



DixonBrosnan  
environmental consultants

Report in Support of Appropriate Assessment (AA)  
Screening & Natura Impact Statement (NIS)

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

On Behalf of  
Homeland Projects Ltd

July 2025

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environmental consultants

Project	Report in Support of Appropriate Assessment (AA) Screening & Natura Impact Statement (NIS) Large-Scale Residential Development (LRD) at Ross Road, Killarney	
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27/03/25	First draft	Sorcha Sheehy PhD
08/04/25	Second draft	Carl Dixon MSc
31/07/25	Issue to client	
DixonBrosnan Lios Ri Na hAoine, 1 Redemption Road, Cork. Tel 086 851 1437   <a href="mailto:carl@dixonbrosnan.com">carl@dixonbrosnan.com</a>   <a href="http://www.dixonbrosnan.com">www.dixonbrosnan.com</a>		
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# 1. Introduction

## 1.1 Background

The information in this report has been compiled by DixonBrosnan Environmental Consultants, on behalf of the applicant. It provides information on and assesses the potential for a proposed Large-Scale Residential Development (LRD) at Ross Road, Killarney, Co. Kerry, hereafter referred to as the “proposed development”, to impact on any Natura 2000 sites within its likely zone of impact. The information in this report forms part of and should be read in conjunction with the planning application documentation for the proposed development.

The Birds Directive (2009/147/EC) and the Habitats Directive (92/42/EEC) put an obligation on EU Member States to establish the Natura 2000 network of sites of highest biodiversity importance for rare and threatened habitats and species across the EU. In Ireland, the Natura 2000 network of European sites comprises Special Areas of Conservation (SACs, including candidate SACs) and Special Protection Areas (SPAs). SACs are selected for the conservation of Annex I habitats (including priority types which are in danger of disappearance) and Annex II species (other than birds). SPAs are selected for the conservation of Annex I birds and other regularly occurring migratory birds and their habitats. The annexed habitats and species for which each site is selected correspond to the qualifying interests of the sites and from these the conservation objectives of the site are derived. The Birds and Habitats Directives set out various procedures and obligations in relation to nature conservation management in Member States in general, and of the Natura 2000 sites and their habitats and species in particular. A key protection mechanism is the requirement to consider the possible nature conservation implications of any plan or project on the Natura 2000 site network before any decision is made to allow that plan or project to proceed. Not only is every new plan or project captured by this requirement but each plan or project, when being considered for approval at any stage, must take into consideration the possible effects it may have in combination with other plans and projects when going through the process known as Appropriate Assessment (AA).

The obligation to undertake Appropriate Assessment (AA) derives from Article 6(3) and 6(4) of the Habitats Directive, and both involve a number of steps and tests that need to be applied in sequential order. Article 6(3) is concerned with the strict protection of sites, while Article 6(4) is the procedure for allowing derogation from this strict protection in certain restricted circumstances. As set out in Section 177U of the Planning and Development Act 2000 as amended, a screening for appropriate assessment of an application for consent for the proposed development must be carried out by the competent authority to assess, in view of best scientific knowledge, if the proposed development, individually or in combination with another plan or project is likely to have a significant effect on any European site. Each step in the assessment process precedes and provides a basis for other steps. The results at each step must be documented and recorded carefully so there is full traceability and transparency of the decisions made.

## 1.2 Report Background

The purpose of this report is to inform the AA process as required under the Habitats Directive (92/43/EEC) in instances where a plan or project may give rise to significant impacts on a

Natura 2000 site. This report aims to inform the Appropriate Assessment process in determining whether the development, both alone and in combination with other plans or projects, are likely to have a significant impact on the Natura 2000 sites in the study area, in the context of their conservation objectives and specifically on the habitats and species for which the sites have been designated.

This report has been prepared with regard to the following guidance documents, where relevant.

- *Managing Natura 2000 Sites: The Provision of Article 6 of the Habitats Directive 92/43/EEC (European Commission (EC), 2018);*
- *Assessment of Plans and Projects Significantly Affecting Natura 2000 sites: Methodical*
- *Guidance on the Provisions of Article 6(3) and (4) of the Habitats Directive 92/43/EEC (European Commission (EC), 2021);*
- *Guidance Document on Article 6(4) of the Habitats Directive 92/43/EEC (European Commission, (EC) 2007);*
- *Appropriate Assessment of Plans and Projects in Ireland – Guidance for Planning Authorities (Department of Environment, Heritage and Local Government, 2010 revision);*
- *Appropriate Assessment under Article 6 of the Habitats Directive; Guidance for Planning Authorities. Circular NPW 1/10 and PSSP 2/10 (Department of Environment, Heritage and Local Government, 2010);*
- *Guidelines for Good Practice Appropriate Assessment of Plans under Article 6(3) Habitats Directive (International Workshop on Assessment of Plans under the Habitats Directive, 2011);*
- *Commission notice Guidance document on wind energy developments and EU nature legislation, (EC 2020);*
- *Communication from the Commission on the precautionary principle. European Commission (2000)*
- *Assessment of plans & projects in relation to N2K sites – Methodological Guidance (EC 2021);*
- *Guidance document on the strict protection of animal species of Community interest under the Habitats Directive (EC 2021)*
- *CJEU Case C 164/17 Edel Grace Peter Sweetman v An Bord Pleanála,*
- *EC Commission Notice 2021/C 437/01 'Assessment of plans and projects in relation to Natura 2000 sites - Methodological guidance on the provisions of Article 6(3) and (4) of the Habitats Directive 92/43/EEC'.*

- *People Over Wind and Peter Sweetman v. Coillte Teoranta (People Over Wind) [2018] C-323/17 and*
- *Kelly -v- An Bord Pleanála & anor [2019] IEHC 84*

### 1.3 Authors of the Report

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

Carl Dixon MSc (Ecology) is a senior ecologist who has over 25 years' experience in ecological and water quality assessments. Carl Dixon holds an Honours Degree (BSc) in Ecology and a Masters (MSc) in Ecological Monitoring from UCC. Prior to setting up DixonBrosnan Environmental Consultants in 2000, Carl set up and ran Core Environmental Services which included Rural Environmental Protection Scheme (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 particular 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.

Dr. Sorcha Sheehy PhD (ecology/ornithology) is an experienced ecological consultant specialising in bird behaviour. Sorcha received a BSc in Applied Ecology from UCC and subsequently went on to receive a PhD in behavioural ornithology at UCC. During her PhD research, Sorcha studied bird-aircraft collision with a particular focus on bird behaviour, included field-based behavioural observations at airports, bird cadaver examination and collision classification and the use of radar tracking to model collision risk. Sorcha has worked for over 15 years in a professional ecology role and specialises in the coordination of ecology projects and assessments. She has coordinated and contributed to Habitats Directive Assessments (AA screenings and NIS) and Environmental Impact Assessment Reports (EIAR) for a range of small and large-scale projects with particular expertise in assessing impacts on birds. Notable projects include Arklow Bank Wind Park, Shannon Technology and Energy Park and Waste to Energy Facility Ringaskiddy.

## 2. Regulatory Context and Appropriate Assessment Procedure

### 2.1 Regulatory Context

The Habitats Directive (Council Directive 92/43/EEC on the *Conservation of Natural Habitats and of Wild Fauna and Flora*) aims to maintain or restore the favourable conservation status of habitats and species of community interest across Europe. The requirements of this directive is transposed into Irish law through the European Communities (Birds and Natural Habitats Regulations; S.I. No. 477 of 2011).

Under the Directive a network of sites of nature conservation importance have been identified by each Member State as containing specified habitats or species requiring to be maintained

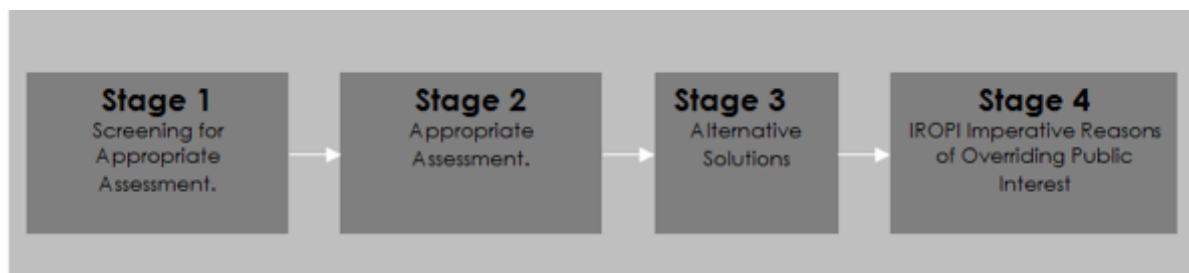
or returned to favourable conservation status. In Ireland the network consists of SACs and SPAs, and also candidate sites, which form the Natura 2000 network.

Article 6(3) of Council Directive 92/43/EEC of 21 May 1992 on the *Conservation of Natural Habitats and of Wild Fauna and Flora* (as amended) (hereafter 'the Habitats Directive') requires that, any plan or project not directly connected with or necessary to the management of a designated site, but likely to have a significant effect thereon, either individually or in combination with other plans or projects, shall be subject to appropriate assessment of its implications for the site in view of the site's conservation objectives. A competent authority (e.g. the EPA or Local Authority) can only agree to a plan or project after having determined that it will not adversely affect the integrity of the site concerned.

The possibility of a significant effect on a designated or "European" site has generated the need for an appropriate assessment to be carried out by the competent authority for the purposes of Article 6(3). A Stage Two Appropriate Assessment is required if it cannot be excluded, on the basis of objective information, that the proposed development, individually or in combination with other plans or projects, will have a significant effect on a European site. The first (Screening) Stage for appropriate assessment operates merely to determine whether a (Stage Two) Appropriate Assessment must be undertaken on the implications of the plan or project for the conservation objectives of relevant European sites.

## 2.2 Appropriate Assessment Procedure

The assessment requirements of Article 6(3) establish a stage-by-stage approach. This assessment follows the stages outlined in the 2001 European Commission publications "Assessment of plans and projects significantly affecting Natura 2000 sites: methodological guidance on the provisions of Articles 6(3) and 6(4) of the Habitats Directive 92/43/EEC" (2001) and *Managing Natura 2000 Sites: the provisions of Article 6 of the 'Habitats' Directive 92/43/EEC* (Draft) Office for Official Publications of the European Communities, Luxembourg (EC, 2015);



The stages are as follows:

**Stage One:** Screening — the process which identifies any appreciable impacts upon a Natura 2000 site of a project or plan, either alone or in combination with other projects or plans, and considers whether these impacts are likely to be significant;

**Stage Two:** Appropriate assessment — the consideration of the impact on the integrity of the Natura 2000 site of the project or plan, either alone or in combination with other projects or plans, with respect to the site's structure and function and its conservation objectives. Additionally, where there are adverse impacts, an assessment of the potential mitigation of those impacts;

**Stage Three:** Assessment of alternative solutions: The process which examines alternative ways of achieving the objectives of the project or plan that avoid adverse impacts on the integrity of the Natura 2000 site. It is confirmed that no reliance is placed by the developer on Stage Three in the context of this application for development consent;

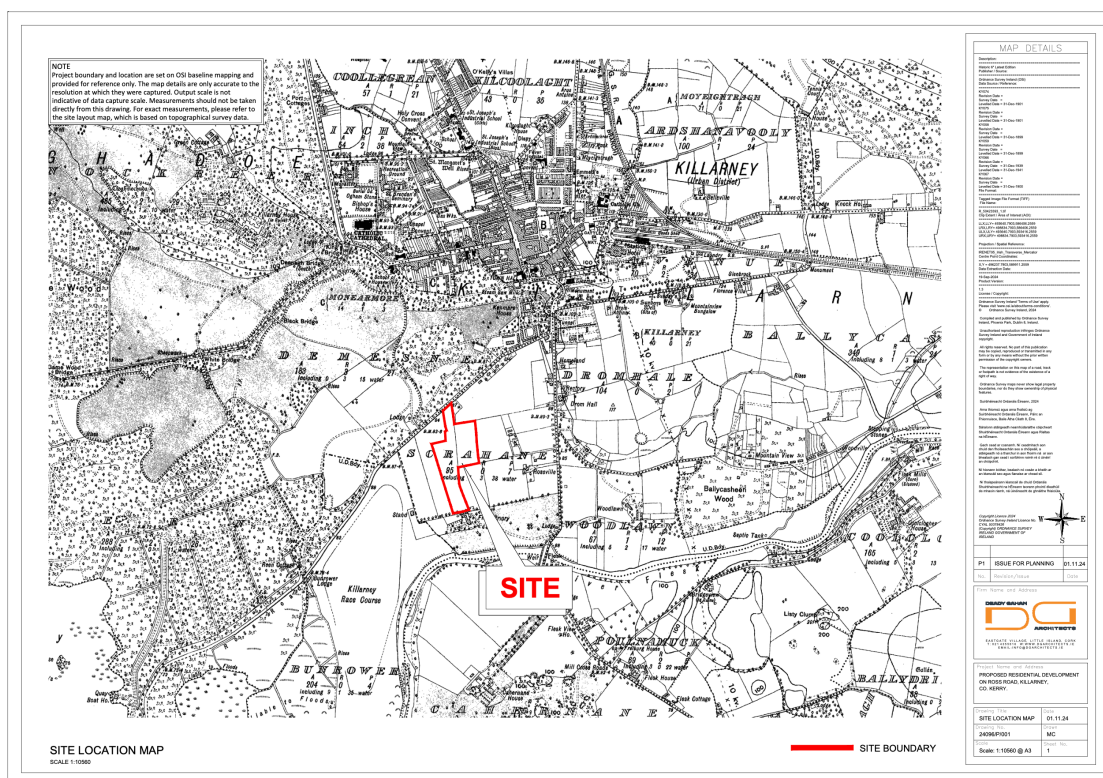
**Stage Four:** Assessment where no alternative solutions exist and where adverse impacts remain — an assessment of compensatory measures where, in the light of an assessment of imperative reasons of overriding public interest (IROPI), it is deemed that the project or plan should proceed (it is important to note that this guidance does not deal with the assessment of imperative reasons of overriding public interest). Again, for the avoidance of doubt, it is confirmed that no reliance is placed by the developer on Stage Four in the context of this application for development consent.

It is the responsibility of the competent authority, in this instance Kerry County Council, to make a decision on whether or not the proposed development should be approved, taking into consideration any potential impact upon any Natura 2000 site within its likely zone of impact.

### 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**

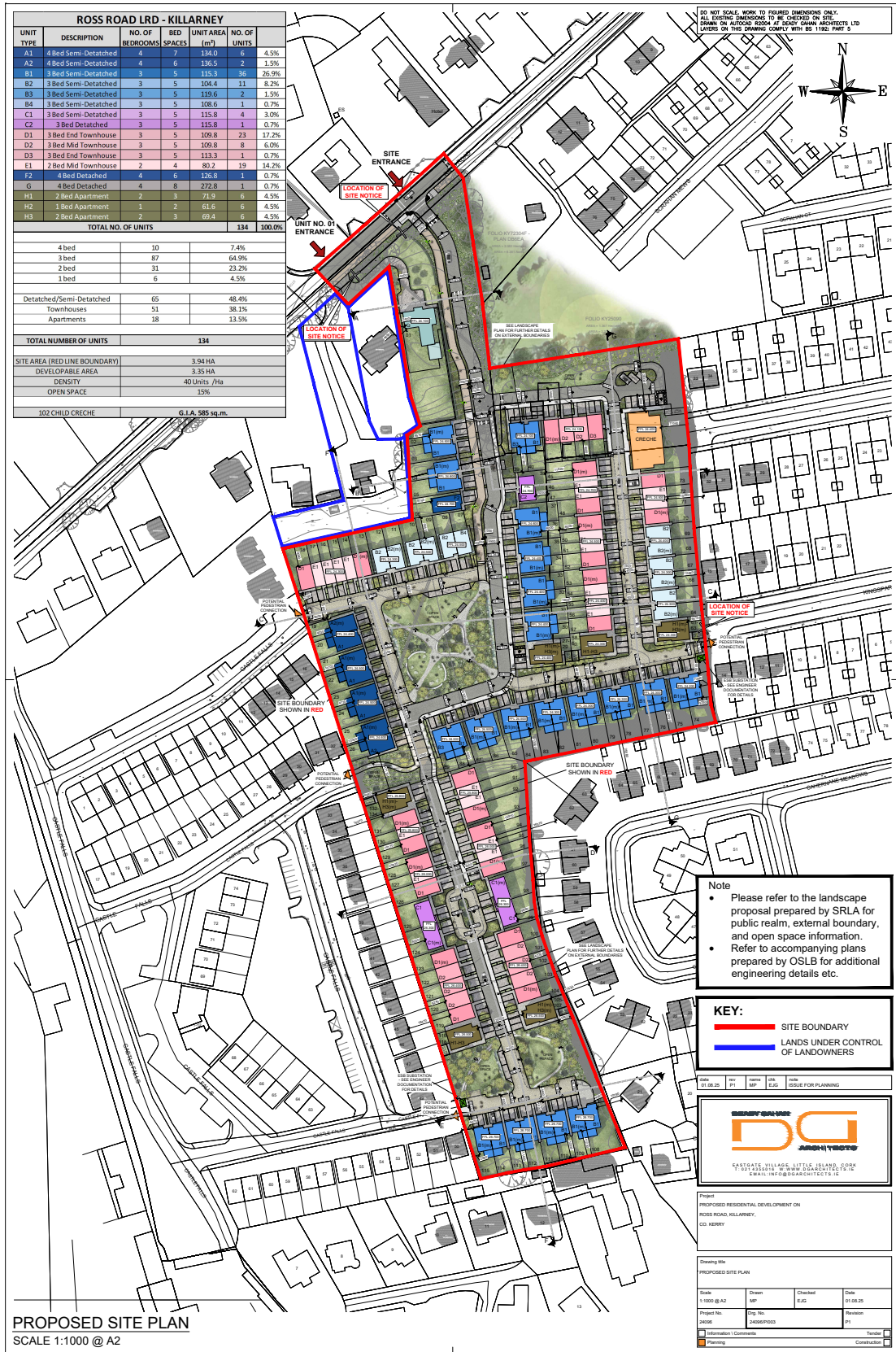


Figure 2. Proposed site layout | Source Deady Gahan Architects

### 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**. Additional site drawings are included in **Appendix 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. Stage 1. Appropriate Assessment Screening**

### **4.1 Introduction**

This section contains the information required for the competent authority to undertake screening for AA for the proposed development.

The aims of this section are to:

- Determine whether the proposed development is directly connected with, or necessary to, the conservation management of any Natura 2000 sites;
- Provide information on, and assess the potential for the proposed development to significantly effect on Natura 2000 Sites (also known as European sites); and
- Determine whether the proposed development, alone or in combination with other projects, is likely to have significant effects on Natura 2000 sites in view of their conservation objectives.

The proposed development is not directly connected with, or necessary to the conservation management of any Natura 2000 sites.

### **4.2 Zone of Impact**

The likely Zone of Impact (Zoi) comprises the area within which the proposed development may potentially affect the conservation objectives or qualifying interests (QI) of a Natura 2000 site. There is no recommended distance and guidance from the National Parks and Wildlife Service (NPWS) recommends that the distance should be evaluated on a case-by-case basis with reference to the nature, size and location of the project, the sensitivities of the ecological receptors, and the potential for in-combination effects (cumulative).

In ecological and environmental impact assessment, for an effect to occur there must be a risk enabled by having a source (e.g. construction works at a proposed development site), a 'receptor' (e.g. SAC or other ecologically sensitive feature), and a pathway between the source and the receptor (e.g. a watercourse which connects the proposed development site to the SAC). A 'receptor' is defined as the Special Conservation Interest (SCI) of SPAs or Qualifying

Interest (QI) of SACs for which conservation objectives have been set for the European sites being screened.

Consideration is therefore given to the source-pathway-receptor linkage and associated risks between the proposed development and Natura 2000 sites. For a significant effect to occur there needs to be an identified risk whereby a source (e.g. contaminant or pollutant arising from construction activities) affects a particular receptor (i.e. Natura 2000 site) through a particular pathway (e.g. a watercourse which connects the proposed development with the Natura 2000 site).

The identification of risk does not automatically mean that an effect will occur, nor that it will be significant. The identification of these risks means that there is a possibility of environmental or ecological damage occurring. The level and significance of the effect depends upon the nature of the consequence, likelihood of the risk and characteristics of the receptor.

The precautionary principle is applied for the purposes of screening to ensure that consideration and pre-emptive action is undertaken where there is a lack of scientific evidence. It is noted that mitigation measures are not taken into account in the AA screening assessment process.

### 4.3 Desktop Study

A desktop review facilitates the identification of the baseline ecological conditions and key ecological issues relating to Natura 2000 sites and facilitates an evaluation assessment of potential in-combination impacts. Sources of information used for this report include reports prepared for the Killarney area and information from statutory and non-statutory bodies. The following sources of information and relevant documentation were utilised:

- National Parks & Wildlife Service (NPWS) - [www.npws.ie](http://www.npws.ie)
- Environmental Protection Agency (EPA) – [www.epa.ie](http://www.epa.ie)
- National Biodiversity Data Centre (NBDC)– [www.biodiversityireland.ie](http://www.biodiversityireland.ie)
- *Kerry County Development Plan 2022-2028*;
- Birdwatch Ireland - <http://www.birdwatchireland.ie/>
- Invasive Species Ireland - <http://www.invasivespeciesireland.com/>
- *Best Practice Guidance for Habitat Survey and Mapping* (Heritage Council, 2011)
- *A Guide to Habitats in Ireland* (Fossitt, 2000)
- *Bird Census Techniques* Bibby, C.J., Burgess, N.D., Hill, D.A. & Mustoe, S.H. (2000)
- *Bird Monitoring Methods - a Manual of Techniques for Key UK Species*. Gilbert, G., Gibbons, D.W. & Evans, J. (1998) and

- *Environmental Impact Assessment of Projects Guidance on the preparation of the Environmental Impact Assessment Report (Directive 2011/92/EU as amended by 2014/52/EU)* European Union, 2017.
- Roden, C., Murphy, P. & Ryan, J.B. (2021) A study of lakes with Slender Naiad (*Najas flexilis*). Irish Wildlife Manuals, No. 132. National Parks and Wildlife Service, Department of Housing, Local Government and Heritage, Ireland.
- NPWS 2017 Conservation objectives supporting document for the Killarney National Park, Macgillycuddy's Reeks and Caragh River Catchment SAC (*Najas flexilis* (Willd.) Rostk. & W.L.E. Schmidt Version 1. NPWS

#### 4.4 Field Study

Site surveys were carried out on the 23<sup>rd</sup> of September 2024 and 15<sup>th</sup> of January 2025. The survey assessed the potential for all Qualifying Interests (QIs)/ Special Conservation Interests (SCIs) of European sites and third schedule invasive species to occur within the proposed site.

#### 4.5 Natura 2000 Sites

In accordance with the European Commission Methodological Guidance (EC 2018), a list of Natura 2000 sites that can be potentially affected by the proposed development has been compiled. All SACs, candidate SAC's (cSAC) and SPAs sites within the likely zone of impact of the proposed development have been identified in **Table 1** and shown in **Figure 3** and **Figure 4**.

The proposed development site does not overlap with any Natura 2000 site i.e., SAC/SPA/cSAC (See **Table 1**). Relevant Natura 2000 sites are shown in **Figure 3** and **Figure 4**. Killarney National Park, Macgillycuddy's Reeks and Caragh River Catchment SAC is located 120m northwest (at closest point) and Killarney National Park SPA is 280m northeast (at closest point). There are no watercourses within or adjacent to 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 via an existing surface water network along the Ross Road which ultimately discharges to Lough Leane (1.5km west). Given the proximity of local watercourses/waterbodies, surface water runoff during construction and discharges during operation could potentially impact on local water quality and QI species/habitats within the Killarney National Park, Macgillycuddy Reeks and Caragh River Catchment SAC and Killarney National Park SPA. Construction works could also potentially spread invasive species to the SAC and SPA. Given the proximity of these European sites, qualifying species from these Natura 2000 sites could potentially forage on or near the proposed development site. Qualifying species could be impacted by disturbance to *ex situ* habitats and/or lighting during the construction or operational phase.

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.

There are no hydrological or other connections between the proposed development and any other Natura 2000 site. Therefore, no pathway for impact to other Natura 2000 sites have been identified.

**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
<b>SAC</b>			
Killarney National Park, Macgillicuddy's Reeks and Caragh River Catchment SAC	000365	120m northwest. 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><b>Habitats</b></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 Littorelletea uniflorae and/or Isoeto-Nanojuncetea</p> <p>3260 Water courses of plain to montane levels with the Ranunculion fluitantis and Callitriche-Batrachion vegetation</p> <p>4010 Northern Atlantic wet heaths with Erica tetralix</p> <p>4030 European dry heaths</p> <p>4060 Alpine and Boreal heaths</p> <p>5130 Juniperus communis formations on heaths or calcareous grasslands</p> <p>6130 Calaminarian grasslands of the Violetalia calaminariae</p> <p>6410 Molinia meadows on calcareous, peaty or clayey-silt-laden soils (Molinion caeruleae)</p> <p>7130 Blanket bogs (* if active bog)</p> <p>7150 Depressions on peat substrates of the Rhynchosporion</p> <p>91A0 Old sessile oak woods with Ilex and Blechnum in the British Isles</p>

European Site	Site Code	Distance at Closest Point and potential source-pathway-receptor link	QIs/SCIs
			<p>91E0 Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> (Alno-Padion, Alnion incanae, Salicion albae)*</p> <p>91J0 <i>Taxus baccata</i> woods of the British Isles*</p> <p><b>Species</b></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	2.4km southwest. No pathway exists to terrestrial qualifying habitats.	<p><b>Habitats</b></p> <p>7110 Active raised bogs*</p> <p>7120 Degraded raised bogs still capable of natural regeneration</p>

European Site	Site Code	Distance at Closest Point and potential source-pathway-receptor link	QIs/SCIs
Castlemaine Harbour SAC	000343	<p>6.1km northwest. 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><b>Habitats</b></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> <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> (<i>Alno-Padion</i>, <i>Alnion incanae</i>, <i>Salicion albae</i>)*</p> <p><b>Species</b></p> <p>1095 Sea Lamprey (<i>Petromyzon marinus</i>)</p>

European Site	Site Code	Distance at Closest Point and potential source-pathway-receptor link	QIs/SCIs
			<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	13.7km southeast. Lesser horseshoe will forage within 2.5km (up to 5km) from roosts. Given the distance from this SAC, no pathway has been identified.	<p>Species</p> <p>1303 Lesser Horseshoe Bat (<i>Rhinolophus hipposideros</i>)</p>
<b>SPA</b>			
Killarney National Park SPA	004038	280m northeast. 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><b>Birds</b></p> <p>A098 Merlin (<i>Falco columbarius</i>)</p> <p>A395 Greenland White-fronted Goose (<i>Anser albifrons flavirostris</i>)</p>

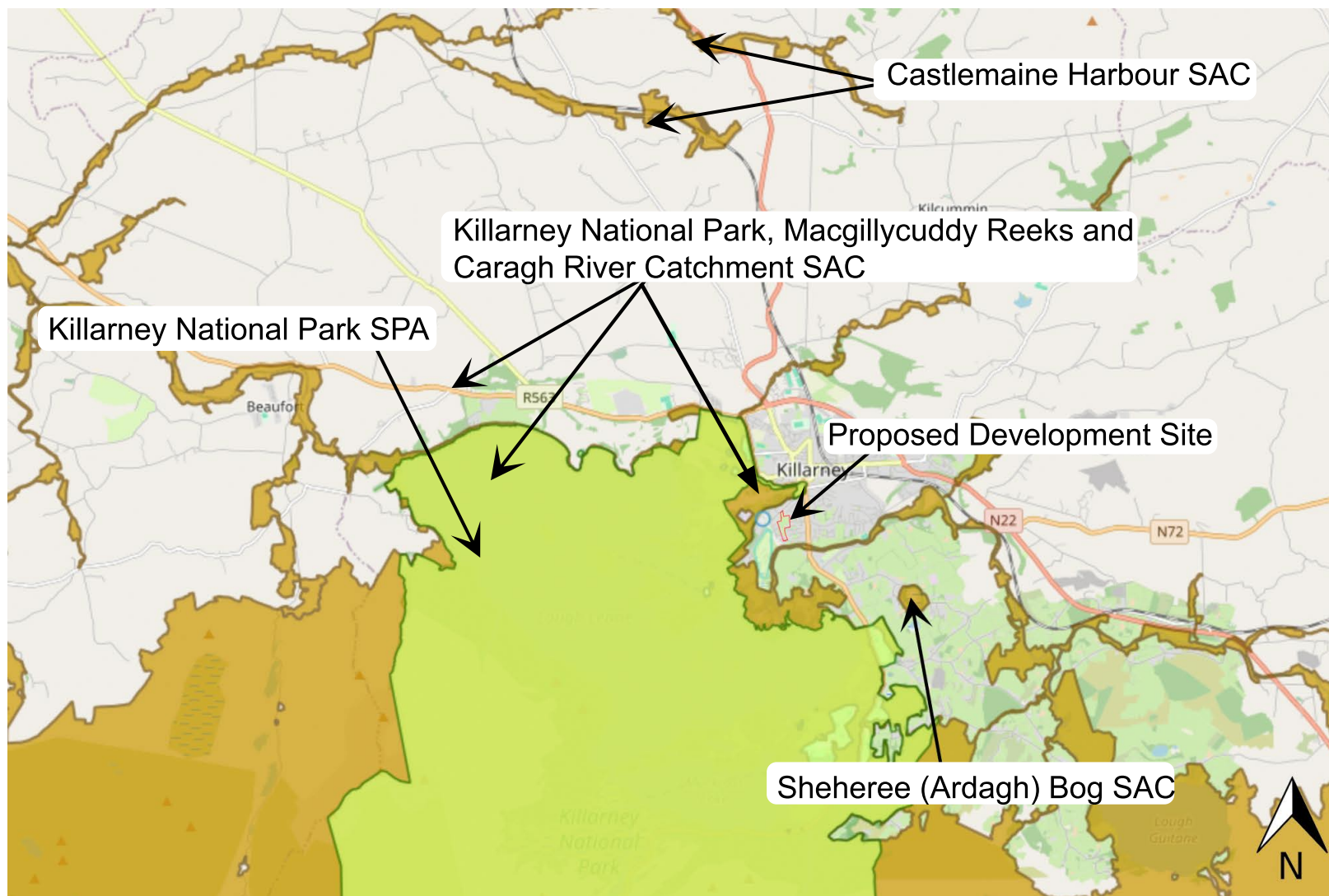


Figure 3. Location of the development site boundary and Natura 2000 sites located within potential likely zone of impact of the site | Source: EPA Envision mapping <https://gis.epa.ie/EPAMaps/> | Not to scale



**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**

## 4.6 Natura 2000 Site – Site Synopses, qualifying interests and conservation objectives

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

Killarney National Park, Macgillycuddy's Reeks and Caragh River Catchment SAC is the largest terrestrial SAC site in Ireland and encompasses the mountains and lakes of the Iveragh Peninsula and the Paps range. It is the most mountainous region of Ireland, and includes the highest peak Carrauntoohil at 1039m. The underlying rock is almost entirely Old Red Sandstone, although carboniferous limestone occurs on the east side of Lough Leane. Glacial processes have shaped the sandstone into dramatic ridges and valleys, including the well wooded Killarney valley. A wide range of semi-natural habitats are present, along with some improved land and forestry in the Caragh River catchment. Generally, the proximity of the site to the Atlantic in the south-west ensures a strong oceanic influence.

The SAC is of great ecological importance. It includes the most extensive oakwoods in the country, with some of the best bryophyte communities in Europe; Ireland's only sizable stand of Yew; excellent examples of blanket bog, alluvial woodland; good quality oligotrophic lakes, some of which support rare glacial relicts; unpolluted rivers with aquatic vegetation and rare invertebrates and fish; and several other annexed habitats. The site also supports 12 Annex II species of flora and fauna, six Annex I bird species and at least 33 Irish Red Data Book species. Many rare bryophytes and invertebrates are also present, several at their only known Irish locations. A full site synopsis for this Natura 2000 site is included as **Appendix 1** of this report.

### 4.6.2 Killarney National Park SPA

Killarney National Park SPA is a large site which encompasses the lakes and part of the Macgillycuddy's Reeks in the vicinity of Killarney. 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. Muckross Lake and the Upper Lake are both high quality oligotrophic systems. 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 White Fronted Geese *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 Peregrine Falcon *Falco peregrinus*, Merlin *Falco columbarius*, Red Grouse *Lagopus lagopus* and Ring Ouzel *Turdus torquatus* - the latter two species are Red-listed in Ireland. The extensive woodlands support some scarce breeding birds, notably Common Redstart *Phoenicurus phoenicurus*, Wood Warbler *Phylloscopus sibilatrix* and Garden Warbler *Sylvia borin*. Several research programmes have been carried out, including studies on the bird communities associated with the woodlands, and the wildfowl associated with the lakes. A range of other notable animal and plant species are associated with this site, including Arctic Char *Salvelinus alpinus*. A full site synopsis for the Killarney National Park SPA is included as **Appendix 1** of this report.

## 4.7 Natura 2000 sites – Features of interests and conservation objectives

The EU Habitats Directive contains a list of habitats (Annex I) and species (Annex II) for which SACs must be established by Member States. Similarly, the EU Birds Directive contains lists of important bird species (Annex I) and other migratory bird species for which SPAs must be established. Those that are known to occur at a site are referred to as 'qualifying interests'

and are listed in the Natura 2000 forms which are lodged with the EU Commission by each Member State. A 'qualifying interest' is one of the factors (such as the species or habitat that is present) for which the site merits designation. The National Parks and Wildlife Service (NPWS) are responsible for the designation of SACs and SPAs in Ireland. The conservation objectives for the relevant sites are detailed in:

*NPWS (2017) Conservation Objectives: Killarney National Park, Macgillycuddy's Reeks and Caragh River Catchment SAC 000365. Version 1. National Parks and Wildlife Service, Department of Culture, Heritage and the Gaeltacht*

*NPWS (2024) Conservation Objectives: Killarney National Park SPA 004038. Version 1. National Parks and Wildlife Service, Department of Housing, Local Government and Heritage.*

The overall aim of the Habitats Directive is to maintain or restore the favourable conservation status of habitats and species of community interest. These habitats and species are listed in the Habitats and Birds Directives and Special Areas of Conservation and Special Protection Areas are designated to afford protection to the most vulnerable of them. These two designations are collectively known as the Natura 2000 network. European and national legislation places a collective obligation on Ireland and its citizens to maintain at favourable conservation status sites designated as Special Areas of Conservation and Special Protection Areas. The Government and its agencies are responsible for the implementation and enforcement of regulations that will ensure the ecological integrity of these sites.

The maintenance of habitats and species within Natura 2000 sites at favourable conservation condition will contribute to the overall maintenance of favourable conservation status of those habitats and species at a national level. Favourable conservation status of a habitat is achieved when its natural range, and area it covers within that range, is stable or increasing, and the ecological factors that are necessary for its long-term maintenance exist and are likely to continue to exist for the foreseeable future, and the conservation status of its typical species is favourable.

The favourable conservation status of a species is achieved when population data on the species concerned indicate that it is maintaining itself, and the natural range of the species is neither being reduced or likely to be reduced for the foreseeable future, and there is, and will probably continue to be, a sufficiently large habitat to maintain its populations on a long-term basis. The species and habitats listed as qualifying interests for the Killarney National Park, Macgillycuddy's Reeks and Caragh River Catchment SAC and Killarney National Park SPA are included in **Table 2 to Table 4**.

**Table 2. Qualifying habitats for the Killarney National Park, Macgillycuddy's Reeks and Caragh River Catchment SAC**

Habitat Code	Habitat	Conservation objective
[3110]	Oligotrophic waters containing very few minerals of sandy plains ( <i>Littorelletalia uniflorae</i> )	Restore
[3130]	Oligotrophic to mesotrophic standing waters with vegetation of the <i>Littorelletea uniflorae</i> and/or <i>Isoeto-Nanojuncetea</i>	Restore
[3260]	Water courses of plain to montane levels with the <i>Ranunculion fluitantis</i> and <i>Callitriche-Batrachion</i> vegetation	Maintain

Habitat Code	Habitat	Conservation objective
[4010]	Northern Atlantic wet heaths with <i>Erica tetralix</i>	Restore
[4030]	European dry heaths	Restore
[4060]	Alpine and Boreal heaths	Restore
[5130]	<i>Juniperus communis</i> formations on heaths or calcareous grasslands	Maintain
[6130]	Calaminarian grasslands of the <i>Violetalia calaminariae</i>	Maintain
[6410]	Molinia meadows on calcareous, peaty or clayey-silt-laden soils ( <i>Molinion caeruleae</i> )	Restore
[7130]	Blanket bogs (* if active bog)	Restore
[7150]	Depressions on peat substrates of the <i>Rhynchosporion</i>	Restore
[91A0]	Old sessile oak woods with <i>Ilex</i> and <i>Blechnum</i> in the British Isles	Restore
[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> )	Restore
[91J0]	<i>Taxus baccata</i> woods of the British Isles	Restore

Restore = Restore favourable conservation condition, Maintain = Restore favourable conservation condition

**Table 3. Qualifying species for the Killarney National Park, Macgillycuddy's Reeks and Caragh River Catchment SAC**

Species code	Species	Scientific name	Conservation objective
[1024]	Kerry Slug	<i>Geomalacus maculosus</i>	Maintain
[1029]	Freshwater Pearl Mussel	<i>Margaritifera margaritifera</i>	Restore
[1065]	Marsh Fritillary	<i>Euphydryas aurinia</i>	Restore
[1095]	Sea Lamprey	<i>Petromyzon marinus</i>	Maintain
[1096]	Brook Lamprey	<i>Lampetra planeri</i>	Maintain
[1099]	River Lamprey	<i>Lampetra fluviatilis</i>	Maintain
[1106]	Salmon	<i>Salmo salar</i>	Maintain
[1303]	Lesser Horseshoe Bat	<i>Rhinolophus hipposideros</i>	Maintain
[1355]	Otter	<i>Lutra lutra</i>	Maintain
[1421]	Killarney Fern	<i>Trichomanes speciosum</i>	Maintain
[1833]	Slender Naiad	<i>Najas flexilis</i>	Maintain
[5046]	Killarney Shad	<i>Alosa fallax killarnensis</i>	Restore

Restore = Restore favourable conservation condition, Maintain = Restore favourable conservation condition

**Table 4. Special Conservation Interests for the Killarney National Park SPA**

Species code	Species	Scientific name	Conservation objective
A098	Merlin	<i>Falco columbarius</i>	Maintain
A395	Greenland White-fronted Goose	<i>Anser albifrons flavirostris</i>	Restore

Restore = Restore favourable conservation condition, Maintain = Restore favourable conservation condition


## 4.8 Baseline Data



### 4.8.1 Habitats

Habitat survey and mapping was carried out on the 23<sup>rd</sup> of September 2024 and 15<sup>th</sup> 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 5** and the habitats recorded on site are described in **Table 5**. Photographs of the site are also included in below.

**Table 5. Habitat present within the proposed development site.**

Habitats	Comments
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>

Habitats	Comments
	 <p data-bbox="424 801 1082 831">Plate 2. Improved (low diversity) grassland dominates the site</p>
<p data-bbox="204 864 399 981">Treeline WL2/Stone walls and other stonework BL1</p>	<p data-bbox="424 864 1374 920">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="424 954 1374 1010">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="424 1043 1374 1133">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 <b>Section 7.2</b>.</p> <p data-bbox="424 1167 1374 1256">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="424 1290 1374 1346">Where the stonewalls are vegetated species recorded include Polypody, Rusty back fern, Sorrel, Maidenhair fern and Spring wort.</p> <p data-bbox="424 1379 1374 1435">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="424 1906 963 1935">Plate 3. Treeline and wall along northern boundary</p>

Habitats	Comments
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Plate 4. Lawson's cypress around building



Plate 5. Lawson's cypress treeline at eastern side of site



Habitats	Comments
	<p>Plate 6. Mature sycamore at east of site</p>  <p>Plate 7. Mature Cyprus trees at central/eastern boundary</p>
Scrub WS1	<p>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>  <p>Plate 8. Scrub along eastern boundary</p>
Hedgerow WL1/Scrub WS2	<p>Along the southern side of the eastern boundary there is an untidy line of hedgerow/scrub habitat which borders adjoining gardens.</p> <p>It includes a managed section of Cherry Laurel hedgerow. Other sections 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>One mature Oak and one mature Ash are present along this boundary. Further detail on mature trees are provided in <b>Section 7.2</b>.</p>

Habitats	Comments
	 <p data-bbox="424 813 1018 842">Plate 9. Scrub/hedgerow along south-eastern boundary</p>  <p data-bbox="424 1406 1031 1435">Plate 10. Scrub/hedgerow along south-eastern boundary</p>
Buildings and artificial surfaces BL3	<p data-bbox="424 1469 1382 1529">A concrete block wall runs along the southern boundary. Two mature trees are present along this section of wall</p> <p data-bbox="424 1561 1382 1621">The concrete wall extends along the western boundary. Some vegetation growth is present along the wall with Ivy and Bramble dominating.</p>

Habitats	Comments
	 <p data-bbox="424 835 1294 862">Plate 11. Mature trees along southern boundary with concrete block wall beneath</p>  <p data-bbox="424 1395 1002 1422">Plate 12. Concrete block wall along western boundary</p>
Buildings and artificial surfaces BL3 (structures)	<p data-bbox="424 1451 1385 1512">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="424 1541 1385 1601">The buildings are currently used for storage with chopped wood, bagged wood, planks, wire, pipework, barrels, etc.</p> <p data-bbox="424 1630 1385 1691">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="424 1720 1385 1747">A more detailed discussion on the site buildings is included in <b>Section 7.2</b>.</p>

Habitats	Comments
	 <p data-bbox="424 719 703 748">Plate 13. Onsite buildings.</p>



**Figure 5. Habitat map of proposed development site**

## 4.8.2 Mammals

The focus of the mammal survey was to establish if any species listed as qualifying species for the Killarney National Park, Macgillycuddy Reeks and Caragh River Catchment SAC and Castlemaine Harbour SAC, namely Otter and Lesser Horseshoe Bat.

### Otters

A review of existing records showed that Otter or signs of Otter have been recorded on 84 occasions within grid square V98 (the OS 10km grid square which overlaps with the proposed development site), the most recent being in May 2017 (Source NBDC March 2025). The River Flesk and Lough Leane form critical habitats for Otter and there are a large number of records of Otter around Lough Leane (1.5km west) and along the River Flesk (175m south). There are also several records of Otter along the Deenagh River c.780m northwest. These waterbodies are separated from the proposed development by urban/residential developments.

However, the built-up urban setting in the which the proposed development site 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.

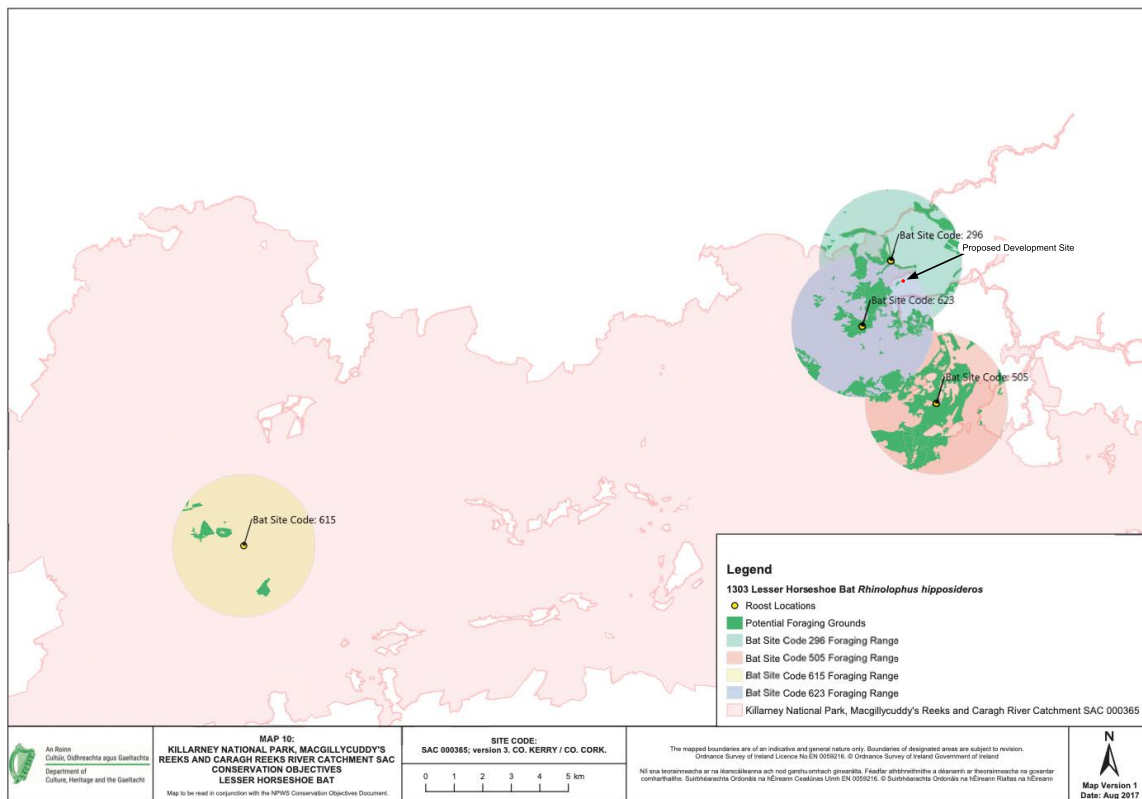
### Lesser Horseshoe Bat

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 6**). 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 proposed development 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 6. Conservation objectives map for Lesser Horseshoe Bat (Source NPWS 2017 (Map 10))**

### 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 15<sup>th</sup> 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 23<sup>rd</sup> of September 2024 and the 15<sup>th</sup> of January 2025. In general, the buildings are quite open and drafty and considered of low potential value for bats. A description of the buildings onsite is included in **Table 6**.

An internal search of the buildings did not reveal any evidence of bat usage such as droppings staining, prey remains, etc. The buildings are quite open and draughty and considered of low potential value for bats. No signs of roosting bats were recorded.

**Table 6. 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 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**




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.

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

No evidence of bat usage

Low potential for bats

Buildings Photos	Building description
 <p>The first photograph shows the exterior of Building 3, a rectangular structure with walls made of grey concrete blocks and a roof of corrugated metal. The building is situated outdoors with trees in the background. The second photograph shows a close-up of the front of the building, highlighting large, dark gaps between the walls and the roofline. The third photograph shows the interior of the building, focusing on the wooden roof trusses and the corrugated metal ceiling.</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>

### 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 (4<sup>th</sup> ed)'* (Collins 2023) on the 29<sup>th</sup> 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 15<sup>th</sup> 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 (4<sup>th</sup> ed)*' (Collins 2023). A summary of the trees at the site and their potential value for roosting bats is included in **Table 7**.

**Table 7. Potential roosting value of trees at the site.**

Tree number/group	Photographs	Description
<b>Trees earmarked for removal</b>		
T3-T7		<p>Semi-mature trees with no significant PRFs.</p> <p>No value for roosting bats</p>
Group 1 Lawsons cypress		<p>Mature treeline. Non-native</p> <p>No potential roost features</p>
Group 2 Lawsons cypress		
Group 3 Lawsons cypress		
Group 4 Lawsons cypress		
T11	<p>An early mature sycamore that is being suppressed</p> <p>No potential for roosting bats</p>	
T12	<p>An early mature sycamore that is being suppressed.</p> <p>No potential for roosting bats</p>	

Tree number/group	Photographs	Description
T19		<p>One mature ash at the end of the Conifer line. Isolated. Considerable ivy cover.</p> <p>Low potential for roosting bats</p>
<b>Trees for retention</b>		
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>

A bat activity and emergence survey was carried out by DixonBrosnan on the 23<sup>rd</sup> 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.

### 4.8.3 Birds

The National Biodiversity Centre online data base lists a number of Annex I of the Birds Directive, namely, Kingfisher (*Alcedo atthis*), Corn Crake (*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.

Key habitats for Greenland White-fronted Geese include peat bogs (including raised bogs and blanket bogs), grasslands (such as wet grassland, callows, semi-improved grassland, and intensive grassland), arable stubble, winter cereal fields, coastal grasslands, and occasionally salt marsh. While the grassland at the proposed development site could potentially provide foraging habitat for this species, given the availability of similar types of grassland in the surrounding landscape alongside higher values habitat within the SPA, this is unlikely to form critical foraging habitat for this species.

### 4.8.4 Invertebrates

Kerry slug (*Geomalacus maculosus*) is a protected species throughout its range of southwest Ireland and the north of the Iberian peninsula. Within Ireland it is protected under the Wildlife Act, 1976 as amended, and is also protected under Annex II and Annex IV of EU Habitats Directive [Council Directive 92/43/EEC] and seven Special Areas of Conservation (SACs) have been designated for its protection in Ireland, including the Killarney National Park, Macgillycuddy Reeks and Caragh River Catchment SAC. In West Cork and Kerry *Geomalacus maculosus* occurs in three general habitat types. These are deciduous woodland (usually *Quercus* dominated), blanket bog or unimproved oligotrophic open moor and lake shores (NPWS 2010; Platts & Speight 1988). Within these habitats, the species tends only be present if there is outcropping of Devonian Old Red Sandstone (NPWS 2010), humid conditions and lichen, liverwort and/or mosses for the species to shelter in and feed on (Platts & Speight 1988). There is no suitable habitat for Kerry Slug within the proposed development site.

Marsh Fritillary is protected under the Annex II of the EU Habitats Directive [92/43/EEC] and is a qualifying interest for the Killarney National Park, Macgillycuddy's Reeks and Caragh River Catchment SAC. Colonies can occur in a wide variety of habitats including sand dunes,

calcareous grassland, fens, bogs and upland heaths and grasslands. The presence of its foodplant Devil's-bit Scabious, *Succisa pratensis* is an essential habitat component for this species. There is no suitable habitat for Marsh Fritillary within the proposed development site.

#### 4.8.5 Invasive Species

The control of invasive species in Ireland comes under the Wildlife (Amendment) Act 2000, where it states that:

*'Any person who— [...] plants or otherwise causes to grow in a wild state in any place in the State any species of flora, or the flowers, roots, seeds or spores of flora, [refers only to exotic species thereof][...] otherwise than under and in accordance with a licence granted in that behalf by the Minister shall be guilty of an offence.'*

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).

#### 4.8.6 Water Quality

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 third-cycle RBMP aims to build on the progress made during the first 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 waste-water 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.

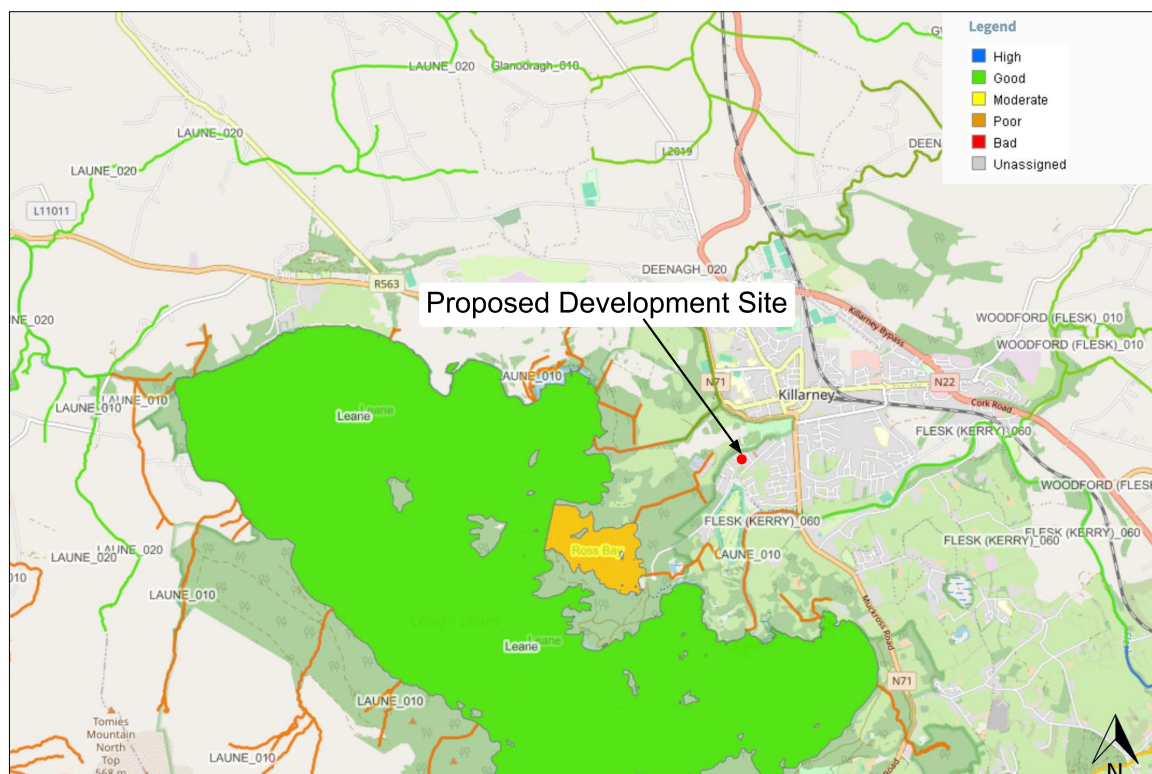
Data relating to the watercourses within the study area is provided in **Table 8** and shown in **Figure 7**.

**Table 8. Water Framework Directive Data – Relevant data**

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 2,036km<sup>2</sup>. 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 km<sup>2</sup>.</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 2<sup>nd</sup> 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 3<sup>rd</sup> 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 <sup>rd</sup> 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: wfdireland map system & www.catchments.ie



**Figure 7. River/Lake Waterbodies relevant to the proposed project. | Source: EPA Envision mapping <https://gis.epa.ie/EPAMaps/> | Not to scale**

#### 4.8.7 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 (a tributary of Lough Leane (Ross Bay)).

## **4.9 Potential Impact of Proposed Development on Natura 2000 Sites**

### **4.9.1 Potential Impacts from Loss of Habitat**

Any habitat loss of Natura 2000 sites or deterioration in habitat quality would reduce the extent of habitat available for QI/SCI species. This could potentially decrease the viability of existing QI habitats and increase the pressure on existing habitat and may result in further deterioration.

The proposed development is not located within a designated site. As the proposed development site is located outside the boundary of any Natura 2000 sites, there will be no direct loss of habitat within Natura 2000 sites.

Surveys did not record Lesser Horseshoe Bat activity and no signs of Otter were recorded in the vicinity of the proposed development site. There are no watercourses or wetland habitats within the site which could provide habitat for Otter.

As outlined in **section 4.8.2** the proposed development is located within the 2.5km buffer of a qualifying Lesser Horseshoe Bat roost. However, there are no suitable habitats for lesser horseshoe bat within the proposed development site. 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, stone walls 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. Woodland areas within the SAC boundary (c.120m northwest) and the riparian corridor along the River Flesk (c.175m south) is likely to be the closest suitable location for foraging/commuting Lesser Horseshoe Bat. These areas are separated from the proposed development site by continuous residential development. 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. No impact on these QI species is predicted to occur from loss of *ex situ* foraging habitat.

While the grassland at the proposed development site could potentially provide foraging habitat for Greenland White-fronted Geese (SCI species of the Killarney National Park SPA), given the availability of similar types of grassland in the surrounding landscape alongside higher value habitat within the SPA, this is unlikely to form critical foraging habitat for this species. Improved agricultural grassland is not a limiting factor around Killarney and no likely significant effects from the removal of this habitat have been identified.

There will be no likely significant effects on the conservation objectives of the Killarney National Park, Macgillycuddy's Reeks and Caragh River Catchment SAC and Killarney National Park SPA as a result of habitat loss or fragmentation and this has been screened out from further assessment.

#### **4.9.2 Potential Impacts from surface water runoff during construction and operation**

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. Lough Leane is located within the Killarney National Park, Macgillycuddy's Reeks and Caragh River Catchment SAC and Killarney National Park SPA. Although unlikely, uncontrolled surface water runoff during construction could impact on the River Flesk c.175m south of the site. Therefore, the proposed development has the potential to impact on water quality within the Killarney National Park, Macgillycuddy's Reeks and Caragh River Catchment SAC and Killarney National Park SPA as well as qualifying species which use aquatic habitats.

Likely significant effects on the Killarney National Park, Macgillycuddy's Reeks and Caragh River Catchment SAC and Killarney National Park SPA from surface water runoff during construction and operation cannot be ruled out. Potential surface water impacts on the Killarney National Park, Macgillycuddy's Reeks and Caragh River Catchment SAC and Killarney National Park SPA are screened in for further assessment in the Stage 2 NIS.

#### **4.9.3 Potential Impacts from noise and disturbance**

Potentially increased noise and disturbance (including lighting) associated with the proposed development could cause disturbance/displacement of terrestrial fauna. If of sufficient severity, there could be impacts on reproductive success. The proposed development is potentially located in proximity to Killarney National Park, Macgillycuddy's Reeks and Caragh River Catchment SAC and Killarney National Park SPA.

There are no watercourses within or adjacent to the proposed development site. The closest watercourse is the River Flesk located c. 175m south. Lough Leane is located c.1.5km west of the site. No signs of Otter were recorded within the proposed developments site and there will be no direct impacts on local watercourses. Local watercourses and waterbodies are separated from the proposed development site by existing housing and roads. Given the above there is no potential for disturbance to Otter within the Killarney National Park, Macgillycuddy's Reeks and Caragh River Catchment SAC. It is noted that there are no aquatic habitats within the proposed development and therefore no potential for disturbance impacts on aquatic QI species i.e., Freshwater Pearl Mussel, Sea Lamprey, River Lamprey, Atlantic Salmon, Killarney Shad will occur.

While Greenland White-fronted Geese could potentially forage at the site, this is not valuable habitat for this species. The site is located within a built up, sub-urban setting and any birds which use lands in the vicinity are subject to existing disturbance. Given the location of the site within an existing sub-urban setting, no disturbance impacts to SCI birds have been identified.

One of the targets for the Killarney National Park, Macgillycuddy's Reeks and Caragh River Catchment SAC (NPWS (2017)) is that there should be no significant increase in artificial light intensity adjacent to named Lesser Horseshoe roosts or along commuting routes within 2.5km of those roosts. Lesser Horseshoe Bats are very sensitive to light pollution and will avoid brightly lit areas. Inappropriate lighting around roosts may cause abandonment lighting along commuting routes may cause preferred foraging areas to be abandoned, thus increasing the

energetic cost for bats (Schofield, 2008). As described in **Section 4.8.2**, the proposed development site is located within the 2.5km buffer zone for the Lesser Horseshoe Bat within the Killarney National Park, Macgillycuddy's Reeks and Caragh River Catchment SAC. In the absence of proper lighting design, there could be potential disturbance to commuting routes within 2.5km of roost ID 623 and 296. It is noted that the proposed development is already impacted by light spillage from surrounding development and therefore habitats within the site are unsuitable for commuting Lesser Horseshoe Bat. However, inappropriate lighting of the proposed development site could impact habitats in the vicinity including habitats within the SAC boundary c.120m northwest and c.175m south along the River Flesk.

Likely significant effects on Lesser Horseshoe Bat from light spillage onto commuting habitat during the construction and operational phase of the proposed development cannot be ruled out. Therefore, potential disturbance impacts on the Killarney National Park, Macgillycuddy's Reeks and Caragh River Catchment SAC are screened in for further assessment in the Stage 2 NIS.

No likely significant disturbance effects have been identified for Killarney National Park SPA. Potential significant effects on Killarney National Park SPA have been screened out from further assessment.

#### **4.9.4 Potential impacts from 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 9**.

**Table 9. 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 (Carbonaceous) 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

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 9** 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 likely significant effects on water quality within Killarney National Park, Macgillycuddy's Reeks and Caragh River Catchment SAC have been identified from the proposed wastewater discharges.

#### **4.9.5 Potential impacts from spread of invasive species**

No third schedule invasive species were recorded within the proposed development site. The high impact Cherry Laurel was recorded. As noted in **Section 4.8.5**, there is no statutory obligation to remove this species. Given the distance from the SAC boundary and the absence of a direct hydrological connection, no pathway for spread of this species to the SAC/SPA has been identified. Therefore, no impact on the qualifying interests and conservation objectives for European sites from the spread of invasive species will occur and this will be screened out from further assessment.

#### **4.9.6 In-combination Impacts**

In-combination (cumulative) impacts refer to a series of individual impacts that may, in combination, produce a significant effect. The underlying intention of this in-combination provision is to take account of in-combination impacts from existing or proposed plans and projects and these will often only occur over time.

The known threats to the Killarney National Park, Macgillycuddy's Reeks and Caragh River Catchment SAC and Killarney National Park SPA are walking, horse riding and non-motorised vehicles, fertilisation, attraction park, dispersed habitation, leisure fishing, bait digging or collection, grazing, erosion, abandonment of pastoral systems lack of grazing, mowing or cutting of grassland, silviculture, forestry, peat extraction, urbanised areas, human habitation, hunting, attraction park, golf course, fire and fire suppression, fertilisation and invasive non-native species.

Further investigation on the potential for in-combination impacts is included in Stage 2 of this report.

## 4.9 Screening of Relevant Natura 2000 Sites and Qualifying Interests/Special Conservation Interests

### 4.9.1 Overview of Screening

Based on the precautionary principle, the likelihood of significant effects to the Killarney National Park, Macgillycuddy's Reeks and Caragh River Catchment SAC and Killarney National Park SPA cannot be ruled out. Screening conclusions with regards to the qualifying species and habitats for relevant Natura 2000 sites are provided in **Table 10**. No significant effects on the conservation objectives of any other Natura 2000 sites are predicted to occur. Sites/QIs/SCIs that are screened in for further assessment are highlighted in bold.

**Table 10. Screening of relevant Natura 2000 sites**

Natura 2000 Site	Qualifying Interest	Potential Impacts	Screened In/Out
<p><b>Killarney National Park, Macgillycuddy's Reeks and Caragh River Catchment SAC</b></p>	<p><b>Oligotrophic waters containing very few minerals of sandy plains (<i>Littorelletalia uniflorae</i>) [3110]</b></p> <p><b>Oligotrophic to mesotrophic standing waters with vegetation of the <i>Littorelletea uniflorae</i> and/or <i>Isoeto-Nanojuncetea</i> [3130]</b></p> <p><b>Water courses of plain to montane levels with the <i>Ranunculion fluitantis</i> and <i>Callitriche-Batrachion</i> vegetation [3260]</b></p>	<p>These habitats are located downstream of the proposed development site and are potentially connected to the proposed development site via Lough Leane.</p> <p>Potential impacts on these habitats could occur due to surface water impacts during the construction and operational phase.</p>	<p>Screened in</p>

Natura 2000 Site	Qualifying Interest	Potential Impacts	Screened In/Out
	<ul style="list-style-type: none"> <li>• Northern Atlantic wet heaths with <i>Erica tetralix</i> [4010]</li> <li>• European dry heaths [4030]</li> <li>• Alpine and Boreal heaths [4060]</li> <li>• <i>Juniperus communis</i> formations on heaths or calcareous grasslands [5130]</li> <li>• Calaminarian grasslands of the <i>Violetalia calaminariae</i> [6130]</li> <li>• <i>Molinia</i> meadows on calcareous, peaty or clayey-silt-laden soils (<i>Molinion caeruleae</i>) [6410]</li> <li>• Blanket bogs (* if active bog) [7130]</li> <li>• Depressions on peat substrates of the <i>Rhynchosporion</i> [7150]</li> <li>• Old sessile oak woods with <i>Ilex</i> and <i>Blechnum</i> in the British Isles [91A0]</li> <li>• Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> (<i>Alno-Padion</i>, <i>Alnion incanae</i>, <i>Salicion albae</i>) [91E0]</li> <li>• <i>Taxus baccata</i> woods of the British Isles [91J0]</li> </ul>	<p>The proposed development is not located within the Killarney National Park, Macgillycuddy's Reeks and Caragh River Catchment SAC.</p> <p>Therefore, no potential impacts on these terrestrial habitats have been identified.</p>	Screened Out

Natura 2000 Site	Qualifying Interest	Potential Impacts	Screened In/Out
	<ul style="list-style-type: none"> <li><i>Trichomanes speciosum</i> (Killarney Fern) [1421]</li> </ul>	<p>Killarney Fern belongs to the Filmy Fern family (<i>Hymenophyllaceae</i>). Killarney fern generally requires specific habitat requirements which are found in dripping caves, cliffs, crevices and gullies by waterfalls, crevices in woodland, and occasionally on the floor of damp woodland - all deeply shaded humid habitats.</p> <p>No potential impact on this species has been identified.</p>	Screened Out
	<ul style="list-style-type: none"> <li><i>Geomalacus maculosus</i> (Kerry Slug) [1024]</li> <li><i>Euphydryas aurinia</i> (Marsh Fritillary) [1065]</li> </ul>	<p>No evidence of these species was recorded during site surveys and the proposed development site is not located within the SAC.</p> <p>Thus, no potential impacts on these terrestrial species have been identified.</p>	Screened Out
	<ul style="list-style-type: none"> <li><b><i>Rhinolophus hipposideros</i> (Lesser Horseshoe Bat) [1303]</b></li> </ul>	<p>The proposed development site is located within 2.5 kilometres of a qualifying roosts. Therefore, increased lighting could create disturbance of linear commuting habitat in the vicinity.</p> <p>Disturbance to foraging and commuting habitat within the site could potentially have negative impacts on this species.</p>	<b>Screened In</b>

Natura 2000 Site	Qualifying Interest	Potential Impacts	Screened In/Out
	<ul style="list-style-type: none"> <li>• <b><i>Alosa fallax killarnensis</i> (Killarney Shad) [5046]</b></li> </ul>	<p>Killarney Shad is unique to Lough Leane, located approximately 850m from the proposed development site, which is potentially connected to the proposed development site via the surface water discharges.</p> <p>Potential impacts on this species could occur due to surface water impacts during the construction and operational phase.</p>	Screened in
	<ul style="list-style-type: none"> <li>• <b><i>Najas flexilis</i> (Slender Naiad) [1833]</b></li> </ul>	<p>Records for <i>Najas flexilis</i> exist for seven lakes in the Killarney National Park, Macgillycuddy's Reeks and Caragh River Catchment SAC. Potential impacts on this species could occur due to surface water impacts during the construction and operational phase.</p>	Screened in
	<ul style="list-style-type: none"> <li>• <b><i>Margaritifera margaritifera</i> (Freshwater Pearl Mussel) [1029]</b></li> </ul>	<p>The distribution for this species target lengths include the perimeters of lakes in each catchment</p> <p>Potential impacts on this species could occur due to surface water impacts during the construction and operational phase.</p>	Screened in

Natura 2000 Site	Qualifying Interest	Potential Impacts	Screened In/Out
	<ul style="list-style-type: none"> <li>• <i>Petromyzon marinus</i> (Sea Lamprey) [1095]</li> <li>• <i>Lampetra planeri</i> (Brook Lamprey) [1096]</li> <li>• <i>Lampetra fluviatilis</i> (River Lamprey) [1099]</li> <li>• <i>Salmo salar</i> (Salmon) [1106]</li> <li>• <i>Lutra lutra</i> (Otter) [1355]</li> </ul>	<p>These species can occur within freshwater and thus could be affected by impacts on water quality. Impacts on prey availability could impact on Otter.</p> <p>It is noted no disturbance effects or loss of habitat have been identified for these species.</p> <p>Potential impacts on this species could occur due to surface water impacts during the construction and operational phase.</p>	<b>Screened In</b>
Killarney National Park SPA	<ul style="list-style-type: none"> <li>• A395 Greenland White-fronted Goose <i>Anser albifrons flavirostris</i></li> </ul>	<p>The SPA is located downstream of the proposed development site and is potentially connected to the proposed development site via the Lough Leane.</p> <p>It is noted no disturbance effects or loss of habitat have been identified for these species.</p> <p>Potential impacts on wetland habitats used by Greenland White-fronted Geese could occur due to surface water impacts during the construction and operational phase.</p>	<b>Screened in</b>
	<ul style="list-style-type: none"> <li>• A098 Merlin <i>Falco columbarius</i></li> </ul>	<p>No suitable habitat for Merlin within proposed development site. No pathway for impact on habitats used by Merlin.</p> <p>No pathway for impact on this species.</p>	Screened out

#### 4.9.2 Screening conclusion

The aims of this screening section of this report were as follows:

- Determine whether the proposed development, alone or in combination with other projects, is likely to have significant effects on Natura 2000 sites in view of their conservation objectives.
- Provide information on and assess the potential for the proposed development to significantly impact on Natura 2000 Sites (also known as European sites).
- Determine whether the proposed development is directly connected with, or necessary to the conservation management of any Natura 2000 sites.

It has been objectively concluded that:

- The proposed development is not directly connected with, or necessary to the conservation management of any Natura 2000 sites.
- On the basis of objective information, likely significant effects from the proposed development on European sites cannot be ruled out. There is potential for the proposed development to significantly impact the Killarney National Park, Macgillycuddy's Reeks and Caragh River Catchment SAC and Killarney National Park SPA via impacts on water quality during construction and operation. There is potential for the proposed development to significantly impact the Killarney National Park, Macgillycuddy's Reeks and Caragh River Catchment SAC via lighting disturbance on Lesser Horseshoe Bat.
- The proposed development, alone or in combination with other projects could potentially impact on QI species and habitats within the Killarney National Park, Macgillycuddy's Reeks and Caragh River Catchment SAC Killarney National Park SPA.
- It has been concluded beyond reasonable scientific doubt, based on objective information, and considering the conservation objectives of the relevant European sites, that significant impacts from the project, individually or in combination with other plans and projects, on the following Natura 2000 sites can be excluded:
  - Sheheree (Ardagh) Bog SAC (000382)
  - Castlemaine Harbour SAC (000343)
  - Old Domestic Building Curraglass Wood (002041)

On the basis of objective information and in view of best scientific knowledge, the possibility of likely significant effects from the proposed project on the European sites Killarney National Park, Macgillycuddy's Reeks and Caragh River Catchment SAC and Killarney National Park SPA, cannot be ruled out and therefore an Appropriate Assessment is required.

## 5. Natura Impact Statement (NIS)

### 5.1 Introduction

**Sections 3 and 4** of this report are relevant to informing the Natura Impact Statement (NIS) in that the proposed development and receiving environment is described in sufficient detail. In **Section 4**, the likely zone of impact (Zol) of the proposed development and the European sites within the Zol were identified. Likely significant effects on the Killarney National Park, Macgillycuddy's Reeks and Caragh River Catchment SAC and Killarney National Park SPA were identified in **Section 4**. This NIS now examines and analyses, in light of the best scientific knowledge, with respect to these Natura 2000 sites within the likely zone of impact of the proposed development, the potential effect sources and pathways, how these could impact on the QI/SCI habitats and species and whether the predicted effects would adversely affect the integrity of the Killarney National Park, Macgillycuddy's Reeks and Caragh River Catchment SAC and Killarney National Park SPA.

Mitigation measures are set out within the NIS and ensure that any effects on the conservation objectives of the Killarney National Park, Macgillycuddy's Reeks and Caragh River Catchment SAC and Killarney National Park SPA will be avoided during the proposed development such that there will be no risk of adverse effects on these European sites.

### 5.2 Status of Qualifying Interests (Qis) and Special Conservation Interests (SCIs) for Killarney National Park, Macgillycuddy's Reeks and Caragh River Catchment SAC and Killarney National Park SPA

#### 5.2.1 Lamprey species (*Petromyzon marinus*, *Lampetra fluviatilis*)

River Lamprey exhibits an anadromous life cycle (i.e. where anadromous fish spend most of their adult lives in salt-water and migrate to freshwater rivers and lakes to reproduce). The Sea Lamprey is the largest of the Irish lampreys. Sea Lamprey are listed in Appendix II, while River Lamprey is listed in both Appendices II and IV of the Habitats Directive. All three species are listed in Appendix III of the Berne Convention.

Maitland and Campbell (1992) list the threats to lamprey as water pollution, barriers to migration and habitat degradation. In Ireland the single biggest factor limiting the distribution of anadromous lamprey are upstream barriers. Although the data available to date are limited, the impact of artificial barriers on the distribution of lampreys on a number of major rivers is evident.

All three lamprey species are listed as qualifying interests for Killarney National Park, Macgillycuddy's Reeks and Caragh River Catchment SAC. Conservation objectives for Lamprey species within the Killarney National Park, Macgillycuddy's Reeks, Caragh River Catchment SAC are outlined in **Table 11**.

**Table 11. Conservation objectives for Lamprey species within the Killarney National Park, Macgillicuddy's Reeks, Caragh River Catchment SAC**

Species	Attribute	Measure	Target
Sea Lamprey	Distribution: extent of anadromy	% of river accessible	Greater than 75% of main stem length of rivers accessible from estuary
	Population structure of juveniles	Number of age/size groups	At least three age/size groups present
	Juvenile density in fine sediment	Juveniles/m <sup>2</sup>	Juvenile density at least 1/m <sup>2</sup> (all sites)
	Extent and distribution of spawning habitat	m <sup>2</sup> and occurrence	No decline in extent and distribution of spawning beds
	Availability of juvenile habitat	Number of positive sites in 3rd order channels (and greater), downstream of spawning areas	More than 10% of sample sites positive
River/brook Lamprey	Distribution	% of river accessible	Access to all water courses down to first order streams
	Population structure of juveniles	Number of age/size groups	At least three age/size groups of river/brook lamprey present
	Juvenile density in fine sediment	Juveniles/m <sup>2</sup>	Mean catchment juvenile density of brook/river lamprey at least 5/m <sup>2</sup>
	Extent and distribution of spawning habitat	m <sup>2</sup> and occurrence	No decline in extent and distribution of spawning beds
	Availability of juvenile habitat	Number of positive sites in 2nd order channels (and greater), downstream of spawning areas	More than 50% of sample sites positive

### 5.2.2 Atlantic salmon (*Salmo salar*)

Atlantic Salmon is anadromous migratory fish and a QI for the Killarney National Park, Macgillicuddy's Reeks, Caragh River Catchment SAC. Adult fish migrate from the sea to river/stream spawning areas, where the young fish live out their juvenile life stages before migrating as adults to the sea. Conservation objectives for Atlantic Salmon within the Killarney National Park, Macgillicuddy's Reeks, Caragh River Catchment SAC and Castlemaine Harbour SAC are outlined in **Table 12**.

**Table 12. Conservation objectives for Atlantic Salmon within the Killarney National Park, Macgillicuddy's Reeks, Caragh River Catchment SAC**

Attribute	Measure	Target
Distribution: extent of anadromy	% of river accessible	100% of river channels down to second order accessible from estuary
Adult spawning fish Number	Number	Conservation Limit (CL) for each system consistently exceeded

Attribute	Measure	Target
Salmon fry abundance	Number of fry/5 minutes electrofishing	Maintain or exceed 0+ fry mean catchment-wide abundance threshold value. Currently set at 17 salmon fry/5 min sampling
Out-migrating smolt abundance	Number	No significant decline
Number and distribution of redds	Number and Occurrence	No decline in number and distribution of spawning redds due to anthropogenic causes
Water quality	EPA Q value	At least Q4 at all sites sampled by EPA

### 5.2.3 Otter (*Lutra lutra*)

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.

Conservation objectives for Otter within the Killarney National Park, Macgillycuddy's Reeks, Caragh River Catchment SAC are outlined in **Table 13**. It is noted that the proposed development site is not located within the 250m Otter buffer zones mapped for the SAC.

**Table 13. Conservation objectives for Otter within the Killarney National Park, Macgillycuddy's Reeks, Caragh River Catchment SAC**

Attribute	Measure	Target
Distribution	Percentage positive survey sites	No significant decline
Extent of terrestrial habitat	Hectares	No significant decline. Area mapped and calculated as 1,936.8ha along riverbanks /lake shoreline/ around ponds
Extent of freshwater (river) habitat	Kilometres	No significant decline. Length mapped and calculated as 1,246.2km,
Extent of freshwater (lake) habitat	Hectares	No significant decline Area mapped and calculated as 2,710.3ha
Fish available biomass	Kilograms	No significant decline
Barriers to connectivity	Number	No significant increase

### 5.2.4 Lesser Horseshoe Bat (*Rhinolophus hipposideros*)

Lesser Horseshoe Bat is mainly found in counties on Ireland's western seaboard Mayo, Galway, Clare, Limerick, Kerry and Cork although its strongholds are found in Kerry/west Cork and in Clare. This species is a QI for the Killarney National Park, Macgillycuddy's Reeks and Caragh River Catchment SAC. The species is protected by European legislation through its listing on Annex II and Annex IV of the EU Habitats Directive (Directive 92/43/EEC on the

conservation of natural habitats and of wild fauna and flora). As Lesser Horseshoe Bat is Ireland's only Annex II listed bat species, this means that its population requires special protection measures and designation of Special Areas of Conservation within the Natura 2000 network. These designations are usually roost or hibernacula centered and focus on large roosting sites for the species, usually with >50 individuals in winter or >100 individuals in summer.

Lesser Horseshoe Bats forage on flying insects within predominately 'cluttered' habitats, such as dense vegetation in deciduous woodland and riparian vegetation normally within a couple of kilometres of their roosts. The bats rely on linear landscape features (e.g. treelines, stone walls and hedgerows) to navigate and commute from roosts to feeding sites and they are reluctant to fly out in the open (Schofield, 2008).

**Table 14. Conservation objectives for Lesser Horseshoe Bat within the Killarney National Park, Macgillycuddy's Reeks, Caragh River Catchment SAC**

Attribute	Measure	Target
Population per roost	Number	Minimum number of 182 bats in winter for Roost ID 623; minimum number of 127 in winter and 358 in summer for Roost ID 505; minimum number of 176 in winter and 315 in summer for Roost ID 296; minimum number of 218 in summer for Roost ID 615
Winter roosts	Condition	No decline
Summer roosts	Condition	No decline
Number of auxiliary roosts	Number and condition	No decline
Extent of potential foraging habitat	Hectares	No significant decline
Linear features	Kilometres	No significant loss, within 2.5km of qualifying roosts.
Light pollution	Lux	No significant loss, within 2.5km of qualifying roosts.

Summer roosting sites are often in the attics of old or derelict buildings. The bats are faithful to a roost site and will return to the same site each year. Hibernation sites are typically caves, souterrains, cellars and icehouses. Lesser Horseshoe Bats tend to forage in summer in broadleaved woodland and around riparian vegetation (Bontadina *et al.*, 2002; Biggane, 2003). In 2016, the Bat Conservation Trust (BCT) carried out a review of literature pertaining to mean and maximum bat foraging distances (BCT, 2016). In their review, a Core Sustainance Zone (CSZ) refers to the area surrounding a communal bat roost within which habitat availability and quality will have a significant influence on the resilience and conservation status of the colony using the roost. For the BCT review, Lesser Horseshoe Bat data was available from 83 radio-tracked individuals from four separate studies. The weighted average maximum foraging distance Lesser Horseshoe Bats was 2.02km. The BCT noted that for Annex II species there is justification for increasing the CSZ to reflect use of the landscape by all bats in a population. Some researchers have found that Lesser Horseshoe Bats normally forage in woodlands/scrub within 2.5km of their roosts (Bontadina *et al.*, 2002); thus, for each roost, a 2.5km zone is considered an appropriate distance to foraging areas for the purpose of the current site specific conservation objectives (SSCO). The 2.5km zone around each known roost is mapped and potential foraging grounds within the zone are identified and mapped for each SAC using the Forestry Inventory and Planning System (FIPS) (2007/2012)

spatial dataset. The target is that there is no significant decline in potential foraging habitat within 2.5km of qualifying roosts. The proposed development site is located within the 2.5km buffer zone for Lesser Horseshoe Bat roosts within the Killarney National Park, Macgillicuddy's Reeks, Caragh River Catchment SAC.

**5.2.5 Oligotrophic waters containing very few minerals of sandy plains (*Littorelletalia uniflorae*) [3110]/ Oligotrophic to mesotrophic standing waters with vegetation of the *Littorelletea uniflorae* and/or *Isoeto-Nanojuncetea* [3130]**

3110 Oligotrophic isoetid lake habitat. A habitat dominated by isoetids. Characteristic species include *Isoetes lacustris*, *Isoetes echinospora*, *Littorella uniflora*, *Lobelia dortmanna* and *Deschampsia setacea*. The habitat frequently occurs on sheltered, gently sloping shorelines. It is generally associated with peatland areas and base-poor water (pH often <6.5).

3130 Mixed *Najas flexilis* lake habitat. Typified by habitats with *Najas flexilis*, this is a more species rich habitat than 3110. It also contains *Isoetes lacustris*, *Isoetes echinospora*, and *Littorella uniflora*, but combined with some broad-leaved pondweeds such as *Potamogetonperfoliatus*. While frequently associated with peatland, this habitat type is found in catchments with more mixed geology, including at least some base-rich influence and pH closer to neutral (pH 7).

**Table 14. Conservation objectives for Oligotrophic waters containing very few minerals of sandy plains (*Littorelletalia uniflorae*) [3110] within the Killarney National Park, Macgillicuddy's Reeks, Caragh River Catchment SAC**

Attribute	Measure	Target
Habitat area	Hectares	Area stable or increasing, subject to natural processes
Habitat distribution	Occurrence	No decline, subject to natural processes
Typical species	Occurrence	Typical species present, in good condition, and demonstrating typical abundances and distribution
Vegetation composition: characteristic zonation	Occurrence	All characteristic zones should be present, correctly distributed and in good condition
Vegetation distribution: max. depth	Metres	Restore maximum depth of vegetation, subject to natural processes
Hydrological regime: water level fluctuations	Metres	Maintain appropriate natural hydrological regime necessary to support the habitat
Lake substratum quality	Various	Restore appropriate substratum type, extent and chemistry to support the vegetation
Water quality: transparency	Metres	Restore appropriate Secchi transparency. There should be no decline in Secchi depth/transparency
Water quality: nutrients	µg/l P; mg/l N	Restore the concentration of nutrients in the water column to sufficiently low levels to support the habitat and its typical species

Attribute	Measure	Target
Water quality: phytoplankton biomass	µg/l Chlorophyll a	Restore appropriate water quality to support the habitat, including high chlorophyll a status
Water quality: phytoplankton composition	EPA phytoplankton composition metric	Maintain appropriate water quality to support the habitat, including high phytoplankton composition status
Water quality: attached algal biomass	Algal cover and EPA phytobenthos metric	Restore/maintain trace/absent attached algal biomass (<5% cover) and high phytobenthos status
Water quality: macrophyte status	EPA macrophyte metric	Maintain high macrophyte status
Acidification status	pH units; mg/l	Maintain appropriate water and sediment pH, alkalinity and cation concentrations to support the habitat, subject to natural processes
Water colour	mg/l PtCo	Restore/maintain appropriate water colour to support the habitat
Dissolved organic carbon (DOC)	mg/l	Restore/maintain appropriate organic carbon levels to support the habitat
Turbidity	Nephelometric turbidity units/ mg/l SS/ other appropriate units	Restore/maintain appropriate turbidity to support the habitat
Fringing habitat : area and condition	Hectares	Maintain the area and condition of fringing habitats necessary to support the natural structure and functioning of habitat 3110

**Table 15. Conservation objectives for Oligotrophic to mesotrophic standing waters with vegetation of the *Littorelletea uniflorae* and/or *Isoeto-Nanojuncetea* [3130] within the Killarney National Park, Macgillycuddy’s Reeks, Caragh River Catchment SAC**

Attribute	Measure	Target
Habitat area	Hectares	Area stable or increasing, subject to natural processes
Habitat distribution	Occurrence	No decline, subject to natural processes

Attribute	Measure	Target
Typical species	Occurrence	Typical species present, in good condition, and demonstrating typical abundances and distribution
Vegetation composition: characteristic zonation	Occurrence	All characteristic zones should be present, correctly distributed and in good condition
Vegetation distribution: max depth	Metres	Restore maximum depth of vegetation, subject to natural processes
Hydrological regime: water level fluctuations	Metres	Maintain appropriate natural hydrological regime necessary to support the habitat
Lake substratum quality	Various	Restore appropriate substratum type, extent and chemistry to support the vegetation
Water quality: transparency	Metres	Restore appropriate Secchi transparency. There should be no decline in Secchi depth/transparency
Water quality: nutrients	µg/l P; mg/l N	Restore the concentration of nutrients in the water column to sufficiently low levels to support the habitat and its typical species
Water quality: phytoplankton biomass	µg/l Chlorophyll a	Restore appropriate water quality to support the habitat, including high chlorophyll a status
Water quality: phytoplankton composition	EPA phytoplankton composition metric	Maintain appropriate water quality to support the habitat, including high phytoplankton composition status
Water quality: attached algal biomass	Algal cover and EPA phytobenthos metric	Restore/maintain trace/absent attached algal biomass (<5% cover) and high phytobenthos status
Water quality: macrophyte status	EPA macrophyte metric	Maintain high macrophyte status
Acidification status	pH units; mg/l	Maintain appropriate water and sediment pH, alkalinity and cation concentrations to support the habitat, subject to natural processes
Water colour	mg/l PtCo	Restore/maintain appropriate water colour to support the habitat
Dissolved organic carbon (DOC)	mg/l	Restore/maintain appropriate organic carbon levels to support the habitat

Attribute	Measure	Target
Turbidity	Nephelometric turbidity units/ mg/l SS/ other appropriate  units	Restore/maintain appropriate turbidity to support the habitat
Fringing habitat: area and condition	Hectares	Maintain the area and condition of fringing habitats necessary to support the natural structure and functioning of habitat 3130

### 5.2.6 Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation [3260]

The EU (2003) definition of the habitat water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation is very broad. There is no satisfactory definition of the habitat and its sub-types or their distribution in Ireland and a lack of relevant monitoring data concerning the habitat. This habitat can occur over a wide range of physical conditions, from acid, oligotrophic, flashy upland streams dominated by bryophytes to more eutrophic, slow flowing streams dominated by *Ranunculus* and *Callitriche* species. While the former will be sensitive to diffuse pollution the latter, especially in shallow streams, will be relatively more resistant.

This habitat type is commonly distributed along the main Blackwater channel and within tributaries and includes species such as Pond Watercrowfoot (*Ranunculus peltatus*), Watercrowfoot (*Ranunculus* sp.), Canadian Waterweed (*Elodea canadensis*), Broad-leaved Pondweed (*Potamogeton natans*) and Water Milfoil (*Myriophyllum* spp.).

**Table 16. Conservation objectives for Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation [3260] within the Killarney National Park, Macgillycuddy's Reeks, Caragh River Catchment SAC**

Attribute	Measure	Target
Habitat distribution	Occurrence	No decline, subject to natural processes
Hydrological regime: river flow	Metres per second	Maintain appropriate hydrological regimes
Hydrological regime: tidal influence	Daily water level  fluctuations- metres	Maintain natural tidal regime
Substratum composition:	Millimetres	The substratum should be dominated by the particle size ranges, appropriate to the habitat sub-type (typically sands, gravels and cobbles)

Attribute	Measure	Target
particle size range		
Water quality: nutrients	Milligrammes per litre	The concentration of nutrients in the water column should be sufficiently low to prevent changes in species composition or habitat condition
Vegetation composition: typical species	Occurrence	Typical species of the relevant habitat sub-type should be present and in good condition
Floodplain connectivity: area	Hectares	The area of active floodplain at and upstream of the habitat should be maintained

### 5.2.7 Freshwater Pearl Mussel (*Margaritifera margaritifera*) [1029]

The decline of FPM populations in Ireland is primarily related to the continuous failure to produce new generations of mussels because of the loss of clean gravel beds, which have become infiltrated by fine sediment and/or over-grown by algae or macrophytes. Macrophytes smother the juvenile habitat even further, and trap more sediment, exacerbating the problem in the long term. Juvenile mussels require well-oxygenated and silt-free substrate and riffled habitats in low gradient watercourses frequently provide a suitable mix of rock, cobble and sand substrates. This is severely affected by siltation, algal growth and decomposition of organic material.

**Table 17. Conservation objectives for *Margaritifera margaritifera* (Freshwater Pearl Mussel) [1029] within the Killarney National Park, Macgillycuddy's Reeks, Caragh River Catchment SAC**

Attribute	Measure	Target
Distribution	Kilometres	Note that the distribution target lengths include the perimeters of lakes in each catchment
Distribution: Caragh	Kilometres	Maintain Caragh distribution at 35.06km
Distribution: Currane	Kilometres	Maintain Currane distribution at 14.90km
Distribution: Gearhameen	Kilometres	Maintain Gearhameen distribution at 4.45km

Attribute	Measure	Target
Population size	Number of adult mussels	Restore populations to at least: 2.8 million adult mussels in the Caragh, 100,000 in the Currane and 100,000 in the Gearhameen
Population Structure: recruitment	Percentage per size class	Restore to at least 20% of each population no more than 65mm in length; and at least 5% of each population no more than 30mm in length
Population structure: adult mortality	Percentage	No more than 5% decline from previous number of live adults counted; dead shells less than 1% of the adult population and scattered in distribution
Habitat extent	Kilometres	Note that the suitable habitat target lengths include the perimeters of lakes in each catchment
Habitat extent Carragh	Kilometres	Restore suitable habitat in more than 33.18km in the Caragh and any additional stretches necessary for salmonid spawning
Habitat extent Currae	Kilometres	Restore suitable habitat in more than 6.86km in the Currane and any additional stretches necessary for salmonid spawning
Habitat extent Gearhameen	Kilometres	Restore suitable habitat in more than 4.45km in the Gearhameen and any additional stretches necessary for salmonid spawning
Water quality: macroinvertebrate and phytobenthos (diatoms)	Ecological quality ratio (EQR)	Restore water quality - macroinvertebrates: EQR greater than 0.90 (Q4-5 or Q5); phytobenthos: EQR greater than 0.93
Substratum quality: filamentous algae (macroalgae); macrophytes (rooted higher plants)	Percentage	Restore substratum quality - filamentous algae: absent or trace (less than 5%); macrophytes: absent or trace (less than 5%)

Attribute	Measure	Target
Substratum quality: oxygen availability	Redox potential	Restore to no more than 20% decline from water column to 5cm depth in substrate
Hydrological regime: flow variability	Metres per second	Restore appropriate hydrological regime
Host fish	Number	Maintain sufficient juvenile salmonids to host glochidial larvae
Fringing habitat: area and condition	Hectares	Maintain the area and condition of fringing habitats necessary to support the population

### 5.2.8 Slender Naiad (*Najas flexilis*) [1833]

This is an aquatic species, usually permanently submerged in freshwater deeper than 1 meter but shallower than 5 meters. It is a delicate, much branched, hairless annual to 30cms. Leaves are unstalked, opposite or whorled with a sheathing base, to 25mm long, narrow, linear. Leaves are sparsely toothed or not at all. Male and female flowers are separate on the same plant. No sepals or petals. Flowers are in leaf axils, the male protected by a bract or spathe until pollination. Male flowers have one unstalked anther. Female flowers have one carpel. The fruit is an unstalked drupe.

Roden *et al.* (2021) note that a general rise in nutrient loading (nitrogen and phosphorus) is known to have occurred in many Irish lakes. This increase reflects increased use of fertilisers on farms and forestry, and an increase in septic tanks around many lakes, as well as in urban wastewater discharges. The impact of increased nutrient loads is often summarised as an increase in total phosphorus, an element which frequently limits plant and algal growth and is known to correlate with a decline in lake conservation condition. Data on total phosphorus inputs may be obtained from WFD studies by the EPA or LAWPRO. Increases in farming, forestry or housing activities detected from aerial imagery might be related to changes in lake total phosphorus. In general, it is not possible for field observation to directly detect changes in nutrient loading, even though it is probably the greatest threat to Irish *Najas flexilis* lakes.

According to NPWS (2017), enrichment of lake water and sediments with phosphorus and nitrogen (eutrophication) is considered a significant pressure on the species within Killarney National Park, Macgillycuddy's Reeks and Caragh River Catchment SAC. Roden *et al.* (2021) found that Lough Leane appears to be in the process of degradation with the recent loss of many species found in *Najas flexilis*-type lakes, along with the almost complete disappearance of *Najas flexilis* itself.

It is noted that wastewater impacts have not been screened into Stage 2 of this NIS are dealt with in Stage 1 of this report (i.e. AA screening). As noted in **Section 4.9.4**, 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. The discharge from the wastewater treatment plant does not have an observable negative impact on the Water Framework Directive status.

**Table 18. Conservation objectives for *Najas flexilis* (Slender Naiad) [1833] within the Killarney National Park, Macgillycuddy’s Reeks, Caragh River Catchment SAC**

Attribute	Measure	Measure/target
Population extent	Hectares; distribution	No change to the spatial extent of <i>Najas flexilis</i> the lakes, subject to natural processes.
Population depth	Metres	No change to the depth range of <i>Najas flexilis</i> within the lakes, subject to natural processes
Population viability	Plant traits	No decline in plant fitness subject to natural processes
Population abundance	Square metres	No change to the cover abundance of <i>Najas flexilis</i> subject to natural processes
Species distribution	Occurrence	No decline subject to natural processes
Habitat extent	Hectares	No decline, subject to natural processes
Hydrological regime: water level fluctuations	Metres	Maintain/restore appropriate natural hydrological regime necessary to support the habitat for the species
Lake substratum quality	Various	Maintain appropriate substratum type, extent and chemistry to support the populations of the species
Water quality	Various	Maintain/restore appropriate water quality to support the populations of the species
Acidification status	pH units mg/l	Maintain appropriate water and sediment pH, alkalinity and cation concentrations to support the populations of <i>Najas flexilis</i> , subject to natural processes
Water colour	Mg/l PtCo	Maintain appropriate water colour to support the populations of <i>Najas flexilis</i>
Associated species	Species composition and abundance	Maintain appropriate associated species and vegetation communities to support the populations of <i>Najas flexilis</i>

### 5.2.9 Killarney Shad (*Alosa fallax killarnensis*) [5046]

The Killarney shad is endemic to Ireland, which means that it is a native species that is found only in Ireland, making it a very special part of our natural heritage. Killarney shad are only found in one location, Lough Leane in County Kerry, where it is known locally as "goureen". The Killarney shad is a landlocked, non-migratory subspecies of the twaite shad (*Alosa fallax*) that probably colonised Lough Leane thousands of years ago and became isolated there. Similar shad subspecies have also been recorded in southern Europe, including Italy and Greece.

**Table 19. Conservation objectives for *Alosa fallax killarnensis* (Killarney Shad) [5046] within the Killarney National Park, Macgillycuddy's Reeks, Caragh River Catchment SAC**

Target	Attribute	Measure
Distribution	Occurrence	Widespread recording during appropriate fish sampling operations (e.g. netting, hydroacoustics); access into inflowing and outflowing rivers for potential spawning migrations
Population structure: age class	Number of age classes	Full range of age classes present
Extent and distribution of spawning habitat	m2 and occurrence	No decline in extent and distribution of spawning habitats
Water quality: oxygen levels	Milligrammes per litre	No lower than 5mg/l
Spawning habitat quality: filamentous algae; macrophytes; sediment	Occurrence	Maintain stable gravel substrate with very little fine material, free of filamentous algal (macroalgae) growth and macrophyte (rooted higher plants) growth

### 5.2.10 Greenland White-fronted Goose (*Anser albifrons flavirostris*)

The national population of Greenland White-fronted Goose declined by 13% between 1985 - 2018. The Greenland White-fronted Goose flock in the Killarney Valley averaged between 50 and 60 geese in the 1970s, with a peak count of 69 geese in 1982/83. The flock has steadily declined since this peak period and the species has not been recorded within the SPA since December 2012 when 7 geese were recorded present (Source NPWS 2024).

Distribution encapsulates the number of locations and area of potentially suitable habitat for the wintering population and its availability for use. The suitability and availability of habitat areas are likely to vary throughout the season, for example, due to variation in land management practices or the abundance of resources available (due to natural variation and

other factors). This will affect the spatio-temporal patterns of use of the habitats by the wintering population

**Table 20. Conservation objectives for A395 Greenland White-fronted Goose *Anser albifrons flavirostris* within the Killarney National Park SPA**

Attribute	Measure	Target
Winter population trend	Percentage change in number of individuals	Long term winter population trend is stable or increasing
Winter spatial distribution	Hectares, time and intensity of use	Sufficient number of locations, area, and availability (in terms of timing and intensity of use) of suitable habitat to support the population target
Disturbance at wintering site	Intensity, frequency, timing and duration	Disturbance occurs at levels that do not significantly impact the achievement of targets for population trend and spatial distribution
Barriers to connectivity and site use	Number, location, shape and hectares	Barriers do not significantly impact the wintering population's access to the SPA or other ecologically important sites outside the SPA
Forage spatial distribution, extent and abundance	Location, hectares, and forage biomass	Sufficient number of locations, area of suitable habitat and available forage biomass to support the population target
Roost spatial distribution and extent	Location and hectares of roosting habitat	Sufficient number of locations, area and availability of suitable roosting habitat to support the population target
Supporting habitat: area and quality	Hectares and quality	Sufficient area of utilisable habitat available in ecologically important sites outside the SPA

## 5.4 Assessment of Potential Effect Pathways

All potential effects would relate to direct and indirect effects to relevant habitats and fauna of the Killarney National Park, Macgillycuddy's Reeks, Caragh River Catchment SAC and Killarney National Park SPA. The assessment of impacts is based on the EC (2018) *Managing Natura 2000 Sites: The Provision of Article 6 of the Habitats Directive 92/43/EEC*, professional judgement and criteria or standards where available.

The potential impacts associated with the development are discussed in the following section with respect to their likelihood to have had or to have significant impacts on Natura 2000 sites. As part of the assessment direct, indirect and in-combination impacts were considered.

As part of the assessment the potential for adverse effects associated with the development were reviewed as outlined below:

- Potential effects on water quality during construction
- Potential effects on water quality during operation
- Potential lighting effects on commuting routes (outside proposed development site)
- Potential in-combination effects

### 5.4.1 Impacts on surface water quality during construction

During construction there are potential sources of pollution from excavation and drainage from the site resulting from runoff and erosion from site earthworks and temporary stockpiles. The presence of fuels, lubricants and other chemicals from construction activities also have the potential to temporarily affect the surface/ground water regime of the area if not managed properly. These sources of pollution have the potential to impacts on water quality within the Killarney National Park, Macgillycuddy's Reeks, Caragh River Catchment SAC and Killarney National Park SPA downstream.

In the absence of appropriate design and mitigation, high levels of silt in surface water run-off from construction works, could theoretically impact on fish species. 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. Excessive siltation can cause eggs and fry to be smothered. In particular impacts on spawning lamprey and salmonids can be significant. 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 e.g. Freshwater pearl mussel. Aquatic plant communities may also be affected by increased siltation. Submerged plants may be stunted and photosynthesis may be reduced.

Inadvertent spillages of hydrocarbons during construction could introduce toxic chemicals into the aquatic environment via surface water run-off or groundwater contamination and have a direct toxicological impact on habitats and fauna.

Mitigation measures outlined in **Section 6** will ensure there is no impact on the Killarney National Park, Macgillycuddy's Reeks, Caragh River Catchment SAC and Killarney National

Park SPA from surface water runoff during the construction phase. Following the implementation of these mitigation measures, the proposed development will not adversely affect the integrity of Killarney National Park, Macgillycuddy's Reeks, Caragh River Catchment SAC and Killarney National Park SPA due to surface water runoff during the construction phase.

#### 5.4.2 Impacts on water quality during operation

There is currently no formal surface water network within the proposed development site. There are no watercourses within the proposed development site. 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 range of SuDS and surface water control measures have been included at the design stage of this project to ensure there will be no impact on local water quality or runoff rates during the operational phase of the proposed development.

As described in **Section 3.4**, 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) indicates that a small limited area in the north eastern portion of the proposed development site falls within a predictive 0.1% AEP (1 in 1000 year – Flood Zone 'B') fluvial flood zone associated with the River Flesk. The proposed development site does not fall within a predictive 1% AEP (1 in 100 year – Flood Zone 'A') fluvial flood zone. The vast majority of the site falls within Flood Zone 'C'. In order to ensure a sustainable development, and to ensure that the potential flood risk to the portion of the proposed access road that falls within the delineated predictive 0.1% AEP (1 in 1000 year - Flood Zone 'B') fluvial flood zone is mitigated to an acceptable level, it is proposed to raise the finished ground level of the proposed access road to a minimum level of 23.50m OD which will ensure that the maximum potential flood depth along this portion of the access road will not exceed 0.3m during the occurrence of an extreme 0.1% AEP (1 in 1000 year) fluvial flood event. In consideration of findings and output of this 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.

Given the proposed SuDS measures proposed and the existing network, it is concluded that the proposed development will have no adverse effect on the integrity of Killarney National Park, Macgillycuddy's Reeks, Caragh River Catchment SAC and Killarney National Park SPA due to surface water discharges during the operational phase.

### 5.4.3 Impacts of lighting

Lesser horseshoe bats are extremely sensitive to artificial light, even at low light intensities, and they avoid brightly lit areas. Artificial light at or near roosts may impact the bats by delaying their emergence time at dusk, reducing reproductive success or even cause roosts to be abandoned (Bat Conservation Trust & Institute of Lighting Professionals, 2018). In Ireland, information on the extent of artificial lighting was provided by the six local authorities with horseshoes in their areas to a modelling study undertaken by VWT in 2020 and revealed that there were high densities of lighting associated with Galway and Limerick Cities, which could be acting as a barrier to the movements of bats in these areas (Finch and McAney, 2020). It is recommended that there is no significant increase in artificial lighting adjacent to roosts of importance, or along commuting routes within 2.5km of Lesser horseshoe bats roosts.

As outlined in **section 4.8.2** the proposed development site is located within the 2.5km buffer of a qualifying Lesser Horseshoe Bat roost. However, there are no suitable habitats for lesser horseshoe bat within the proposed development site. Woodland areas within the SAC boundary (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 are separated from the proposed development site by continuous residential development. Although unlikely given the location of the proposed development site surrounded by urban, lit areas, the precautionary principle has been applied to ensure there will be no significant light spillage onto commuting habitats outside the proposed development site boundary.

Mitigation measures for construction and operational lighting have been included in **Section 6** of this report. Lighting for the proposed development has been designed in line with bat conservation guidelines as recommended by the Lesser Horseshoe Bat national action plan (NPWS & VTT (2023)). This will minimise light spillage outside the proposed development site (See horizontal illuminance drawings by Lighting Reality (See **Appendix 2**)). Moving away from the site, light spillage will be imperceptible and there will be significant increase in artificial light intensity along commuting routes within 2.5km of those roosts.

The proposed development will not adversely affect the integrity of Killarney National Park, Macgillycuddy's Reeks, Caragh River Catchment SAC due to change in light levels.

## 6. 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, such that adverse effects on site integrity Killarney National Park, Macgillycuddy's Reeks, Caragh River Catchment SAC and Killarney National Park do not occur.

Mitigation measures are set out in accordance with the European Commission guidance on the: '*Assessment of plans and projects significantly affecting Natura 2000 Sites: Methodological guidance on the provisions of Article 6(3) and (4) of the Habitats Directive 92/43/EEC, (2001)*'. and '*Managing Natura 2000 sites: The provisions of Article 6 of the 'Habitats' Directive (2018)*'.

Refer to **Appendix 3**, for details on adverse effects identified and proposed mitigation measures.

### 6.1 Construction Phase Mitigation Measures

All personnel involved with the project will receive an on-site induction relating to operations and the environmentally sensitive nature of nearby European sites and to re-emphasize the precautions that are required as well as the precautionary measures to be implemented. All staff and subcontractors have the responsibility to:

- Work to agreed plans, methods and procedures to eliminate and minimise environmental impacts,
- Understand the importance of avoiding pollution on-site, including noise and dust, and how to respond in the event of an incident to avoid or limit environmental impact;
- Respond in the event of an incident to avoid or limit environmental impact;
- Report all incidents immediately to their line manager;
- Monitor the workplace for potential environmental risks and alert the immediate line manager if any are observed; and
- Co-operate as required, with site inspections.

### 6.2 Water Quality General

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.

#### 6.2.1 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.

### **6.3 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.

#### **6.3.1 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.

#### **6.3.2 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.

### **6.3.3 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.

### **6.3.4 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.

### **6.3.5 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.

### **6.3.6 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.

### **6.3.7 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.

### **6.3.8 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.

### **6.3.9 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.

## **6.4 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.

## 6.5 Lighting

### 6.5.1 Lighting during construction

Construction works will primarily take place during hours of daylight to minimise disturbance to any nocturnal mammal species. Where lighting is required, 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 works lighting:

- Lighting will be provided with the minimum luminosity necessary for safety and security purposes. Where possible, lighting will be restricted to the working area and using the cowl and angling noted above, will minimise overspill and shadows on sensitive habitats outside the construction area and
- During construction, lighting will be positioned and directed so that it does not unnecessarily intrude on adjacent ecological receptors and structures used by protected species.
- Site lighting will typically be provided by tower mounted temporary portable construction floodlights. The floodlights will be cowed and angled downwards to minimise spillage to surrounding properties. The following measures will be applied in relation to site lighting:
  - Where possible, construction lights will be switched off when not in use.

### 6.5.2 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  $I_{\max 90}$  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.

## 7. In-combination Impacts

In-combination impacts refer to a series of individual impacts that may, in combination, produce a significant effect. The underlying intention of this in combination provision is to take account of in-combination impacts from existing or proposed plans and projects and these will often only occur over time.

Article 6(3) of the Habitats Directive requires that:

*Any plan or project not directly connected with or necessary to the management of the site but likely to have a significant effect thereon, either individually or in combination with other plans or projects, shall be subject to appropriate assessment of its implications for the site in view of the site's conservation objectives.*

It is therefore required that the potential impacts of the proposed development are considered in-combination with any other relevant plans or projects. An assessment of plans and projects with the potential for in-combination effects in association with the proposed development was undertaken. A search of planning applications in the vicinity of the proposed development was undertaken in March 2025 to examine projects with potential for in-combination effects (Source: Kerry County Council, An Bord Pleanála, EPA). Other projects or developments which could potentially cause in-combination impacts are listed in **Table 21**.

**Table 21. Other developments near site and potential in-combination impacts**

Plans and Projects European Network		Key Policies/Issues/Objectives Directly Related to the Conservation of the	
River Management Plan 2022-2027	Basin Plan	<p>The project should comply with the environmental objectives of the Irish RBMP which are to be achieved generally by 2027.</p> <ul style="list-style-type: none"> <li>• Ensure full compliance with relevant EU legislation</li> <li>• Prevent deterioration</li> <li>• Meeting the objectives for designated protected areas</li> </ul>	<p>The implementation and compliance with key environmental policies, issues and objectives of this management plan will result in positive in-combination effects to European sites. The implementation of this plan will have a positive impact for the biodiversity. It will not contribute to in-combination impacts with the proposed development.</p>

Plans and Projects European Network	Key Policies/Issues/Objectives Directly Related to the Conservation of the	
	<ul style="list-style-type: none"> <li>Protect high status waters</li> </ul> <p>Implement targeted actions and pilot schemes in focus sub-catchments aimed at: targeting water bodies close to meeting their objective and addressing more complex issues which will build knowledge for the third cycle.</p>	
Inland Fisheries Ireland Corporate Plan 2021-2025	<p>To ensure that Ireland's fish populations are managed and protected to ensure their conservation status remains favourable. That they provide a basis for a sustainable world class recreational angling product, and those pristine aquatic habitats are also enjoyed for other recreational uses.</p> <p>To develop and improve fish habitats and ensure that the conditions required for fish populations to thrive are sustained and protected.</p> <p>To grow the number of anglers and ensure the needs of IFI's other key stakeholders are being met in a sustainable conservation focused manner.</p> <p>EU (Quality of Salmonid Waters) Regulations 1988. All works during development and operation of the project must aim to conserve fish and other species of fauna and flora habitat; biodiversity of inland fisheries and ecosystems and protect spawning Salmon and trout.</p>	<p>The implementation and compliance with key environmental issues and objectives of this corporate plan will result in positive on-combination effects to European sites. The implementation of this corporate plan will have a positive impact for biodiversity of inland fisheries and ecosystems. It will not contribute to in-combination or cumulative impacts with the proposed development.</p>
Irish Water Capital Investment Plan 2020-2024	<p>Proposals to upgrade and secure water services and water treatment services countrywide.</p>	<p>Likely net positive impact due to water conservation and more effective treatment of water. It will not contribute to in-combination impacts with the proposed development.</p>
Water Services Strategic Plan (WSSP, 2015)	<p>Irish Water has prepared a Water Services Strategic Plan (WSSP, 2015), under Section 33 of the Water Service No. 2 Act of 2013 to address the delivery of strategic objectives which will contribute towards improved water quality and biodiversity requirements through reducing:</p> <ul style="list-style-type: none"> <li>Habitat loss and disturbance from new / upgraded infrastructure;</li> <li>Species disturbance;</li> <li>Changes to water quality or quantity; and</li> <li>Nutrient enrichment /eutrophication.</li> </ul>	<p>The WSSP forms the highest tier of asset management plans (Tier 1) which Irish Water prepare and it sets the overarching framework for subsequent detailed implementation plans (Tier 2) and water services projects (Tier 3). The WSSP sets out the challenges we face as a country in relation to the provision of water services and identifies strategic national priorities. It includes Irish Water's short, medium and long-term objectives and identifies strategies to achieve these objectives. As</p>

Plans and Projects European Network	Key Policies/Issues/Objectives Directly Related to the Conservation of the	
		<p>such, the plan provides the context for subsequent detailed implementation plans (Tier 2) which will document the approach to be used for key water service areas such as water resource management, wastewater compliance and sludge management. The WSSP also sets out the strategic objectives against which the Irish Water Capital Investment Programme is developed. The current version of the CAP outlines the proposals for capital expenditure in terms of upgrades and new builds within the Irish Water owned assets.</p> <p>The overarching strategy was subject to AA and highlighted the need for additional plan/project environmental assessments to be carried out at the tier 2 and tier 3 level. Therefore, significant in-combination effects can be ruled out.</p>
<p><b>Other developments in the vicinity</b></p>	<p>Kerry County, An Bord Pleanála, EPA planning database was consulted to identify any proposed or permitted developments in proximity to the proposed developments site (23/03/25).</p>	
	<p>The following LRDs have been granted planning in Killarney.</p> <p>Planning reference 2460295. The construction of a residential development of: 224 no. residential units with ancillary two storey crèche, landscaping, road improvements, pedestrian / cycleways, storm water upgrades and associated site development works. The proposed development makes provision for 76 houses comprising of 8 no. 2-storey 2-bedroom townhouses, 28 no. 2-storey 3-bedroom townhouses, 10 no. 2-storey 3-bedroom semi-detached units and 30 no. 2-storey 4-bedroom semi-detached units. The proposed development includes 148 no. apartments / duplexes to be provided as follows: Block 1 (4 no. 2-bedroom &amp; 4 no. 3-bedroom over 3 storeys), Block 2 (2 no. 2-bedroom &amp; 2 no. 3-bedroom over 3-storeys), Block 3 (4 no. 1-bedroom, 10 no. 2-bedroom and 6 no. 3-bedroom over 3-storeys), Block 4 (10 no.</p>	<p>Following mitigation measures, no significant adverse impacts from changes in water quality will occur. Therefore, no in-combination effects from changes in water quality have been identified.</p> <p>Following mitigation measures, no significant adverse impacts from increased lighting will occur. Therefore, no in-combination disturbance effects on Lesser horseshoe bat have been identified.</p> <p>No other significant adverse in-combination effects have been identified.</p>

Plans and Projects European Network	Key Policies/Issues/Objectives Directly Related to the Conservation of the	
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1-bedroom & 10 no. 2-bedroom over 3-storeys), Block J (32 no. 2-bedroom over 4 storeys), Block K (16 no. 1-bedroom apartments & 16 no. 2-bedroom apartments over 4 storeys) Block L (32 no. 2-bedroom apartments over 4 storeys). The proposed development will provide for a new vehicular access and pedestrian entrances onto Port Road, upgrades to Port Road comprising reduction in carriageway widths, provision of shared pedestrian/cycle path and uncontrolled pedestrian crossing, and a pedestrian connection to Millwood Estate. It is proposed to upgrade the stormwater network on St. Margaret's Road (approximately 140 metres north of the main development site) to support the development. Ancillary infrastructure development works will include relocation/undergrounding of ESB powerlines, wastewater infrastructure including foul pumping station, surface water attenuation, water utility services, public lighting, bin stores, bicycle stores, ESB substations, and all associated site development works. A Natura Impact Statement has been prepared in respect of the proposed development. Port Road and St Margaret's Road,, Coollegreen, Inch, Knockreer, Ardnamweely, Derreen (townlands),, Killarney, Co. Kerry.

CONSTRUCT 249 NO. DWELLINGS COMPRISING OF 2 NO 5-BED HOUSES, 6 NO. 4-BED HOUSES, 117 NO. 3 BED HOUSES, 18 NO. 2-BED HOUSES, 68 NO. 2-BED APARTMENTS AND 38 NO. 1-BED APARTMENTS. ALL HOUSES AND APARTMENTS ARE CONTAINED IN TWO STOREY BUILDINGS IN HEIGHT AND COMPRISE A MIX OF TERRACE AND SEMI-DETACHED TYPOLOGIES.HOUSE TYPE F (4-BED SEMI-DETACHED) AND HOUSE TYPE G ( 5 BED- SEMI-DETACHED) INCLUDE RESIDENTIAL ACCOMMODATION AT ATTIC/SECOND LEVEL WITH ASSOCIATED ROOFLIGHTS. THE APARTMENTS INCLUDE BALCONIES/GROUND FLOOR TERRACES AS PRIVATE OPEN SPACE PROVISION. THE DEVELOPMENT INCLUDES PUBLIC OPEN SPACE INCLUDING PLAY FACILITES, A NEW VEHICULAR ACCESS FROM UPPER PARK ROAD, ALL INTERNAL ROADSAND FOOTPATHS INCLUDING A NUMBER OF HOMEZONES/SHARED SURFACES, BOUNDARY TREATMENT AND HARD AND SOFT LANSSCAPING, DRAINGAE WORKS FOR THE NEW DEVELOPMENT AND ALL ASSOCIATED AND ANCILLARY WORKS. THE

Plans and Projects European Network	Key Policies/Issues/Objectives Directly Related to the Conservation of the	
	<p>PROPOSED DEVELOPMENT ALSO INCLUDES A NEW TWO-WAY CYCLEPATH AND A FOOTPATH ALONG UPPER PARK ROAD, WITH PEDESTRIAN CROSSINGS ON UPPER PARK ROAD, A TWO STOREY CRECHE OF C.417 SQ.M GROSS FLOOR SPACE WITH ASSOCIATED OPEN SPACE AND PV PANELS AT ROOF LEVEL: 510 NO. SURFACE CAR PARKING SPACES (INCLUDING ACCESSIBLE SPACES) FOR THE RESIDENTIAL DEVELOPMENT AND 19 NO. SURFACE CAR PARKING SPACES FOR THE CRECHE, 352 NO. BICYCLE PARKING SPACES ARE PROVIDED IN SECURE FACILITIES FOR THE MAISONETTE UNITS TO THE REAR OF EACH UNIT. A NATURA IMPACT STATE HAS BEEN PREPARED IN RESPECT OF THE PROPOSED DEVELOPMENT. UPPER PARK ROAD, KILLARNEY, CO KERRY</p> <p>Other developments which have been granted planning in the Ross Road area during the last 24-month period are small in scale, relating to works on existing housing/buildings.</p>	

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. These projects and potential in-combination impacts are detailed in **Table 20**.

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 will ensure there are no impacts on local water quality and therefore no in-combination impacts from operational surface water discharges will occur. Lighting design measures will ensure there will be no significant increase in lighting and therefore no potential in-combination effects on Lesser Horseshoe bat will occur.

In the absence of any significant potential impacts or adverse effects on the on the qualifying interests and conservation interests for the Killarney National Park, Macgillycuddy's Reeks and Caragh River Catchment SAC and Killarney National Park SPA and in the absence of significant impacts on its overall integrity, no potential in-combination impact from the proposed development has been identified.

## 8. Conclusions

The AA screening concluded, on the basis of objective information and in view of best scientific knowledge, the possibility of significant effects from the proposed project on European sites could not be ruled out and therefore an Appropriate Assessment was required. The AA screening concluded that there was potential for the proposed development to significantly

impact the Killarney National Park, Macgillycuddy's Reeks and Caragh River Catchment SAC and Killarney National Park SPA, via surface water runoff/discharges during construction and operation, increased lighting and in-combination impacts.

The NIS has been prepared to inform and assist Kerry County Council to assess, in view of best scientific knowledge, if the proposed development, individually or in combination with another plan or project is likely to have a significant effect on the Killarney National Park, Macgillycuddy's Reeks and Caragh River Catchment SAC and Killarney National Park SPA.

This NIS has examined and analysed, in light of the best scientific knowledge, with respect to Killarney National Park, Macgillycuddy's Reeks and Caragh River Catchment SAC and Killarney National Park SPA within the potential likely zone of impact of the proposed development, the potential effect pathways, how these could impact on qualifying species and habitats and whether the predicted effects would adversely affect the integrity of these European sites.

Mitigation measures are set out in **Section 6** of the NIS and they ensure that any effects on the conservation objectives of Killarney National Park, Macgillycuddy's Reeks and Caragh River Catchment SAC and Killarney National Park SPA will be avoided during the proposed development such that there will be no risk of adverse effects on the integrity of these European sites.

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 and operation 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.

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## Appendices

### Appendix 1. Site synopses

#### **SITE NAME: KILLARNEY NATIONAL PARK SPA SITE CODE: 004038**

This large site encompasses the lakes and part of the Macgillycuddy's Reeks in the vicinity of the town of Killarney in Co. Kerry. The underlying geology is Old Red Sandstone and, on the eastern shores of Lough Leane, Carboniferous limestone. Lough Leane is the largest (8.6 km along its long axis) of the lakes in the site, and is classified as a mesotrophic system. Muckcross Lake and the Upper Lake are both high quality oligotrophic systems. Killarney National Park is perhaps best known for its Oak woodlands. They form the most extensive area of native woodland remaining in Ireland and include Derrycunihy Wood, described as perhaps the most natural Sessile Oak wood in the country. The higher areas of the site are dominated by blanket bog and wet heath.

At the time this site was designated as a Special Protection Area (SPA) it was being utilised by Greenland White-fronted Goose. This, along with the nearby Eirk Bog, is the most southerly site in Ireland utilised by this species and it is also one of the few flocks that continues to utilise peatland habitats. The site continues to be used by

Greenland White-fronted Goose in small numbers (<20 birds) and is regarded as a special conservation interest for this SPA. While Killarney National Park has not been subject to a complete upland breeding bird survey the habitat within the site is estimated to support up to 5 pairs of Merlin and therefore this species is regarded as a special conservation interest for this SPA. Other upland species which breed within the site include Peregrine (1 pair), Ring Ouzel (1-2 pairs) and Red Grouse. The extensive woodlands support some scarce breeding birds, notably Redstart (1-2 pairs), Wood Warbler (1-2 pairs) and Garden Warbler (possibly up to 10 pairs).

Lough Leane, and to a lesser extent the other lakes, support a variety of wintering waterfowl species including Mute Swan (38), Teal (184), Mallard (361), Pochard (54), Tufted Duck (271), Goldeneye (23), Little Grebe (11), Cormorant (86), Coot (124) and Black-headed Gull (84) – all counts are three year mean peaks for the period 1995/96-1997/98. Several research programmes have been carried out on the birds in the site, including studies on the communities associated with the Yew woodlands, and the wildfowl associated with the lakes. Part of Killarney National Park SPA is a Wildfowl Sanctuary.

#### **Site Name: Killarney National Park, Macgillycuddy's Reeks and Caragh River Catchment SAC**

#### **Site Code: 000365**

This very large site encompasses the mountains, rivers and lakes of the Iveragh Peninsula, and the Paps Mountains which stretch eastward from Killarney towards Millstreet. The majority of the site is in Co. Kerry, with a small portion in Co. Cork. This is the most mountainous region in Ireland and includes Carrauntoohil, the highest peak in the country at 1,039 m. 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 dramatic sandstone ridges and valleys have been shaped by glacial processes and many of the lakes are impounded by glacial moraines. Located close to the Atlantic in the south-west of Ireland, the site is subject to strong oceanic influences. Generally, Lusitanian flora and fauna is well-represented, while the high peaks and cliffs support arctic-alpine relicts.

The site is a Special Area of Conservation (SAC) selected for the following habitats and/or species listed on Annex I / II of the E.U. Habitats Directive (\* = priority; numbers in brackets are Natura 2000 codes):

[3110] Oligotrophic Waters containing very few minerals [3130] Oligotrophic to Mesotrophic Standing Waters

[3260] Floating River Vegetation

[4010] Wet Heath

[4030] Dry Heath

[4060] Alpine and Subalpine Heaths [5130] Juniper Scrub

[6130] Calaminarian Grassland [6410] *Molinia* Meadows

[7130] Blanket Bogs (Active)\*

[7150] Rhynchosporion Vegetation [91A0] Old Oak Woodlands

[91E0] Alluvial Forests\*

[91J0] Yew Woodlands\*

[1024] Kerry Slug (*Geomalacus maculosus*)  
[1029] Freshwater Pearl Mussel (*Margaritifera margaritifera*) [1065] Marsh Fritillary (*Euphydryas aurinia*)  
[1095] Sea Lamprey (*Petromyzon marinus*)

[1096] Brook Lamprey (*Lampetra planeri*)  
[1099] River Lamprey (*Lampetra fluviatilis*)  
[1103] Twaite Shad (*Alosa fallax*)  
[1106] Atlantic Salmon (*Salmo salar*)  
[1303] Lesser Horseshoe Bat (*Rhinolophus hipposideros*)

[1355] Otter (*Lutra lutra*)

[1421] Killarney Fern (*Trichomanes speciosum*)

[1833] Slender Naiad (*Najas flexilis*)

The Oak woodlands, occurring mostly around the Killarney lakes, are the habitat for which the area is perhaps best known. They form the most extensive area of native woodland remaining in Ireland and include Derrycunihy Wood, described as perhaps the most natural Sessile Oak (*Quercus petraea*) wood in the country. The woods are typically dominated by Sessile Oak, with an understorey of Holly (*Ilex aquifolium*). The Strawberry-tree (*Arbutus unedo*) is a notable component of the woods and there are scattered areas of Yew (*Taxus baccata*). The herb layer is not particularly species-rich, but the woods support perhaps the best developed Atlantic bryophyte community in Europe. Several rare species are present including *Lejeunea flava*, *Cyclodictyon laetivirens*, *Daltonia splachnoides*, *Sematophyllum demissum* and *Radula carringtonii*.

The only sizeable Yew woodland in Ireland is found on the limestone of the Muckcross peninsula. Here, some of the trees are up to 200 years old. The dense shade beneath the tree results in few herbs in the ground flora, but the bryophyte layer is well-developed and almost continuous.

Wet woodland, or carr, occurring on the low-lying limestone areas within the floodplain of Lough Leane, forms one of the most extensive areas of this woodland type in Ireland. The dominant canopy species are Alder (*Alnus glutinosa*), willows (*Salix* spp.), Ash (*Fraxinus excelsior*) and Downy Birch (*Betula pubescens*), while the field layer is dominated by Remote Sedge (*Carex remota*) and Creeping Bent (*Agrostis stolonifera*).

Adding to the diversity of the woodland component of this site are a number of mixed woodlands, including those of Ross Island which support one of the richest herb layers of the Killarney woods.

The most common habitat types within the overall site are blanket bog, heath and upland grassland. The heath and grassland generally occur on areas with shallow peat and on the mineral soils of the steep mountain sides, while the blanket bog occurs on the more gentle slopes, plateaux and other level ground. Often the habitats occur in a mosaic, with exposed rock frequently occurring.

A variety of blanket bog types are represented from lowland valley to mountain blanket bog. Some of the best include: Cumberagh River Bog Nature Reserve, a

domed bog which is perhaps the most southern intact blanket bog in the country; Ballygisheen, which contains one of the most extensive areas of intact lowland blanket bog in Co. Kerry; Coomacheo/Caherbarnagh, which combine to form the largest mountain blanket bog in the south-west; Eirk Bog Nature Reserve, a classic example of a bog intermediate between a raised and blanket bog; Mangerton Bog, an upland bog which grades into an unusual lichen heath seen at no other site; and Oolagh East, a quaking basin mire. Generally, the bogs have a characteristic flora. The Lusitanian species, Large-flowered Butterwort (*Pinguicula grandiflora*), is common. The bogs also support a number of unusual species, including mosses (*Sphagnum pulchrum*, *S. fuscum*, *S. platyphyllum*, *S. strictum*, *S. contortum* and *Calliergon stramineum*), liverworts (*Cladopodiella francisci* and *Calypogeia azurea*) and lichens (*Cladonia mediterranea*, *C. macilenta*, *C. rangiferina*, *C. arbuscula* and *Cetraria islandica*).

Rhynchosporion vegetation is confined to wet areas within the lowland blanket bogs, with one of the best areas for the habitat being to the north-east of the Ballygisheen Pass. On a portion of this bog there is an extensive area of quaking flats and pools dominated by the bog mosses *Sphagnum cuspidatum* and *S. auriculatum*. These areas have a typically species-poor flora which includes Bogbean (*Menyanthes trifoliata*), White Beak-sedge (*Rhynchospora alba*), Bog Asphodel (*Narthecium ossifragum*), Common Cottongrass (*Eriophorum angustifolium*) and Great Sundew (*Drosera anglica*). Brown Beak-sedge (*R. fusca*), a locally rare plant of wet bog pools, is

occasional within the site. Although the habitat is best developed in very wet areas of intact bog, it may also occur in wet areas of regenerating cutover blanket bog.

Wet heath often occurs in association with blanket bog and features Cross-leaved Heath (*Erica tetralix*). Dry heath is more frequent in this site, and is dominated by Heather (*Calluna vulgaris*), Bell Heather (*Erica cinerea*) and Western Gorse (*Ulex gallii*), with occasional Bilberry (*Vaccinium myrtillus*). This habitat is well-developed on the Paps Mountains. Elsewhere it is often over-grazed, with upland grassland becoming more frequent. Some of the highest ridges support alpine heath (referable to the *Lycopodium alpinum* - *Racomitrium lanuginosum* association). Widespread plant species of the alpine heath include Bog-myrtle (*Vaccinium myrtillus*), Crowberry (*Empetrum nigrum*) and Fir Clubmoss (*Huperzia selago*), while species such as Juniper (*Juniperus communis* subsp. *nana*) and Dwarf Willow (*Salix herbacea*) have a much more restricted distribution.

The site contains many lakes, but these can be broadly divided into two types: small upland corrie lakes and larger lowland lakes. Examples of the first type are Lough Murtagh and Lough Gortavehy in the Paps Mountains. They are oligotrophic and typically species-poor, with Quillwort (*Isoetes lacustris*), Water Lobelia (♂ and Shoreweed (*Littorella uniflora*) occurring most commonly. The lowland lakes are mostly oligotrophic, although Lough Leane, the largest freshwater body in the region, has become somewhat mesotrophic as a result of pollution from Killarney town. These lowland lakes tend to be more species-rich than those at higher altitudes, with additional species such as Awlwort (*Subularia aquatica*), Six-stamened Waterwort (*Elatine hexandra*) and Alternate Water-milfoil (*Myriophyllum alterniflorum*). Good examples include Lough Caragh, Upper Lake and Muckcross Lake.

The rivers associated with these lakes are also of importance. The Caragh is relatively unpolluted from headwater to estuary, a rare phenomenon in Europe. The Flesk runs over Old Red Sandstone in its upper reaches and limestone as it nears Lough Leane. Both rivers support floating and submerged vegetation and rare invertebrates. Rocks around the smaller mountain streams often support a lush vegetation of ferns and bryophytes, most notably at Torc Waterfall.

Other habitats of note include: Juniper scrub found on islands in the Upper Lake and on dry ridges in nearby Newfoundland Bog; damp meadows, with Purple Moor-grass (*Molinia caerulea*), supporting scarce species such as Whorled Caraway (*Carum verticillatum*) and Ivy-leaved Bellflower (*Wahlenbergia hederacea*); and Calaminarian grasslands, associated with the old copper mines on Ross Island, with species such as Sea Campion (*Silene vulgaris* subsp. *maritima*) and Thrift (*Armeria maritima*).

A large number of plant and animal species of interest occur within the site. For example, two plant species listed on Annex II of the E.U. Habitats Directive occur. Slender Naiad (*Najas flexilis*) is found in some of the lakes at the site. The Killarney Fern (*Trichomanes speciosum*) is another listed and well-known rarity. An additional twenty-two Red Data Book plant species have been recorded, but only twelve of these have been seen recently. These are Pillwort (*Pilularia globulifera*), Kerry Lily (*Simethis planifolia*), Irish Lady's-tresses (*Spiranthes romanzoffiana*), Slender Cottongrass (*Eriophorum gracile*), Small Cudweed (*Logfia minima*), Betony (*Stachys officinalis*), Heath Cudweed (*Omalotheca sylvatica*), Alder Buckthorn (*Frangula alnus*), Alpine Saw-wort (*Saussurea alpina*), Hoary Whitlowgrass (*Draba incana*), Smooth Brome (*Bromus racemosus*) and Holly Fern (*Polystichum lonchitis*). The first seven of these species are legally protected under the Flora (Protection) Order, 1999, as are Slender Naiad and Killarney Fern.

Additional plant species of interest include a fern (*Dryopteris affinis* subsp. *stilluppensis*) and a Whitebeam (*Sorbus anglica*), both at their only Irish locations.

The site is very important for oceanic bryophytes, particularly the woodland species. It also contains good representative examples of the Northern Atlantic Hepatic Mat community and other oceanic montane communities. Killarney Oak woods and mountains have been nominated as a site of international importance for bryophytes.

The Killarney Woods are notable for the number of rare species of Myxomycete fungus that have been recorded, namely *Collaria arcyronema*, *Craterium muscorum*, *Cribraria microcarpa* (only known Irish site), *C. rufa*, *C. violacea*, *Diderma chondrioderma*, *D. lucidum*, *D. ochraceum*, *Fuligo muscorum* and *Licea marginata*.

The site has six bird species which are listed on Annex I of the E.U. Birds Directive. A small flock of Greenland White-fronted Goose, which winters on the boglands within the National Park, is now the only regular flock in the south-west. The site has one of the highest concentrations of breeding Peregrines in the country, as well as some breeding Merlin. Chough is found both in the coastal and inland areas of the site, with possibly up to 30 pairs breeding. Kingfisher is a species associated with the lakes and rivers, especially in the National Park and probably breeds. Finally, a few pairs of Common Tern breed within the site.

The woodlands provide habitat for a variety of breeding birds, most notably Garden Warbler, Blackcap, and probably a few pairs each of the rare Redstart and Wood Warbler. Lough Leane is a site for wintering wildfowl with the following average counts for the two winters 1995/96 and 1996/97: Teal (208), Mallard (350), Pochard (81), Tufted Duck (323) and Coot (169).

The site supports most of the Irish mammal species. Of particular note is the occurrence of two E.U. Habitats Directive Annex II species: Lesser Horseshoe Bat, with a total population of about 300 individuals distributed at several locations, including both nursery and hibernation sites, and Otter. Perhaps the best known mammals of the Killarney National Park are the Red Deer, which form the only remaining native herd in Ireland, comprised of around 600 animals. Sika Deer also occur. Pine Marten is another notable species.

The site is valuable for its rare fish species, five of which are listed on Annex II of the E.U. Habitats Directive: Brook Lamprey (*Lampetra planeri*), River Lamprey (*Lampetra fluviatilis*), Sea Lamprey (*Petromyzon marinus*), Atlantic Salmon (*Salmo salar*) and Killarney Shad (*Alosa fallax killarnensis*). The Killarney Shad is a unique land-locked subspecies confined to the Killarney lakes. Also of note is the glacial relict, Arctic Char (*Salvelinus alpinus*), a Red Data Book species, a unique form of which is found in Lough Coomasaharn.

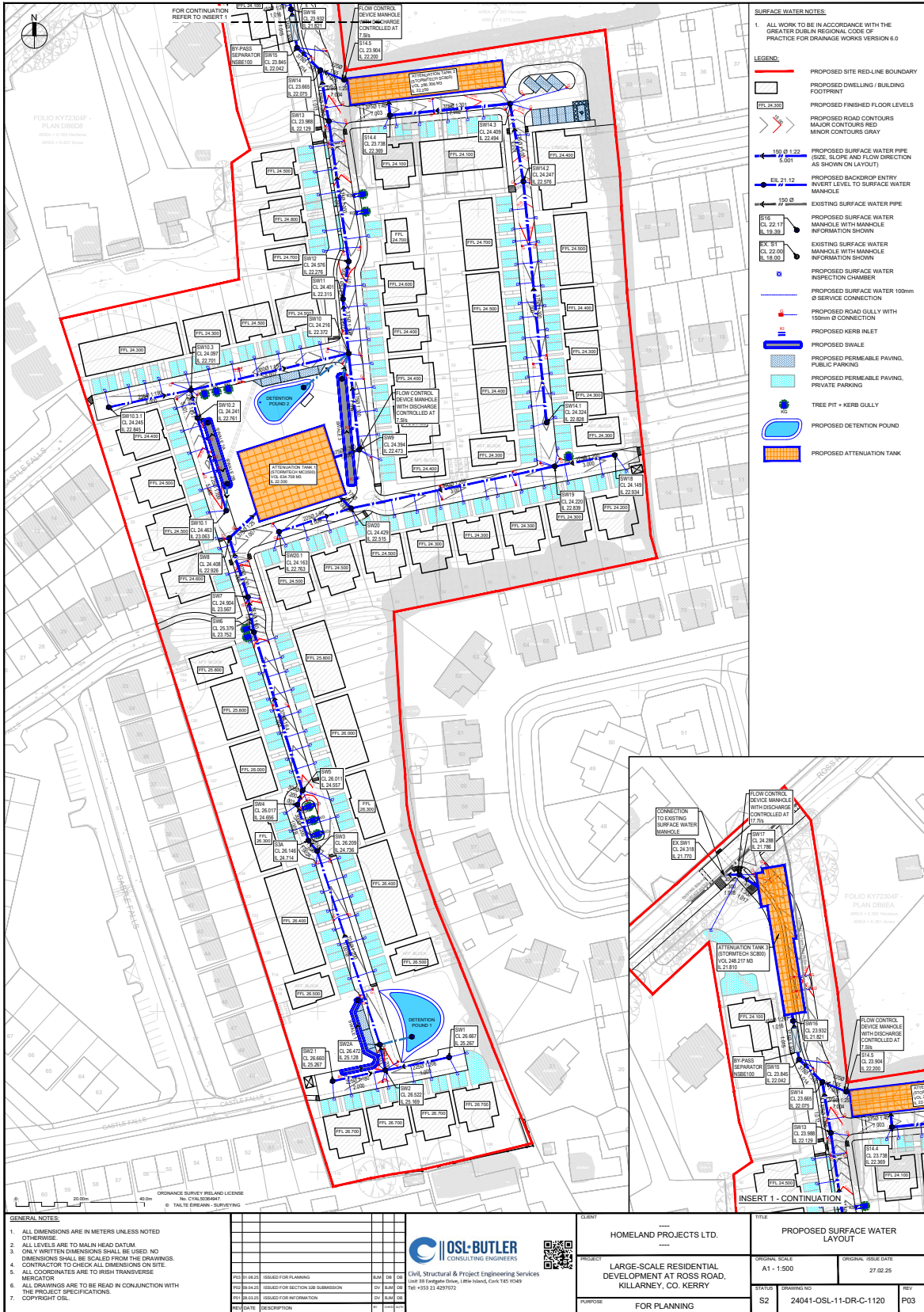
There are numerous rare invertebrates within the site. These include three E.U. Habitats Directive Annex II species: Kerry Slug (*Geomalacus maculosus*), the Freshwater Pearl Mussel (*Margaritifera margaritifera*) and the Marsh Fritillary (*Euphydryas aurinia*). The Kerry Slug and Pearl Mussel populations are of particular importance in a national context. Other species of note include: three chironomids of international importance found in the River Flesk; a wood ant (*Formica lugubris*) at one of only four Irish sites; a snail (*Limnaea involuta*), in Lough Crincaum, at its only known location; two dragonflies (*Cordulea aenea* and *Somatochlora arctica*), the former at one of only two known sites in Ireland and the latter at its only known Irish location; and several other aquatic and woodland species at their only known Irish locations.

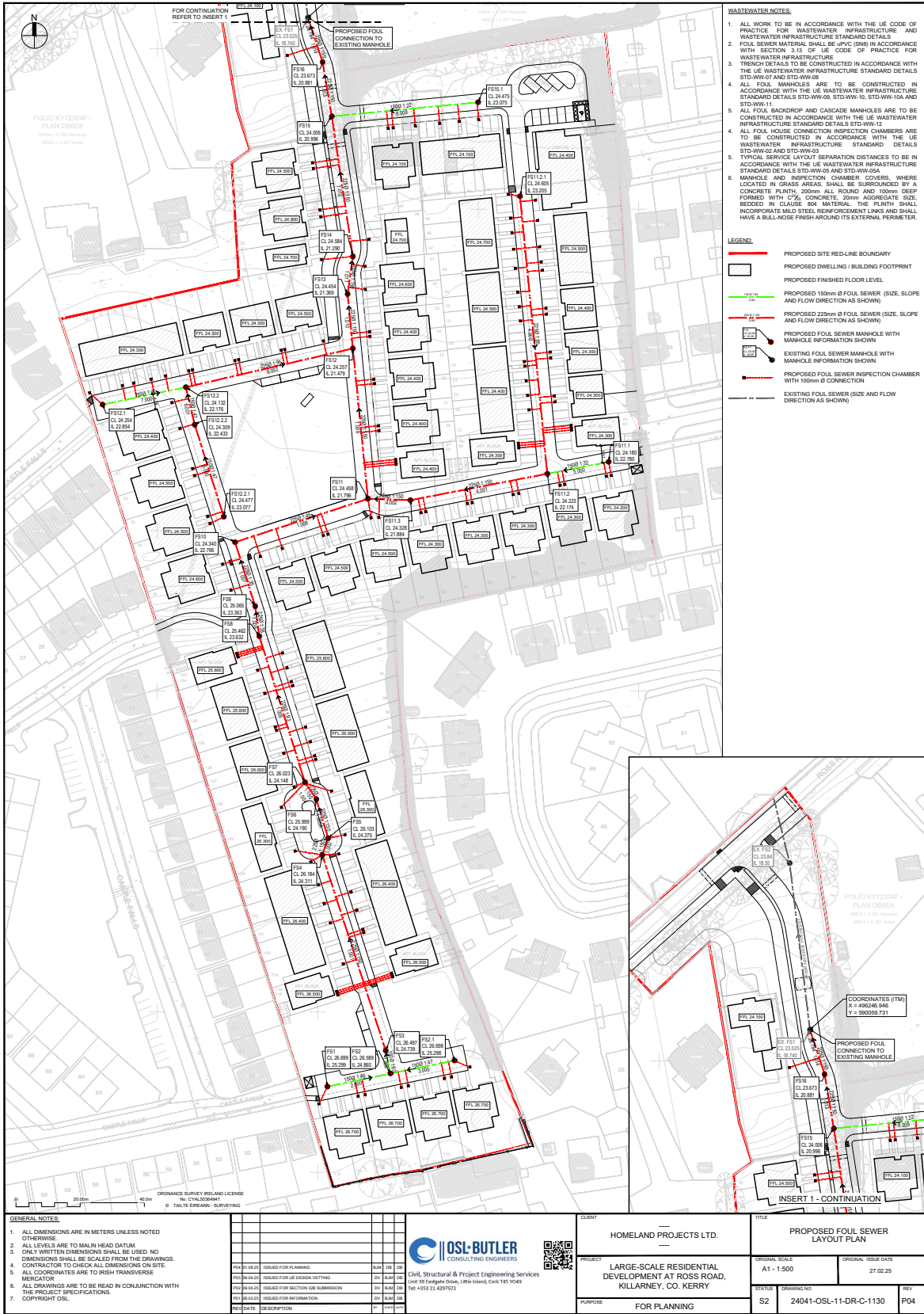
The main land use within the site is grazing by sheep. In and around the National Park deer grazing is also common. The extensive grazing has caused damage to many of the terrestrial habitats, resulting in degradation of heath and blanket bogs and prevention of woodland regeneration. In the upland habitats the erosion caused by grazing is exacerbated by the exposed nature of the terrain. Apart from grazing, the woodlands are particularly threatened by Rhododendron (*Rhododendron ponticum*) invasion: approximately two thirds of the Oak woodlands are affected, although a Rhododendron removal programme is underway in the National Park. The Yew wood has been adversely affected by heavy grazing for many years, but it is intended to control this in the near future by erection of a deer fence. The bogs are sensitive to grazing and are also threatened by turbarry, burning and afforestation. Most of the lakes are very acid-sensitive and therefore vulnerable to afforestation within the catchment areas. Lough Leane has been subject to some eutrophication, although water quality appears to have improved since phosphates were removed from the sewage in 1985.

A management plan was drawn up for the Killarney National Park in 1991. The park is managed primarily for conservation purposes although recreation is also provided for.

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.

## Appendix 2. Drawings





- WASTEWATER NOTES:**
1. ALL WORK TO BE IN ACCORDANCE WITH THE UE CODE OF PRACTICE FOR WASTEWATER INFRASTRUCTURE AND WASTEWATER INFRASTRUCTURE STANDARD DETAILS
  2. FOUL SEWER MATERIAL SHALL BE UPVC (S1) IN ACCORDANCE WITH SECTION 3.13 OF UE CODE OF PRACTICE FOR WASTEWATER INFRASTRUCTURE
  3. TRENCH DETAILS TO BE CONSTRUCTED IN ACCORDANCE WITH THE UE WASTEWATER INFRASTRUCTURE STANDARD DETAILS STD-WW-07 AND STD-WW-08
  4. ALL FOUL MANHOLES ARE TO BE CONSTRUCTED IN ACCORDANCE WITH THE UE WASTEWATER INFRASTRUCTURE STANDARD DETAILS STD-WW-09, STD-WW-10, STD-WW-10A AND STD-WW-11
  5. ALL FOUL BACKDROP AND CASCADE MANHOLES ARE TO BE CONSTRUCTED IN ACCORDANCE WITH THE UE WASTEWATER INFRASTRUCTURE STANDARD DETAILS STD-WW-12
  6. ALL FOUL HOUSE CONNECTION INSPECTION CHAMBERS ARE TO BE CONSTRUCTED IN ACCORDANCE WITH THE UE WASTEWATER INFRASTRUCTURE STANDARD DETAILS STD-WW-02 AND STD-WW-03
  7. TYPICAL SERVICE LAYOUT SEPARATION DISTANCES TO BE IN ACCORDANCE WITH THE UE WASTEWATER INFRASTRUCTURE STANDARD DETAILS STD-WW-05 AND STD-WW-06A
  8. MANHOLE AND INSPECTION CHAMBER COVERS, WHERE LOCATED IN GRASS AREAS, SHALL BE SUBSIDORIZED BY A CONCRETE PLINTH, 200mm ALL ROUND AND 100mm DEEP FORMED WITH C7/8 CONCRETE. JOINT AGGREGATE BEDDED IN CLAUSE 604 MATERIAL. THE PLINTH SHALL INCORPORATE MILD STEEL REINFORCEMENT LINGS AND SHALL HAVE A BULL-NOSE FINISH AROUND ITS EXTERNAL PERIMETER.

- LEGEND:**
- PROPOSED SITE RED-LINE BOUNDARY
  - PROPOSED DWELLING / BUILDING FOOTPRINT
  - PROPOSED FINISHED FLOOR LEVEL
  - PROPOSED 150mm Ø FOUL SEWER (SIZE, SLOPE AND FLOW DIRECTION AS SHOWN)
  - PROPOSED 225mm Ø FOUL SEWER (SIZE, SLOPE AND FLOW DIRECTION AS SHOWN)
  - PROPOSED FOUL SEWER MANHOLE WITH MANHOLE INFORMATION SHOWN
  - EXISTING FOUL SEWER MANHOLE WITH MANHOLE INFORMATION SHOWN
  - PROPOSED FOUL SEWER INSPECTION CHAMBER WITH 100mm Ø CONNECTION
  - EXISTING FOUL SEWER (SIZE AND FLOW DIRECTION AS SHOWN)

- GENERAL NOTES:**
1. ALL DIMENSIONS ARE IN METERS UNLESS NOTED OTHERWISE
  2. ALL LEVELS ARE TO MALIN HEAD DATUM
  3. ONLY WRITTEN DIMENSIONS SHALL BE USED. NO DIMENSIONS SHALL BE SCALED FROM THE DRAWINGS
  4. CONTRACTOR TO CHECK ALL DIMENSIONS ON SITE
  5. ALL COORDINATES ARE TO IRISH TRANSVERSE
  6. ALL DRAWINGS ARE TO BE READ IN CONJUNCTION WITH THE PROJECT SPECIFICATIONS
  7. COPYRIGHT © 2024

NO	DATE	DESCRIPTION	BY	CHK
001	2024-08-22	ISSUED FOR PLANNING	BAW	SB
002	2024-08-22	ISSUED FOR EXHIBITION WITHDRAWN	BAW	SB
003	2024-08-22	ISSUED FOR SECTION 538 SUBMISSION	BAW	SB
004	2024-08-22	ISSUED FOR INFORMATION	BAW	SB

**OSL-BUTLER**  
CONSULTING ENGINEERS

Civil, Structural & Project Engineering Services  
Unit 38 Tregate Drive, Lifford Island, Cork T45 V049  
Tel: +353 21 4207072

CLIENT: HOMELAND PROJECTS LTD.

PROJECT: LARGE-SCALE RESIDENTIAL DEVELOPMENT AT ROSS ROAD, KILLARNEY, CO. KERRY

PURPOSE: FOR PLANNING

TITLE: PROPOSED FOUL SEWER LAYOUT PLAN	
ORIGINAL SCALE: A1 - 1:500	ORIGINAL ISSUE DATE: 27.02.25
STATUS: DRAWING NO: S2	REV: P04
PROJECT NO: 24041-OSL-11-DR-C-1130	

### Horizontal Illuminance (lux)

Grid 1



#### Results

Eav	5.84
Emin	1.14
E <sub>max</sub>	15.71
E <sub>min</sub> /E <sub>max</sub>	0.07
E <sub>min</sub> /E <sub>av</sub>	0.20



## Appendix 3.

### Summary of mitigation

Adverse effects identified	Description of measures, details on implementation, effectiveness, monitoring				
Name/description	How will measures reduce impact	Implemented by	Demonstrate effectiveness	Timescale	Monitoring
<p>During construction there are potential sources of pollution from excavation and drainage from the site resulting from runoff and erosion from site earthworks and temporary stockpiles. The presence of fuels, lubricants and other chemicals from construction activities also have the potential to temporarily affect the surface/ground water regime of the area if not managed properly. These sources of pollution have the potential to impacts on water quality within the Killarney National Park, Macgillycuddy's Reeks, Caragh River Catchment SAC and Killarney National Park SPA downstream. The following QIs within SAC through changes in water</p>	<p>See Section 6.2 and 6.3 of NIS.</p> <p>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.</p> <p>These measures will:</p> <ul style="list-style-type: none"> <li>• Prevent diffuse runoff from the site.</li> <li>• Prevent contaminated surface water entering local drainage network</li> </ul>	<p>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.</p> <p>The contractor (and applicant) will co-operate in-full with the Environmental Department of the local authority.</p>	<p>A combination of silt control measures and hydrocarbon management have been included in the oCEMP to ensure there is no potential for adverse effects on watercourses/waterbodies downstream.</p>	<p>Throughout construction works</p>	<p>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.</p> <p>During the construction phase, the monitoring programme will include daily checks, weekly inspections and monthly audits. This programme and locations of sampling</p>

Adverse effects identified	Description of measures, details on implementation, effectiveness, monitoring				
Name/description	How will measures reduce impact	Implemented by	Demonstrate effectiveness	Timescale	Monitoring
<p>quality i.e. transparency, acidification status, water colour, turbidity and lake substratum quality.</p> <p>Impacts on water quality may impact fish biomass for Otter.</p> <p>Changes in sediment may have adverse effects on Freshwater Pearl Mussel</p> <p><b>QI's/SCIs identified which could be impacted</b></p> <p>Oligotrophic waters containing very few minerals of sandy plains (<i>Littorelletalia uniflorae</i>) [3110]</p> <p>Oligotrophic to mesotrophic standing waters with vegetation of the <i>Littorelletea uniflorae</i> and/or <i>Isoeto-Nanojuncetea</i> [3130]</p> <p>Water courses of plain to montane levels with the <i>Ranunculion fluitantis</i> and <i>Callitricho-Batrachion</i> vegetation [3260]</p>					<p>will be agreed with the local authority prior to the commencement of the proposed development.</p>

Adverse effects identified	Description of measures, details on implementation, effectiveness, monitoring				
Name/description	How will measures reduce impact	Implemented by	Demonstrate effectiveness	Timescale	Monitoring
<p><i>Alosa fallax killarnensis</i> (Killarney Shad) [5046]</p> <p><i>Najas flexilis</i> (Slender Naiad) [1833]</p> <p><i>Margaritifera margaritifera</i> (Freshwater Pearl Mussel) [1029]</p> <p><i>Petromyzon marinus</i> (Sea Lamprey) [1095]</p> <p><i>Lampetra planeri</i> (Brook Lamprey) [1096]</p> <p><i>Lampetra fluviatilis</i> (River Lamprey) [1099]</p> <p><i>Salmo salar</i> (Salmon) [1106]</p> <p><i>Lutra lutra</i> (Otter) [1355]</p> <p>A395 Greenland White-fronted Goose <i>Anser albifrons flavirostris</i></p>					
<p>During operation, contaminated surface water runoff from car parking areas and/or changes in rates of runoff from increased hard surfaces have the potential for adverse effects on water</p>	<p>SuDS measures</p> <p>See Section 3.3 of NIS for details.</p>	<p>SuDS measures will be implemented/supervised by the contractor.</p> <p>It is the responsibility of the applicant to ensure that all proposed measures are</p>	<p>SuDS features are proposed as part of this development. These have been designed in accordance with</p>	<p>Completed on phased basis alongside development</p>	<p>None proposed</p>

Adverse effects identified	Description of measures, details on implementation, effectiveness, monitoring				
Name/description	How will measures reduce impact	Implemented by	Demonstrate effectiveness	Timescale	Monitoring
<p>quality within the Killarney National Park, Macgillycuddy's Reeks, Caragh River Catchment SAC and Killarney National Park SPA downstream. The following QIs within SAC through changes in water quality i.e. transparency, acidification status, water colour, turbidity and lake substratum quality or hydrological regimes</p> <p>Impacts on water quality may impact fish biomass for Otter.</p> <p>Changes in sediment may have adverse effects on Freshwater Pearl Mussel</p> <p><b>QI's/SCIs identified which could be impacted</b></p> <p>Oligotrophic waters containing very few minerals of sandy plains (<i>Littorelletalia uniflorae</i>) [3110]</p> <p>Oligotrophic to mesotrophic standing waters with vegetation of the <i>Littorelletea</i></p>	<p>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.</p>	<p>implemented as per planning application.</p>	<p>CIRIA documents C753, C697 and C609</p>		

Adverse effects identified	Description of measures, details on implementation, effectiveness, monitoring				
Name/description	How will measures reduce impact	Implemented by	Demonstrate effectiveness	Timescale	Monitoring
<p><i>uniflorae</i> and/or <i>Isoeto-Nanojuncetea</i> [3130]</p> <p>Water courses of plain to montane levels with the <i>Ranunculion fluitantis</i> and <i>Callitricho-Batrachion</i> vegetation [3260]</p> <p><i>Alosa fallax killarnensis</i> (Killarney Shad) [5046]</p> <p><i>Najas flexilis</i> (Slender Naiad) [1833]</p> <p><i>Margaritifera margaritifera</i> (Freshwater Pearl Mussel) [1029]</p> <p><i>Petromyzon marinus</i> (Sea Lamprey) [1095]</p> <p><i>Lampetra planeri</i> (Brook Lamprey) [1096]</p> <p><i>Lampetra fluviatilis</i> (River Lamprey) [1099]</p> <p><i>Salmo salar</i> (Salmon) [1106]</p> <p><i>Lutra lutra</i> (Otter) [1355]</p>					

Adverse effects identified	Description of measures, details on implementation, effectiveness, monitoring				
Name/description	How will measures reduce impact	Implemented by	Demonstrate effectiveness	Timescale	Monitoring
A395 Greenland White-fronted Goose <i>Anser albifrons flavirostris</i>					
<p>Lesser horseshoe bats are extremely sensitive to artificial light, even at low light intensities, and they avoid brightly lit areas. Artificial light at or near roosts may impact the bats by delaying their emergence time at dusk, reducing reproductive success or even cause roosts to be abandoned (Bat Conservation Trust &amp; Institute of Lighting Professionals, 2018).</p> <p><b>QI's/SCIs identified which could be impacted</b></p> <p><i>Rhinolophus hipposideros</i> (Lesser Horseshoe Bat) [1303] is a qualifying interest for Killarney National Park, Macgillycuddy's Reeks, Caragh River Catchment SAC</p> <p>No significant increase in artificial light intensity adjacent to named roosts or</p>	<p>Mitigation measures for construction and operational lighting have been included in Section 6 of this report. Lighting for the proposed development has been designed in line with bat conservation guidelines as recommended by the Lesser Horseshoe Bat national action plan (NPWS &amp; VTT (2023)). This will minimise light spillage outside the proposed development site (See horizontal illuminance drawings by Lighting Reality (See Appendix 2)). Moving away from the site, light spillage will be imperceptible and there will be significant increase in artificial light intensity along commuting routes within 2.5km of those roosts.</p> <p>There will be no significant increase in artificial light intensity adjacent to named roosts or along commuting routes within 2.5km of those roosts (As per map 10 NPWS (2017))</p>	<p>It is the responsibility of the applicant to ensure that all proposed measures are implemented as per planning application.</p>	<p>NPWS &amp; VTT (2023)</p>	<p>Completed on phased basis alongside development</p>	<p>None proposed</p>

Adverse effects identified	Description of measures, details on implementation, effectiveness, monitoring				
Name/description	How will measures reduce impact	Implemented by	Demonstrate effectiveness	Timescale	Monitoring
along commuting routes within 2.5km of those roosts.	The proposed development will not adversely affect the integrity of Killarney National Park, Macgillycuddy's Reeks, Caragh River Catchment SAC due to change in light levels.				