 12.3.2**. As outlined in **Section 7.2**, the proposed development site is located within the 2.5km foraging buffer for a qualifying roost of Lesser Horseshoe Bat. The lighting plan will ensure there is no significant increase in artificial light intensity along commuting routes within 2.5km of qualifying roosts.

Overall, considering the creation of new habitats within the landscape plan, in the medium to long term there will be an increase in potential bat foraging habitat within the site. The location of the site within a built up and lit sub-urban setting means that this is of negligible value for foraging/commuting Lesser Horseshoe Bat. However, this will provide foraging/commuting habitat for other common bat species such as Common and Soprano *Pipistrelle* and Leisler's Bat in the medium to long-term.

The impact of the proposed development will be negative and slight in the short-medium term and neutral, imperceptible in the medium to long-term on local bat populations.

9.6.2 Otter

While Otters are known to use the River Flesk (c. 175m south), the River Deenagh (c. 780m northwest) and Lough Leane (c.1.5km west), there are no habitats of value for Otter within the proposed development site. There are no wetland habitats within the site. Surface water from the proposed development will discharge to an existing surface water network before ultimately discharging to Lough Leane. A range of SuDS features have been built into the project plans to ensure that local water quality will be protected and there are no impacts on water quality within Lough Leane or any other watercourses downstream of the site. Therefore, there will be no impacts on prey availability for Otter as a result of the proposed development.

The proposed development will result in an increase in noise and disturbance during the construction phase during daytime hours. However, given Otter's largely nocturnal habits, ability to move away from short-term disturbance and ability to habituate to anthropogenic noise and disturbance, the impact on Otter during construction will not be significant. The proposed development site is located within an urban edge setting. During operation and occupancy of the dwellings, noise and disturbance is likely to increase. However, given the distance of the proposed from valuable Otter habitats no significant impact to local Otter populations is predicted to occur.

Overall, the impact on Otter is predicted to be neutral, imperceptible and long-term.

9.6.3 Other Mammals

Although the habitats to be directly affected may form part of the territories of various mammal species, they do not provide critical resources and direct impacts on these habitats will be localised and temporary. Increased noise and disturbance is predicted to occur during construction and to a lesser degree during operation. The predicted noise level will not be excessive in the context of normal domestic and road traffic levels.

The proposed development will result in the loss of a non-native, coniferous treeline and a small number of broadleaved trees. However, the mature trees and hedgerows at the site will be largely retained. Landscape planting includes native hedgerow/treeline planting. As these habitats mature, they will provide alternative foraging and commuting habitat for small mammals such as Hedgehog and Pygmy Shrew. Lighting has been designed to minimise impacts on nocturnal foraging mammals (See **Section 12.3**). The impact on other mammals is predicted to be neutral, imperceptible and long-term at a local level.

9.6.4 Birds

The terrestrial bird species recorded within the proposed development site are typical of the terrestrial habitats onsite and are generally common. There will be a loss of common bird breeding and foraging habitat within the proposed development site i.e., grassland and non-native, coniferous treeline, which is likely to increase disturbance and reduce the numbers of birds breeding within the site boundary during the construction works. Some displacement of feeding birds may occur during construction due to increased noise and disturbance. Mitigation measures will be implemented to ensure there is no direct injury/mortality to breeding birds. Mitigation has also been specified for demolition works to ensure there is no direct impact on nesting birds such as Swallow.

Visible human presence and increased noise and lighting may prevent birds from nesting or foraging in retained habitats within or adjacent to the proposed development site. In areas where nesting habitat is retained within the site, operational lighting may impact on breeding birds. As construction works will largely be confined to daytime hours, lighting during the construction phase will be minimal and there will no impact on foraging bats. However, as a precautionary measure construction lighting mitigation measure have been specified in **Section 12.3** of this report. During operation, lighting at the site will increase from current levels. However, the proposed development site is located within an existing sub-urban setting and it is noted that operational lighting has been designed in line with wildlife lighting guidelines (in compliance with lighting requirements) to minimise impacts of operation lighting on local wildlife.

The area in proximity to the proposed development is subject to disturbance from existing dwellings and roads and therefore any birds which utilise this area will have habituated to moderate levels of daytime disturbance. Whilst works could potentially disrupt feeding patterns, given the availability of similar habitat in the surrounding area and the ability of birds to move away from disturbance, the impact on the feeding behaviour of these species is predicted to be slight. During the operational phase, the levels of activity will stabilise and birds in the surrounding landscape will be expected to habituate to any increased noise and disturbance levels. Landscape planting includes native hedgerow/treeline and meadow planting. The impact on terrestrial birds is therefore predicted to be negative and not significant in the short-term reducing to neutral and imperceptible in the long-term at a local level.

9.6.5 Other species

No signs of amphibians were recorded and there are no wetland habitats within the site boundary. The site is negligible value for amphibians and reptiles. The proposed development area is only likely to support common invertebrate species. The use of native tree and meadow planting will encourage invertebrate use of newly planted areas during the operational phase of the development. Given that the habitats which will be affected are relatively common in the surrounding landscape, any impact on these species will be positive, slight and long-term.

10. Potential impact on water quality

10.1 Surface Water Runoff/Discharges

Potential impacts on aquatic habitats which can arise from surface water emissions associated with the construction phase of the proposed development include increased silt levels in surface water run-off and inadvertent spillages of cement and/or hydrocarbons from fuel and hydraulic fluid.

High levels of silt can impact on fish species, in particular salmonids. If of sufficient severity, adult fish could theoretically be affected by increased silt levels as gills may become damaged by exposure to elevated suspended solids levels. If of sufficient severity, aquatic invertebrates may be smothered by excessive deposits of silt from suspended solids. In areas of stony substrate, silt deposits may result in a change in the macro-invertebrate species composition, favouring less diverse assemblages and impacting on sensitive species. Cement can also affect fish, plant life and macroinvertebrates by altering pH levels of the water. Aquatic plant communities may also be affected by increased siltation. Submerged plants may be stunted and photosynthesis may be reduced. Such run-off if severe could potentially impact on water quality and thus could impact on aquatic species.

Inadvertent spillages of hydrocarbon and/or other chemical substances could introduce toxic chemicals into the aquatic environment via direct means, surface water run-off or groundwater contamination. Some hydrocarbons exhibit an affinity for sediments and thus become entrapped in deposits from which they are only released by vigorous erosion or turbulence. Oil products may contain various highly toxic substances, such as benzene, toluene, naphthenic acids and xylene which are to some extent soluble in water; these penetrate into the fish and can have a direct toxic effect. The lighter oil fractions (including kerosene, petrol, benzene, toluene and xylene) are much more toxic to fish than the heavy fractions (heavy paraffins and tars). In the case of turbulent waters, the oil becomes dispersed as droplets into the water. In such cases, the gills of fish can become mechanically contaminated and their

respiratory capacity reduced (Svobodova *et al.* 1993). Aquatic plant communities may also be affected by increased siltation. Submerged plants may be stunted and photosynthesis may be reduced. Significant impacts on fish stocks or invertebrate prey could potentially impact on piscivorous species i.e., Otter, Grey Heron etc.

During the construction phase, the scale of the works will be small and there is no potential for significant hydrocarbon spills. However, given the hydrological connection to Lough Leane (and the proximity to the River Flesk), a range of mitigation measures have been specified during construction works to prevent impact on water quality. Hydrocarbon and silt control measures are outlined in **Section 12.1** of this report as well as in the outline Construction, Environmental, Management Plan (oCEMP) which has been included with this application.

A range of SuDS measures have been specified for the proposed development. The overall strategy aims to provide an effective system to mitigate the adverse effects of urban stormwater runoff on the environment by reducing runoff rates, volumes and frequency, reducing pollutant concentrations in stormwater, contributing to amenity, aesthetics and biodiversity enhancement and allow for the maximum collection of rainwater for re-use where possible. In addition, SuDS features aim to replicate the natural characteristics of rainfall runoff for any site by providing control of run-off at source and this has been achieved by the current proposals.

The Site Specific Flood Risk Assessment (OSL-Butler) has been included with this planning application. In consideration of findings and output of the Site Specific Flood Risk Assessment, the potential flood risk to and from the development as proposed is considered to be low. The development as proposed is not predicted to result in an adverse impact to the existing hydrological regime of the area or increase flood risk elsewhere and is therefore considered to be appropriate from a flood risk perspective.

Construction and operational phase runoff from the site will be effectively managed to ensure there is no impact on local water quality or any other watercourses/waterbodies downstream of the site. Given the existing and proposed water control measures no significant impact on local water quality is predicted to occur from the proposed development.

10.2 Wastewater Discharges

The proposed development could potentially result in an increase in nutrients discharging to Lough Leane via the Folly Stream discharge for the Killarney Wastewater Treatment Plant (WWTP). Increased nutrients can potentially impact on estuarine habitats by changing baseline ecological conditions and increasing algal growth, which in turn could impact on feeding success for birds and mammals listed as qualifying interests for the Killarney National Park, Macgillycuddy's Reeks and Caragh River Catchment SAC and Killarney National Park SPA.

Wastewater from the proposed development will be conveyed for treatment to Killarney WWTP. The Killarney agglomeration is served by a wastewater treatment plant with a Plant Capacity Population Equivalent (P.E.) of 54,000. The agglomeration consists of one primary discharge point which discharges to the Folly Stream, located just outside the boundary of the Killarney National Park, Macgillycuddy's Reeks and Caragh River Catchment SAC.

The WWTP obtained a discharge licence (Reg: D0037-01) from the EPA and has assigned emission limit values (ELV's) for a range of parameters to ensure a high degree of protection to Lough Leane (Ross Bay) and surrounding waters. The discharge licence assigns ELV's for total phosphorous (Total P), chemical oxygen demand (COD), total suspended solids (TSS), biological oxygen demand (BOD), Ammonia, total Phosphorous, pH and orthophosphate. The ELVs are set based on the full design capacity (P.E. 54,000) and are aimed at providing a high degree of protection to the receiving water body and to ensure the receiving waterbody is capable of accommodating the proposed discharge without causing or exacerbating a breach in the relevant standards.

A most recent Annual Environmental Report (AER) for Killarney WWTP was reviewed. The effluent monitoring summary is provided in **Table 12**

Table 12. Effluent monitoring summary Killarney WWTP 2023*

Parameter	WWDL ELV (Schedule A)	ELV with Condition 2 Interpretation included Note 1	Interim % reduction from influent concentration	Number of sample results	Number of exceedances	Number of exceedances with Condition 2 Interpretation included	Annual Mean	Overall Compliance (Pass/Fail)
COD-Cr mg/l	125	250	N/A	24	N/A	N/A	16	Pass
Suspended Solids mg/l	35	87.5	N/A	24	N/A	N/A	4.75	Pass
Total Nitrogen mg/l	15	18	N/A	24	N/A	N/A	5.12	Pass
pH pH units	9	9	N/A	24	N/A	N/A	7.14	Pass
BOD, 5 days with Inhibition (Carbonaceo mg/l)	4	8	N/A	24	N/A	N/A	1.63	Pass
Total Phosphorus (as P) mg/l	1	1.2	N/A	24	N/A	N/A	0.068	Pass
Ammonia-Total (as N) mg/l	0.1	0.2	N/A	24	N/A	N/A	0.038	Pass
ortho-Phosphate (as P) - unspecified mg/l	0.1	0.2	N/A	24	1	1	0.034	Fail
Visual Inspection Descriptive	N/A	N/A	N/A	24	N/A	N/A	N/A	
Conductivity @20°C µS/cm	N/A	N/A	N/A	24	N/A	N/A	362	

Notes:
 1 – This represents the Emission Limit Values after the Interpretation provided for under Condition 2 of the licence is applied
 2 – For pH the WWDA specifies a range of pH 6 - 9

*Source Killarney WWTP AER 2023

The AER notes that the final effluent from the Primary Discharge Point was non-compliant with the Emission Limit Values in 2023. The WWTP discharge was not compliant with the ELV's set in the wastewater discharge licence for the following: ortho-Phosphate (as P) - unspecified mg/l (as seen in **Table x** one exceedance recorded in 2023). The AER also notes that the annual mean hydraulic loading is less than the peak Treatment Plant Capacity. The annual maximum hydraulic loading is less than the peak Treatment Plant Capacity. The design of the wastewater treatment plant allows for peak values and therefore the peak loads have not impacted on compliance with Emission Limit Values.

In relation to ongoing monitoring of water quality, the 2023 AER also noted the following:

- The WWTP discharge was not compliant with the ELV's set in the wastewater discharge licence for the following: ortho-Phosphate (as P) - unspecified mg/l.
- The ambient monitoring results do not meet the required EQS at the upstream and the downstream monitoring locations. The EQS relates to the Oxygenation and Nutrient Conditions set out in the Surface Water Regulations 2009.
- Based on ambient monitoring results a deterioration in Ammonia, Ortho Phosphate & BOD, concentrations downstream of the effluent discharge is noted. A deterioration in water quality has been identified, however it is not known if it or is not caused by the WWTP.
- Other causes of deterioration in water quality in the area are unknown.
- The discharge from the wastewater treatment plant does not have an observable negative impact on the Water Framework Directive status.

It is noted that the proposed occupancy of the housing development is approximately 361.8 PE. In 2023 the agglomeration PE for Killarney WWTP was 22,369 (AER 2023). Given the significant capacity available within the WWTP, there is no reason that the WWTP would not accommodate the additional loading from the proposed development.

A Pre-Connection Enquiry was submitted to Irish Water which confirmed that, subject to a valid connection agreement being put in place, the proposed connection to the Irish Water network could be facilitated.

The addition of the effluent discharge from the proposed housing development to the Killarney WWTP is well within its design capacity and will not comprise the operational capability of the WWTP to treat effluent to comply with emission limit values. Therefore, the impacts from the proposed development will be negligible given the current operating conditions at the WWTP. The current discharge does not have an observable negative impact on the Water Framework Directive status of surrounding waterbodies/watercourses. No significant effects on local water quality from the increased wastewater discharges have been identified and no impact on Lough Leane and/or Killarney National Park, Macgillycuddy's Reeks and Caragh River Catchment SAC and Killarney National Park SPA (or pNHA) are predicted to occur.

11. Cumulative Impacts

Cumulative impacts on fauna chiefly relate to increased noise and activity levels and potential impacts on water quality. A planning search Kerry County Council planning portal and An Bord Pleanála was conducted to identify permitted projects in the vicinity of the proposed development site. Projects which, due to their nature or scale were unlikely to result in an in-combination impact, or to which there was no pathway, were excluded. Developments in the vicinity of the proposed development which have been granted planning during the last 24 month period are small in scale, relating to works on exiting housing/buildings. A number of LRDs have been granted planning within Killarney town.

A range of mitigation measures will be implemented during construction to effectively prevent adverse effects on water quality during construction. The measures to be implemented will effectively prevent any significant discharges of hydrocarbons or excess levels of silt from the individual elements of the project thus ensuring that no in-combination impacts will occur.

Furthermore, operational design measures, including SuDS measures will ensure there are no impacts on local water quality or flooding risk and therefore no in-combination impacts from operational surface water discharges will occur.

As this proposed development is not predicted to significantly increase long term noise and disturbance levels or impact significantly on water quality, no significant cumulative impacts have been identified.

12. Mitigation Measures

The mitigation measures have been drawn up in line with current best practice and include an avoidance of sensitive habitats at the design stage and mitigation measures will function effectively in preventing significant ecological impacts. The following mitigation measures will be implemented:

An outline Construction Environmental Management Plan (oCEMP) has been prepared (by OSL-Butler Consulting Engineers) for the proposed development and this contains construction mitigation measures, which are also set out in this report.

12.1 Surface water drainage works

The drainage infrastructure will be constructed and protected through the following measures:

- Hoarding or fencing to be provided to cordon-off completed infrastructure works: As is standard practice on construction sites, elements of works may be completed on a phased basis. As works are completed and handed over within each phase, this area will be enclosed with hoarding or fencing offset a safe distance from the line of the existing infrastructure and no further excavation works will be allowed within this area unless agreed with site management.
- Contractor to produce as-built construction records of drainage infrastructure. These records will be submitted to the engineer for approval in advance of handover. The as-built records will be reviewed and will need to be approved by the engineer before practical completion can be certified. The as-builts will be used by site personnel as a working record of where drainage infrastructure is located. The locations of these will be recorded on the as-built and will be marked out on the ground in advance of any works commencing in later stages. This methodology will be formally incorporated into a method statement to be completed by the groundworks sub-contractor before excavations commence.
- Marker tape to be provided on top of sewers running through live areas of site: As part of the methodology laying of drainage pipes, drainage works will have marker tape placed at a depth of 300mm above the pipe to warn the excavator and banksman of the service below. It is noted that the placing of marker tape over drainage lines is not a standard construction detail. However, the vulnerability of live drainage infrastructure serving a previous area of development within the proposed site is noted and these measures will form part of the works.
- Site personnel to be informed of works already completed and commissioned: As part of the Safe System of Work Plan (SSWP), site personnel will be made aware of the

drainage lines which are in operation. A site- specific method statement will be required in all cases where it is deemed that there is a risk of damaging such services. Those involved in direct management and supervision of site-based excavations require relevant competencies to deliver safety standards on site. They will have health and safety training in order to design safe systems of work that are appropriate to specific site conditions. They will need to prepare clear and simple safety method statements that can be used and understood by site workers. Ongoing checks will be carried out to ensure that appropriate equipment has been provided and is being used correctly.

- Monitoring of excavation and prevention of undermining of infrastructure: Special care will be taken when digging above or close to the lines of services. The locations of these will be marked out on the ground in advance of any excavation being undertaken. The general principles outlined in the Health and Safety Authority document: 'Code of Practice for Avoiding Danger from Underground Services' will be followed to ensure the safety of workers and to minimise the risk of damage to any existing pipelines or buildings.
- Water quality control of discharges to watercourse or drainage network: As detailed within the previous section, adjacent watercourses/groundwater need to be protected from sedimentation and erosion due to direct surface water runoff generated onsite during the construction phase. This includes preventing any sediment laden water from entering the surface water outfalls serving a previous phase of the development. To prevent this from occurring surface water discharge from the site will be managed and controlled as detailed above for the duration of the construction works until the permanently attenuated surface water drainage system of the proposed site is complete. Any manholes will need to be securely covered and gullies fitted with a geotextile filter to allow protection of the surface water within the pipe. Surface water runoff from areas stripped of topsoil and surface water collected in excavations will be directed to on-site settlement ponds where measures will be implemented to capture and treat sediment laden runoff prior to discharge of surface water at a controlled rate.
- The drainage infrastructure will be constructed and protected through the following measures:
 - Hoarding or fencing to be provided to cordon-off completed infrastructure works: As is standard practice on construction sites, elements of works may be completed on a phased basis. As works are completed and handed over within each phase, this area will be enclosed with hoarding or fencing offset a safe distance from the line of the existing infrastructure and no further excavation works will be allowed within this area unless agreed with site management.
 - Contractor to produce as-built construction records of drainage infrastructure. These records will be submitted to the engineer for approval in advance of handover. The as-built records will be reviewed and will need to be approved by the engineer before practical completion can be certified. The as-builts will be used by site personnel as a working record of where drainage infrastructure is located. The locations of these will be recorded on the as-built and will be marked out on the ground in advance of any works commencing in later stages. This methodology will be formally incorporated into

a method statement to be completed by the groundworks sub-contractor before excavations commence.

- Marker tape to be provided on top of sewers running through live areas of site: As part of the methodology laying of drainage pipes, drainage works will have marker tape placed at a depth of 300mm above the pipe to warn the excavator and banksman of the service below. It is noted that the placing of marker tape over drainage lines is not a standard construction detail. However, the vulnerability of live drainage infrastructure serving a previous area of development within the proposed site is noted and these measures will form part of the works.
- Site personnel to be informed of works already completed and commissioned: As part of the Safe System of Work Plan (SSWP), site personnel will be made aware of the drainage lines which are in operation. A site-specific method statement will be required in all cases where it is deemed that there is a risk of damaging such services. Those involved in direct management and supervision of site-based excavations require relevant competencies to deliver safety standards on site. They will have health and safety training in order to design safe systems of work that are appropriate to specific site conditions. They will need to prepare clear and simple safety method statements that can be used and understood by site workers. Ongoing checks will be carried out to ensure that appropriate equipment has been provided and is being used correctly.
- Monitoring of excavation and prevention of undermining of infrastructure: Special care will be taken when digging above or close to the lines of services. The locations of these will be marked out on the ground in advance of any excavation being undertaken. The general principles outlined in the Health and Safety Authority document: 'Code of Practice for Avoiding Danger from Underground Services' will be followed to ensure the safety of workers and to minimise the risk of damage to any existing pipelines or buildings.
- Water quality control of discharges to watercourse or drainage network: As detailed within the previous section, adjacent watercourses/groundwater need to be protected from sedimentation and erosion due to direct surface water runoff generated onsite during the construction phase. This includes preventing any sediment laden water from entering the surface water outfalls serving a previous phase of the development. To prevent this from occurring surface water discharge from the site will be managed and controlled as detailed above for the duration of the construction works until the permanently attenuated surface water drainage system of the proposed site is complete. Any manholes will need to be securely covered and gullies fitted with a geotextile filter to allow protection of the surface water within the pipe. Surface water runoff from areas stripped of topsoil and surface water collected in excavations will be directed to on-site settlement ponds where measures will be implemented to capture and treat sediment laden runoff prior to discharge of surface water at a controlled rate.

12.2 Sediment and water pollution control plan

All works carried out as part of these works will comply with all Statutory Legislation including the Local Government (Water Pollution) acts, 1977 and 1990. This standard is extremely strict,

allowing any entry onto water of deleterious material or polluting matter is an offence. The contractor will co-operate in-full with the Environmental Department of the local authority.

As part of the overall construction methodology, the following issues will be addressed and have been identified as being of particular risk and/or concern to pollution.

12.2.1 Contamination of Watercourse / Groundwater

Although the proposed excavation works will temporarily increase the vulnerability of the underlying aquifer, the thickness of the low permeability subsoil and the shallow depths of excavation involved will minimise the risk to groundwater. There is a risk that ground water could become contaminated with lime from cement which subsequently finds its way into the local adjacent watercourses. The measures proposed to be put in place to mitigate any potential damage from the effluent of contaminated ground water would be to create an exclusion zone, as far as reasonably practicable. Concrete batching will take place off site and wash down and wash out of concrete trucks will take place off site (at authorized concrete batching plant in full compliance with relevant planning and environmental consents). Concrete trucks, cement mixers or drums/bins are only permitted to wash out in designated wash out area greater than 50m from sensitive receptors including drains and drainage ditches. Abstraction of water from watercourses will not be permitted. Discharge from any vehicle wheel wash areas is to be directed to on-site settlement ponds.

12.2.2 Sediment & Erosion

Similar to the above, adjacent watercourses/groundwater need to be protected from sedimentation and erosion due to direct surface water runoff generated onsite during the construction phase. To prevent this from occurring surface water discharge from the site will be managed and controlled for the duration of the construction works until the permanently attenuated surface water drainage system of the proposed site is complete. A temporary positive drainage system shall be installed prior to the commencement of the construction works to collect surface water runoff by the site during construction. A series of geotextile lined cascading, high level outfall, settling basins will be installed upstream of the agreed discharge point by the appointed contractor. Alternatively, a 'siltbuster' silt control unit can be used on the outfall. This temporary surface water management facility will throttle runoff and allow suspended solids to be settled out and removed before water is discharged in a controlled manner to the agreed outfall. All inlets to the cascading settling basins will be riprapped to prevent scour and erosion in the vicinity of the inlet. There will be:

- Minimisation of site disturbance
- Implementation of sediment control (as outlined above)
- Minimisation of the potential for erosion
- Prevention of sediment-contaminated water leaving the site

Such measures shall be undertaken as part of the site's discharge licence. Temporary mounding and sediment control will be implemented to ensure silts do not enter the existing ditch during the construction stage.

12.2.3 Water quality monitoring

It is proposed to implement a programme for monitoring water quality at the outfall as part of the construction of this development, in agreement with the Planning Authority. Monitoring prior to, during and post construction works of surface water quality shall be undertaken to ensure minimum disturbance of water quality in the receiving environment. During the construction phase, the monitoring programme will include daily checks, weekly inspections and monthly audits. This programme and locations of sampling will be agreed with the local authority prior to the commencement of the proposed development.

12.2.4 Discharge Licences

It will not be permitted to discharge into any newly constructed storm water systems or watercourse without adhering to the conditions of the discharge licence and agreeing the same with the Site Manager and Local Authority Area Engineer for implementation.

12.2.5 Over Ground Oil / Diesel Storage

Appropriate safe storage of all by-product and waste materials shall be implemented during the construction works in accordance with this Outline Construction and Environmental Management Plan and the Resource and Waste Management Plan for the works. Only approved storage system for oil / diesel within the site will be permitted, (i.e. all oil / diesel storage to be located within a designated area placed furthest away from adjacent watercourses and contained within constructed bunded areas e.g. placed on 150mm concrete slab with the perimeter constructed with 225mm solid blockwork rendered internally). The bunded area will accommodate the relevant oil / diesel storage capacity in case of accidental spillage. Any accidental spillages will be dealt with immediately on site however minor by containment /removal from site. Surface water runoff from this bunded hardstanding area will discharge to a drain via a full retention petrol interceptor or to the on-site WWTP. Prior to the interceptor, a silt trap will be installed in order to remove the majority of suspended solids.

12.2.6 Disposal of Wastewater off Site

The construction compound will include adequate staff welfare facilities including foul drainage. Foul drainage discharge from the construction compound will be removed off site to a licensed facility until a connection to the public foul drainage network has been established. The Site Management Team will maintain a record of all receipts for the removal of toilet or interceptor waste off site to ensure its disposal in a traceable manner to an authorised facility. These will be available for inspection by the Environment Section of the local authority at all times.

12.2.7 Road Sweepers / Cleaning

The cleaning of public roads in and around the subject site will be undertaken to reduce environmental impacts and care will be taken to prevent any pollution of watercourses from this activity.

12.2.8 Waste Arisings

Appropriate safe storage of all by-product and waste materials shall be implemented during the construction works in accordance with this Outline Construction and Environmental Management Plan and the Resource and Waste Management Plan for the works.

12.2.9 Construction Stage Dewatering

Appropriate monitoring of groundwater levels during site works shall be undertaken. Standard construction phase filtering of surface water for suspended solids will be carried out. Unfiltered surface water discharges or runoff shall not be permitted from the site into the onsite watercourse during the works.

12.3 Compound facilities/parking

The compound shall be entirely within the site boundaries. Site accommodation to be provided will include suitable washing / dry room facilities for construction staff, canteen, sanitary facilities, first aid room, office accommodation etc. Access to the compound will be security controlled and all site visitors will be required to sign in on arrival and sign out on departure.

The compound shall be constructed using a clean permeable stone finish and will be enclosed with security fencing. A permeable hardstand area will be provided for staff parking and these areas will be separate from designated machinery/plant parking.

A material storage zone will also be provided in the compound area. This storage zone will include material recycling areas and facilities.

A series of 'way finding' signage will be provided to route staff / deliveries into the site and to designated compound / construction areas.

On completion of the works all construction materials, debris, temporary hardstands etc. from the site compound will be removed off site and sent for reuse as by-products or recovery at authorised facilities and the site compound area reinstated in full on completion of the works.

12.2 Noise and Working Hours

It is unlikely that there will be a requirement for night-time or evening (19:00 to 23:00 hrs) construction works. Accordingly, based on BS5228 and TII acceptable levels for construction and also the existing ambient sound environment, the following construction noise criteria are proposed:

- 65dB LAeq (1-hour) Monday to Friday (07:00 to 19:00 hrs) and Saturday (07:00 to 13:00 hrs) at existing Noise Sensitive Receptors (NSRs)

12.3 Lighting

The primary mitigation which will be implemented for this project relates to bats, as these are considered the most sensitive species in relation to night time lighting. It is noted that the mitigation proposed will also lessen in the impact in relation other nocturnal species such as Hedgehog. Potentially lighting associated with the site works could cause disturbance/displacement of Bats and other nocturnal wildlife. If of sufficient severity and duration, there could be impacts on reproductive success. Lighting mitigation measures will follow *Bats & Lighting Guidance Notes for: Planners, engineers, architects and developers* (Bat Conservation Ireland, 2010). The following measures will be applied in relation to construction and operational lighting:

12.3.1 Lighting during construction

Site lighting will typically be provided by tower mounted temporary portable construction floodlights. The floodlights will be cowled and angled downwards to minimise spillage to surrounding properties. The following measures will be applied in relation to site lighting:

- Lighting will be provided with the minimum luminosity sufficient for safety and security purposes.
- Lights will be switched off when not in use; and
- Lighting will be positioned and directed so that it does not to unnecessarily intrude on adjacent ecological receptors i.e. treeline and woodland used by protected species...
- Works will primarily take place during hours of daylight to minimise disturbance to any nocturnal mammal species.

12.3.2 Lighting During Operation

The most significant positive environmental aspect of the proposed design is the exclusive use of 2700K Warm White light. This choice is directly aligned with "Best Practice as published by Bat Conservation Ireland & ILP Guidance Note 8 Bats and Artificial Lighting".

Research indicates that shorter wavelength (bluer) light is more disruptive to nocturnal wildlife, particularly bats, by affecting their foraging behaviour, migration patterns, and overall health. By selecting a warmer colour temperature, the design proactively mitigates potential adverse effects on light-sensitive species, demonstrating a responsible approach to ecological conservation within the development area. The following measures have been implemented into the lighting plan:

- **Colour Temperature:** The consistent use of 2700K Warm White light throughout the development is a critical ecological mitigation strategy. This demonstrates a commitment to minimizing biodiversity impact from the design stage.
- **Luminaire Choice:** The selection of Philips LumiStreet Micro luminaires (BGP291 DW10 and DX10) with specific photometric characteristics is a primary mitigation measure. Notably, these luminaires have an I_{max90} value of 0.0 cd/klm, indicating that they are designed to emit virtually no direct light above the horizontal plane. This significantly reduces upward light spill and, consequently, sky glow, which is crucial for maintaining the quality of the night sky in an environmentally sensitive area.
- The consistent mounting height of 6.00 meters for all luminaires helps to control the spread of light, ensuring that illumination is directed downwards and contained within the intended areas, reducing light trespass into adjacent sensitive zones.
- The integration of 7-pin Westire photocells, set to switch ON and OFF at 20 LUX, ensures that the lighting operates only during necessary periods (i.e., when natural light levels drop below the threshold). This intelligent control minimizes unnecessary illumination, reducing overall energy consumption and potential light pollution during periods when artificial light is not required.

12.4 Ecology

12.4.1 General

All personnel involved with the project will receive an on-site induction relating to operations and the environmentally sensitive nature of retained habitats onsite as well as the hydrological connection to local waterbodies including nearby Natura 2000 sites.

All site clearance and landscaping works will comply with current legislative requirements and best practice. All retained trees that are within or close to the working wayleave of the proposed development will be protected in accordance with the requirements of British Standard BS5837:2012 'Trees in Relation to Design, Demolition and Construction' – Recommendations, with protective fencing being installed around all trees to be retained, prior to commencement of development. The planting plans and landscaping proposals will ensure that no invasive species are introduced, either deliberately or inadvertently, to the site from imported materials or other activities. Any licence necessary will be obtained if there could be a significant disturbance of any protected species. Further details on tree protection measures are included in the Arboricultural Impact Assessment (AIA) which accompanies this application.

The Wildlife Amendment Act 2000 (S.46.1) provides that it is an offence to cut, grub, burn or destroy any vegetation on uncultivated land or such growing in any hedge or ditch from the first of March to the 31st of August. Exemptions include the clearance of vegetation in the course of road or other construction works or in the development or preparation of sites on which any building or other structure is intended to be provided. None the less it is recommended that vegetation be removed outside of the breeding season where possible. In particular, removal during the peak-breeding season (April-June inclusive) should be avoided. Such a timeframe would also minimise the potential disturbance of breeding birds outside of the proposed development site boundary.

A landscape plan has been included with the application with further detail on habitat enhancement measures (SRLA). The plan includes for native treeline and hedgerow planting and meadow areas. There is a strong emphasis on the use of the native trees and hedgerow species. The All Ireland pollinator plan 2021-2025 has greatly influenced the planting palette and soft landscape strategy. This, combined with a selection of native plant species, will define the landscape design. For full details, refer to SRLA Landscape and Green infrastructure report.

12.4.2 Bats

As noted above lighting mitigation measures have taken into account measures outlined in the *Bats & Lighting Guidance Notes for: Planners, engineers, architects and developers* (Bat Conservation Ireland, 2010).

During the site works, general mitigation measures for bats will follow the National Road Authority's '*Guidelines for the Treatment of Bats during the Construction of National Road Schemes*' NRA (2005c) and '*Bat mitigation guidelines for Ireland v2*'. Marnell *et al.* 2022). These documents outline the requirements that will be met in the pre-construction (site clearance) stage to minimise negative effects on roosting bats, or prevent avoidable effects resulting from significant alterations to the immediate landscape.

No bat roosts were recorded within trees earmarked for removal. However, the presence of occasional roosting bats in mature and semi-mature trees cannot be altogether ruled out. A number of trees will be removed prior to/during construction. The following precautionary measures will be implemented.

- The bat specialist will work with the contractor to ensure that trees earmarked for retention are adequately protected.
- Tree-felling will be undertaken in the period September to late October/early November. During this period bats are capable of flight and may avoid the risks of tree-felling if proper measures are undertaken.
- Felled trees will not be mulched immediately. Such trees will be left lying several hours and preferably overnight before any further sawing or mulching. This will allow any bats within the tree to emerge and avoid accidental death. The bat specialist will be on-hand during felling operations to inspect felled trees for bats. If bats are seen or heard in a tree that has been felled, work will cease and the local NPWS Conservation Ranger will be contacted.
- Trees will be retained where possible and no 'tidying up' of dead wood and spilt limbs on tree specimens will be undertaken unless necessary for health and safety.
- Treelines earmarked for retention, but adjacent to tree removal areas and thus at risk, will be clearly marked by a bat specialist to avoid any inadvertent damage.

12.4.3 Birds

As noted in **Section 12.4.1**, where possible, vegetation will be removed outside of the breeding season and in particular, removal during the peak-breeding season (April-June inclusive) will be avoided. This will also minimise the potential disturbance of breeding birds outside of the proposed development site boundary.

As detailed in **Section 9.6.4**, a Swallow nest was recorded within a building earmarked for demolition. Ideally demolition will be conducted outside of the breeding season. This will also minimise the potential disturbance of breeding birds outside of the proposed development site boundary. If demolition works during the breeding season cannot be avoided, a pre-construction survey will be carried out by a suitably qualified ecologies and if birds are detected appropriate mitigation measures will be implemented.

12.4.4 Biodiversity enhancement

It is proposed that five bat boxes will be installed at the proposed development site i.e., Bat box pro or similar (<https://www.wildcare.co.uk/vincent-pro-bat-box-10651.html>). These bat boxes will be located within mature/semi-mature trees, retained along the eastern site boundary. These will be positioned at least 10m from any light fittings.

It is proposed that six bird nesting boxes (various types including open fronted, entrance hole) will be installed at the proposed development site. These will be located within retained treelines/hedgerows along the site boundary. These will be positioned at least 10m from any light fittings.

Five insect nesting boxes suitable for Hymenoptera spp. (bees and wasps) will be put in place adjacent to areas of meadow planting as a biodiversity enhancement measure.

Log piles will be installed to allow sites for small mammals such as Hedgehog and Pygmy Shrew. These will be situated along retained habitat and/or areas of newly planted shrub and groundcover.

12.5 Invasive Species

As noted in **Section 7.7** of this report, there is no statutory obligation to remove Cherry Laurel. However, Cherry Laurel will be removed as part of the pre-construction/construction works. Cherry Laurel should be removed with great care given its location within habitats earmarked for retention i.e. scrub/hedgerow.

Two methods of treatment are specified here to allow effective control of this plant within the site.

1. Within areas where the vegetation is being cleared Cherry Laurel will be dug out
2. Within areas where vegetation is being retained, Cherry Laurel will be initially cut back and then chemically treated.

The following treatment options have been widely tested and measured for effectiveness across Ireland. In almost all cases, failures can be accredited to poor application of a particular technique and/or logistical difficulties, rather than the control method itself. Care should be taken when embarking on a control programme and resources should be identified and allocated for repeated treatments.

1. Cut and remove stems by hand or chainsaw, cutting as close to the ground as possible to remove above ground growth. Chip or remove the cut material from the area to allow for effective follow-up work and prevent regrowth. Chipped material can provide good weed barrier around ornamental garden areas. Flailing may be an option in parts of the site to treat young or immature growth. Although not suitable on all sites and locations, especially steeply sloping or wet sites, it is very effective as it breaks up woody stems upon contact. The removal of above ground growth will not prevent regrowth as Cherry Laurel will regrow from cut stems and stumps.
2. Digging the stumps out. The effectiveness of this technique is increased by removing all viable roots. This can be done manually or with a tractor and plough. To avoid regrowth, stumps should be turned upside down and soil should be brushed off roots.
3. Direct stump treatment by painting or spot spraying freshly cut low stumps with a herbicide immediately after been cut. Glyphosate (20% solution), triclopyr (8% solution) or ammonium sulphate (40% solution) are known to be effective during suitable weather conditions i.e. dry weather. The herbicide concentrations used and timings of applications vary according to which chemical is used. Use of a vegetable dye is recommended to mark treated stumps and all stumps should be targeted. A handheld applicator will help avoid spray drift onto surrounding non-target species. Always read the label and follow the manufacturers guidelines when using herbicides. Remember that using

4. A variation on the stump treatment method is stem injection, using a 'drill and drop' methodology, whereby, if the main stem is cut and is large enough for a hole to be drilled into it, the hole can be used to facilitate the targeted application of glyphosate (25% solution).
5. Stump regrowth and seedlings can be effectively killed by spraying regrowth with a suitable herbicide, usually glyphosate. Best practice spraying protocols should be carefully followed. General broadcast spraying is not as effective as stump spot treatment and has the potential to impact on surrounding non-target species. Cherry Laurel leaves are thick and waxy. For herbicide treatment to be effective each individual leaf needs to be thoroughly wetted with herbicide to kill the plant.

13. Conclusions

Overall, the proposed development will impact on habitats of low local value. There will also be a loss of common habitats which have limited use as foraging grounds for common bird and mammal species. Agricultural grassland, which covers most of the site, has low value. The treelines earmarked for removal are coniferous and non-native and are of low ecological value. However, it is noted that a small number of bats were recorded foraging along these habitats.

Broadleaved treeline, mature trees and hedgerows will be largely retained. However, some tree removal will be required. The trees earmarked for removal have low to negligible potential for roosting bats. Mitigation measures will be implemented during tree removal to ensure there is no direct injury/mortality impacts on bats. A landscape masterplan accompanies the current application with a strong emphasis on native planting and ecological connectivity. As the newly planted areas mature they will provide alternative foraging and commuting habitat for bats, birds and other wildlife and increase connectivity with the wider landscape.

The increase in lighting within the proposed development may reduce the bat foraging value of these retained/newly planted habitats. However, operational lighting has been designed to reduce impacts on foraging bats (and other nocturnal wildlife). It is noted that the proposed development site is surrounded on all sides by existing residential development and there is no significant change in light levels is predicted to occur.

During construction, there will be increased noise and disturbance which could potentially impact on birds and non-volant mammals. Given the availability of alternative habitat in the vicinity, the impact on birds, non-volant mammals and other wildlife is likely to be slight to moderate and short-term. This impact will reduce to slight in the long-term as native planting matures.

Mitigation measures have been proposed to protect local water quality. No difficulties in the effective implementation of the prescribed mitigation measures have been identified. No impact from the spread of invasive species will occur. Following mitigation, no significant impacts (SACs, SPAs or pNHAs) on designated sites will occur.

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Appendices

Appendix 1. NRA 2009 Guidelines

Table 1: Examples of valuation at different geographical scales

Ecological valuation: Examples
<p>International Importance:</p> <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 fulfills 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.⁴ • 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)⁵ 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; and/or ○ 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). <ul style="list-style-type: none"> • 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).⁶
<p>National Importance:</p> <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)⁷ of the following: <ul style="list-style-type: none"> ○ Species protected under the Wildlife Acts; and/or ○ Species listed on the relevant Red Data list. • Site containing 'viable areas'⁸ of the habitat types listed in Annex I of the Habitats Directive.
<p>County Importance:</p> <ul style="list-style-type: none"> • Area of Special Amenity.⁹ • 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)¹⁰ 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. • 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.

- County important populations of species, or viable areas of semi-natural habitats or natural heritage features identified in the National or Local BAP, 11 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):

- 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)¹² of the following:
 - 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):

- Sites containing small areas of semi-natural habitat that are of some local importance for wildlife;
- Sites or features containing non-native species that are of some importance in maintaining habitat links.

⁴ See Articles 3 and 10 of the Habitats Directive.

⁵ It is suggested that, in general, 1% of the national population of such species qualifies as an internationally important population. However, a smaller population may qualify as internationally important where the population forms a critical part of a wider population or the species is at a critical phase of its life cycle.

⁶ Note that such waters are designated based on these waters' capabilities of supporting salmon (*Salmo salar*), trout (*Salmo trutta*), char (*Salvelinus*) and whitefish (*Coregonus*).

⁷ It is suggested that, in general, 1% of the national population of such species qualifies as a nationally important population. However, a smaller population may qualify as nationally important where the population forms a critical part of a wider population or the species is at a critical phase of its life cycle.

⁸ A 'viable area' is defined as an area of a habitat that, given the particular characteristics of that habitat, was of a sufficient size and shape, such that its integrity (in terms of species composition, and ecological processes and function) would be maintained in the face of stochastic change (for example, as a result of climatic variation).

⁹ It should be noted that whilst areas such as Areas of Special Amenity, areas subject to a Tree Preservation Order and Areas of High Amenity are often designated on the basis of their ecological value, they may also be designated for other reasons, such as their amenity or recreational value. Therefore, it should not be automatically assumed that such sites are of County importance from an ecological perspective.

¹⁰ It is suggested that, in general, 1% of the County population of such species qualifies as a County important population. However, a smaller population may qualify as County important where the population forms a critical part of a wider population or the species is at a critical phase of its life cycle.

¹¹ BAP: Biodiversity Action Plan

¹² It is suggested that, in general, 1% of the local population of such species qualifies as a locally important population. However, a smaller population may qualify as locally important where the population forms a critical part of a wider population or the species is at a critical phase of its life cycle

