Kerry County Council

N70 Waterville to Ballybrack Road Improvement Scheme

Natura Impact Statement

December 2025

(Blank Page)

Contents

Table of Tables

Table of Figures

Appendices

(Blank Page)

1.0 INTRODUCTION

Kerry County Council are proposing road improvement works along a section of road (approximately 1.37km in length) along the N70, commencing at the southern end of the promenade in Waterville Town and extending south towards Eightercua (hereafter referred to as the proposed development).

The proposed development is not directly connected with or necessary for the management of any European site and hence the requirements of Article 6(3) of the Habitats Directive and Part XAB of the Planning and Development Act 2000, as amended, in respect of Appropriate Assessment (AA) are engaged.

An AA Screening Report was prepared by TOBIN Consulting Engineers (TOBIN), on behalf of Kerry County Council, providing information to enable the competent authority to perform its statutory function to undertake a screening for AA in respect of the proposed development.

A copy of the AA Screening Report is contained in Appendix 3 of this report. The AA Screening Report concluded; *'in view of best scientific knowledge and in the absence of mitigation measures, potential likely significant effects from the proposed development cannot be ruled out for the Killarney National Park, Macgillycuddy's Reeks and Caragh River Catchment SAC. It is therefore recommended that a Stage 2 Natura Impact Statement (NIS) be prepared to assist the competent authority in undertaking an assessment of potential adverse effects of the proposed improvement works either alone or in-combination with other plans and projects on the integrity of the Killarney National Park, Macgillycuddy's Reeks and Caragh River Catchment SAC'.*

This NIS has therefore been prepared, for the purposes of Article 6[3] of the Habitats Directive, providing information to enable the competent authority to perform its statutory function to undertake AA in respect of the proposed development.

This NIS includes an examination and analysis of the best available scientific knowledge and data in the field to identify and assess the implications of the proposed development for any European sites in view of the conservation objectives of those sites. It considers whether there are ex-situ implications for any European sites, for example from impacts which occur via downstream pathways at a remote but connected location, or from impacts on populations of ex-situ species located outside of European sites, or from impacts on ex-situ supporting habitats. It considers whether the proposed development, by itself or in-combination with other plans or projects, would adversely affect the integrity of any European sites. In reaching a conclusion in this regard, consideration has been given to any mitigation measures necessary to avoid or reduce any potential adverse effects.

2.0 LEGISLATIVE CONTEXT

The European Communities (EC) Habitats Directive 92/43/EEC or "the Habitats Directive" and the Council Directive 2009/147/EC on the conservation of wild birds or "the Birds Directive" have been transposed into Irish law, inter alia, by EC (Birds and Natural Habitats) Regulations 2011 (S.I. No. 477/2011; hereafter referred to as the Birds and Habitats Regulations), the Planning Acts, the Roads Acts and related legislation. The Birds Directive seeks to protect birds of special importance by the designation of Special Protection Areas (SPAs). The Habitats Directive does the same for habitats and other species groups with Special Areas of Conservation (SACs).

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

> '*Any plan or project not directly connected with or necessary to the management of the [Natura 2000] site but likely to have a significant effect thereon, either individually or in combination with other plans or projects, shall be subjected to appropriate assessment of its implications for the site in view of the site's conservation objectives. In light of the conclusions of the assessment of the implications for the site and subject to the provisions of paragraph 4, the competent national authorities shall agree to the plan or project only after having ascertained that it will not adversely affect the integrity of the site concerned and, if appropriate, after having obtained the opinion of the general public.'*

This provision is transposed into Irish law by Part XAB of the Planning and Development Acts, 2000-2017.

Stages Involved in the Appropriate Assessment Process

There are potentially four stages in the AA process; derived from 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*" (European Commission, 2001). The result of each stage determines whether a further stage in the process is required. Stages 1 and 2 provide for Screening for Appropriate Assessment and Appropriate Assessment for the purposes of Article 6[3] of the Habitats Directive.

Stage 1: Screening / Test of Significance

This process identifies the likely significant effects upon a European site from a proposed project or plan. Its purpose is to determine, based on a preliminary assessment and objective criteria, whether a plan or project which is not directly connected with or necessary to the management of the site as a European site, individually or in-combination with other plans or projects is likely to have a significant effect upon the European site, in view of its conservation objectives. A project may be 'screened-in' if there is a possibility or uncertainty of possible effects upon the European site, requiring a Stage Two AA. If there is no evidence to suggest significant effects due to the proposed plan or development the project is 'screened out' from further assessment.

Stage 2: Appropriate Assessment

In this stage, consideration is given to ascertain whether the plan or project would adversely affect the integrity of a European site(s), either alone or in-combination with other plans or projects, with respect to the European site's structure and function and its conservation objectives. This stage of the assessment is carried out by the competent authority and is informed by a Natura Impact Statement (NIS).

3.0 METHODOLOGY

3.1 LEGISLATION AND GUIDANCE

This report has been prepared having regard to the following legislation, guidance (and relevant case law):

- European Communities (Birds and Natural Habitats) Regulations, 2011 (S.I. No. 477 of 2011).
- Communication from the Commission on the Precautionary Principle. Office for Official Publications of the European Communities, Luxembourg (European Commission [EC] 2000)[1].
- Nature and biodiversity cases: Ruling of the European Court of Justice. Office for Official Publications of the European Communities, Luxembourg (EC, 2006).
- Managing Natura 2000 Sites – The provisions of Article 6 of the 'Habitats Directive' 92/43/EEC. European Commission (EC, 2018).
- Assessment of Plans and Projects in relation to Natura 2000 sites – Methodological guidance on Article 6(3) and (4) of the Habitats Directive 92/43/EEC, (EC, 2021).
- Interpretation Manual of European Union Habitats. Version EUR 28. European Commission (EC, 2013).
- Appropriate Assessment of Plans and Projects in Ireland, Guidance for Planning Authorities, Department of the Environment, Heritage and Local Government (DoEHLG, 2010).
- Appropriate Assessment Screening for Development Management. Office of the Planning Regulator (OPR) Practice Note PN01 (OPR, 2021).
- Planning & Development Act 2000, as amended including Part XAB.

This report has similarly been prepared regarding relevant rulings by the Court of Justice of the European Union (CJEU), the High Court, and the Supreme Court.

Definitions of conservation status, integrity and significance used in this assessment are defined in accordance with '*Managing Natura 2000 sites: The provisions of Article 6 of the 'Habitats' Directive 92/43/EEC*' (EC, 2018):

- Favourable conservation status (FCS) can only be defined and achieved at the level of the natural range of a species or a habitat type. A broad conservation objective aiming at achieving FCS can therefore only be considered at an appropriate level, such as for example the national, biogeographical or European level. The conservation measures must correspond to the ecological requirements of the natural habitat types in Annex I and of the species in Annex II present on the site. The ecological requirements of those natural habitat types and species involve all the ecological needs which are deemed necessary to ensure the conservation of the habitat types and species. They can only be defined on a case-by-case basis and using scientific knowledge;
- The integrity of a European site is defined as the coherent sum of the site's ecological structure, function, and ecological processes, across its whole area, which enables it to sustain the habitats, complex of habitats and/or populations of species for which the site is designated.
- Significant effect should be determined in relation to the specific features and environmental conditions of the protected site concerned by the plan or project, taking particular account of the site's conservation objectives and ecological characteristics.

[1] Communication from the Commission on the Precautionary Principle. Office for Official Publications of the European Communities, Luxembourg (European Commission [EC] 2000

3.2 DESK STUDY AND INFORMATION

The ecological desktop study completed for the Proposed development site comprised a review of the following key datasets and information sources:

- Identification of European sites within the Zone of Influence (ZoI) of the proposed development site through the identification of potential pathways/links from the proposed development and European sites and/or supporting habitats.
- Review of the National Parks and Wildlife Service (NPWS) site synopsis, Natura 2000 data forms and Conservation Objectives for European sites identified through potential pathways from the proposed development site (https://www.npws.ie/protected-sites).
- NPWS datasets on Annex I habitats
- Review of available literature and web data. This included a detailed review of the NPWS database of areas designated (and proposed) for nature conservation[1] and National Biodiversity Data Centre (NBDC)[2] websites and database including mapping and available reports for relevant sites and in particular qualifying interests and Special Conservation Interests described and their Conservation Objectives.
- Review of Inland Fisheries Ireland (IFI) research data. This included reviewing research studies carried out for the Habitats Directive and Red Data Book Fish species within the receiving environment[3].
- Information and data on water catchments from the River Basin Management Plan 2022-2027[4] and the Water Framework Directive (WFD) Ireland Database[5].
- GSI Online mapping[6]
- Environmental Protection Agency (EPA) Appropriate Assessment tool[7];
- Information and data on water catchments from the River Basin Management Plan 2018-2021 (www.catchments.ie);
- Heritage map viewer[8];
- Kerry County Development Plan, (2022-2028)
- National Biodiversity Plan, (2023-2030)

In addition, aerial photography (Google Maps, Bing Maps) and mapping (Ordnance Survey of Ireland, Geological Survey of Ireland) were used to identify non-designated habitats such as rivers, woodlands, and hedgerows of local ecological importance and invasive species.

3.3 ECOLOGICAL FIELD SURVEY

Multi-disciplinary ecological surveys of the proposed development site were undertaken by qualified and experienced Kerry County Council Ecologist on the 11th of September 2024. These ecological surveys supplemented the surveys undertaken by TOBIN ecologists on the 9th of June 2021 and on the 24th-26th of January 2022. The data collected was robust and allowed TOBIN to draw accurate, definitive and coherent conclusions on the possible impacts of the proposed development.

The aim of the ecological surveys was to determine the presence or absence of protected habitats or species, including Annex I habitats and Annex II and IV species. The surveys were

[1] National Parks and Wildlife Service: https://www.npws.ie/maps-and-data
[2] National Biodiversity Data Centre (NBDC): https://maps.biodiversityireland.ie/Map
[3] https://www.fisheriesireland.ie/Projects/habitats-directive-and-red-data-book-fish-species.html
[4] https://www.catchments.ie/guide-water-framework-directive/
[5] Water Framework Directive (WFD) Ireland www.wfdireland.ie
[6] Geological Survey Ireland Spatial Resources (arcgis.com)
[7] https://gis.epa.ie/EPAMaps/AAGeoTool
[8] https://heritagemaps.ie/WebApps/HeritageMaps/index.html

also undertaken to assess the suitability of the habitats within the proposed development site to support protected species.

Further details of the survey methodologies undertaken are presented hereunder:

- Habitat and botanical surveys were undertaken within the proposed development site following the methodology outlined in '*Best Practice Guidance for Habitat Survey and Mapping*' (Smith *et al.,* 2011) and in '*Ecological Surveying Techniques for Protected Flora and Fauna during the Planning of National Road Schemes*' (NRA, 2008a). The data was recorded, and the habitats encountered during the site visit were classified in accordance with Fossitt (2000) with reference made to the '*Interpretation Manual of EU Habitats*' (EC, 2013) as appropriate.
- The proposed development site was also searched for evidence of any invasive plant species, including invasive plant species listed in Part 1 of the Third Schedule of S.I No. 477/2011 - European Communities (Birds and Natural Habitats) Regulations 2011. Species protected under Flora (Protection) Order, 2015 (S.I. No. 356/2015) or listed under the Irish Red Data List of Irish Plants were also searched for.
- A walkover survey to detect the presence or likely presence of protected mammal species, likely to occur within and in the vicinity of the proposed development site, was undertaken. This included targeted surveys for otter following methods outlined in the NRA (2008a) and Chanin (2003) guidance.. An otter survey was also carried out along sections of the Finglas River (Waterville) which flows into the Currane River approximately 130m downstream of the Currane River Bridge.
- Bat surveys comprised a daytime visual assessment of suitable roosting and foraging habitat within and in the vicinity of the proposed works in accordance with '*Bat Surveys for Professional Ecologists: Good Practice Guidelines (4th edn)*' (Collins, 2023) and within '*Bat Mitigation Guidelines for Ireland*'(NPWS, 2022). Reference was also made to Bat Conservation Ireland guidelines; *Bats and Appropriate Assessment Guidelines* (Bat Conservation Ireland, 2012). Features surveyed included the Currane River Bridge, with a particular focus on lesser horseshoe bats (*Rhinolophus hipposideros*) as it is listed under the Annex II of the EU Habitats Directive.
- Observations of ornithological activity within the proposed development site were recorded with regards to the Countryside Bird Survey guidelines; '*CBS Manual, Guidelines for Countryside Bird Survey Participants*' (CBS, 2012).
- A targeted Kerry slug (*Geomalacus maculosus*) survey was undertaken within the proposed development site. A hand search survey along a transect at night, within potentially suitable habitat identified during the desktop assessment was undertaken on 25th of January 2022 following guidance outlined within the NRA (2008a) guidelines.
- Marsh fritillary (*Euphydryas aurinia*) surveys were also undertaken within the proposed development site following guidance within the NRA's *Ecological Surveying Techniques for Protected Flora and Fauna during the Planning of National Road Schemes (NRA, 2008a).* The survey included a search of the species main food source devil's bit scabious (*Succisa pratensis*) (Phelan *et al*., 2021).

3.3.1.1 Survey Limitations

Due to landowner access restrictions, only the southern bank of the Currane River, upstream of the Currane River Bridge, could be surveyed on foot. In accordance with best practice guidelines (CIEEM, 2018), the northern bank and the sections of river located downstream of the bridge were instead visually assessed from adjacent lands and from the bridge using binoculars and was supported by information obtained from a review of aerial photography and desktop study data. Notwithstanding the small area of limited access, a comprehensive survey was undertaken, and sufficient data was gathered to reliably inform the assessment.

3.4 CONSULTATIONS

A pre-planning consultation letter was sent to the Development Application Unit (DAU) on the 22nd of July 2022 to inform the Department of the proposed development and to discuss potential environmental sensitivities associated with the proposed works. The DAU acknowledged receipt of consultation and noted a response would be received within approximately six weeks. However, at the time of drafting this report, no response had been received.

3.5 STATEMENT OF AUTHORITY

This NIS has been completed by members of the Ecology Team of TOBIN.

Áine Sands (B.Sc.) is a qualified Senior Ecologist with seven years post-graduate experience in ecology and environmental consultancy. She has predominantly been involved in large public and private infrastructure projects where she has carried out numerous Screenings for Appropriate Assessments, Natura Impact Statements and Ecological Impact Assessments for the proposed developments. Áine has a strong understanding of National and European legislation associated with biodiversity and is cognisant of relevant rulings by the Court of Justice of the European Union (CJEU) associated with Appropriate Assessment. Áine also has experience with undertaking ecology surveys for protected habitats and species.

Joao Martins B.E. (Hons) M.Sc., Senior Ecologist with 13 years' relevant professional experience in freshwater ecology including monitoring of both lotic and lentic systems. Mr Martins has extensive experience of preparation of screenings for Appropriate Assessment (AA), Natura Impact Statements (NIS), Ecological Impact Assessments (EcIA) and Environmental Impact Assessment Reports (EIAR). He additionally has specific field surveys experience of Invasive Alien Plant Species, Bat Activity, Habitats, Mammals, amongst others.

Brendan O'Connor (B.Sc.) is a qualified Ecologist with over five years of post-graduate experience in ecology. Brendan's current role is as an Executive Ecologist in the Environmental Assessment Unit of Kerry County Council. Brendan has extensive experience in the production of reports to inform AA screenings and Natura Impact Statements for various developments including quarries, small to large-scale housing and mixed-use developments and infrastructure projects. Brendan also has experience with undertaking ecology surveys for protected habitats and species.

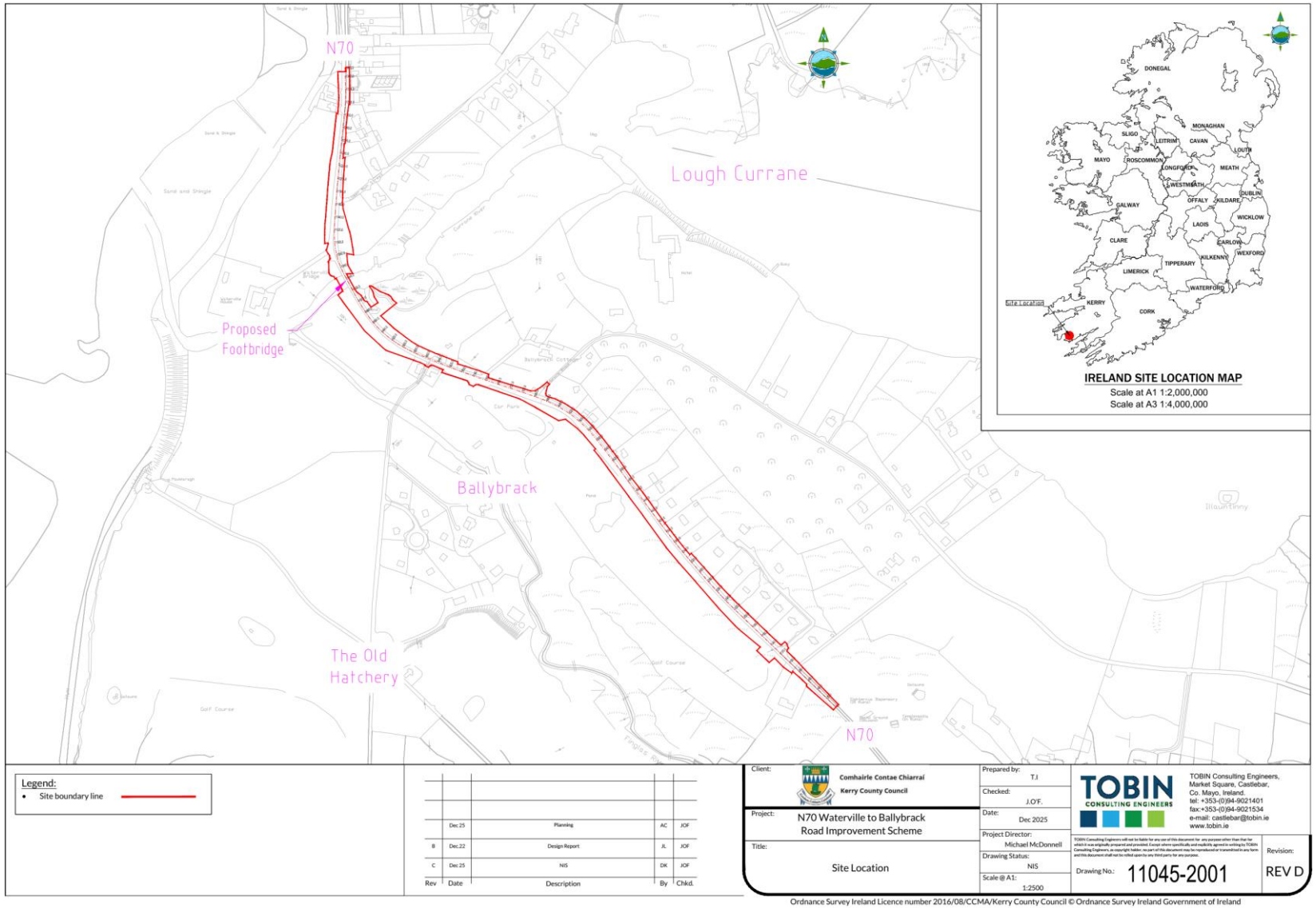
4.0 DESCRIPTION OF THE PROPOSED SCHEME

4.1 SITE LOCATION

The proposed development will begin at the southern end of the promenade in Waterville Town and extend 1.373km south towards Caherdaniel. The proposed development includes 1373m of realigned and improved carriageway with a separate pedestrian and cycle lane facility provided on one side. The proposed cycle lane facility will extend from the southern end of the promenade in Waterville town to the Benjamin Close housing development. The total distance of shared cycleway / footpath to be provided is 1253m. The proposed development will provide a new bridge for shared pedestrian and cycleway use over the Currane River (IE_SW_21F051000) at the Currane River bridge, along the western (coastal) side of the existing bridge. The Currane River flows into Ballinskelligs Bay (IE_SW_200_0000) approximately 360m downstream of the Currane River bridge. The location of the proposed development within the wider geographical setting is shown on Figure 4-1 below.

(Blank Page)

Figure 4-1: Site Location Map



4.2 DESCRIPTION OF THE PROPOSED DEVELOPMENT

The N70 Waterville to Ballybrack section of the route currently consists of a narrow, single carriageway cross-section without hard-shoulders and has both a poor horizontal and vertical alignment. Due to the narrow cross-section and high vehicle speeds, it is unsafe for vulnerable road users. As a legacy route, it has both a substandard horizontal and vertical alignment, which as a result has no defined geometric design. The current forward visibility is as low as 40m in areas which is insufficient visibility for vehicles to stop safely in an emergency. The two junctions at the L-7539-0 and L-11590-0 have substandard visibility envelopes. There are currently no facilities for vulnerable road users.

This section of the N70 also coincides with the Kerry Way walking trail and can have a large number of vulnerable road users, particularly during summer months. There is a Transport Infrastructure Ireland (TII) traffic counter at Kells to the north of the project which indicated an Average Annual Daily Traffic (AADT) figure of 2,901 for 2019, with similar numbers in the preceding years. The heavy goods traffic is 3.7% of the total.

A description of the proposed development is provided hereunder. The description has been divided into three sections which is illustrated on Figure 4-2.

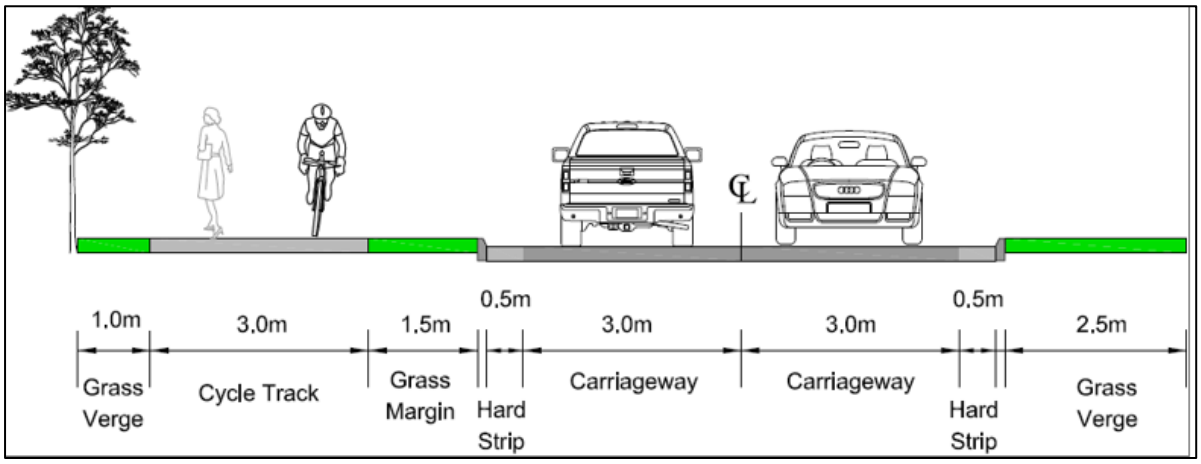
Figure 4-2: Proposed Development

4.2.1 *Section 1*

This section of the scheme extends from the Townland of Eightercua in the South to the Currane River Bridge (1020m approx.). It will include road alignment works and pavement improvement, as well as the provision of a two-way cycle and pedestrian facility, situated on one side of the road only. Figure 4-3 illustrates a cross section proposed as part of the upgrade works. The width of the proposed new road will be 6m with a 0.5m hard strip on each side.

The proposed development will also result in the removal of some existing hedgerows and stone walls along the road.

Figure 4-3: Cross Section of the Proposed Development



4.2.2 *Section 2*

The second section of the scheme is at the Currane River Bridge, an existing masonry bridge which spans over the Currane River which flows into Ballinskelligs Bay downstream.

The proposed development will include the construction of a new two-way cycle and pedestrian bridge installed over the Currane River, on the western side (coastal side) of the existing masonry bridge. A photomontage of the proposed bridge is shown in Figure 4-4 below.

The Currane River, at this location, forms part of the Killarney National Park, Macgillycuddy's Reeks and Caragh River Catchment SAC (Site code: 000365) (refer to Figure 7-2 below). Works associated with the proposed shared cycle/ pedestrian bridge will be undertaken from the riverbank, outside the SAC boundary.

Figure 4-4: Photomontage of the proposed pedestrian bridge which will be installed along the western (coastal side) boundary of the existing bridge

4.2.2.1 Bridge Construction Methodology

The following methodology will be applied to the construction of the Cycleway / Footway bridge and foundations:

4.2.2.1.1 Bridge Material

- The bridge superstructure (steel deck including handrail posts) will be fabricated offsite and brought to the proposed development site.

4.2.2.1.2 Construct Abutment Substructures

- Access tracks shall be created from the existing N70 to the abutment locations. This shall involve removal of existing topsoil and transporting it off site. Imported fill material shall be placed and levelled using a mechanical excavator to create access tracks from the N70 to the abutment locations. These access tracks shall be within the footprint proposed shared footway/cycleway.
- Foundations will be constructed on the banks of the river, and the bridge will be installed by crane which will be situated on the existing road.
- Sheet pile cofferdams will be installed around the two bridge abutments to facilitate excavation to the founding level. The sheet piles will be installed to an approximate depth of 2m below ground level.
- Excavate to founding level within the sheet pile cofferdam using a mechanical excavator. The spoil shall be loaded into dumpers and removed from site or stockpiled for re-use elsewhere on site.
- If necessary, a sump shall be created within the excavation and groundwater pumped to the mobile settlement tank.
- Blinding shall be placed at the base of the excavation. Reinforcement shall be fixed, and formwork placed. In-situ concrete shall be poured into the formwork within the sheet pile excavation to form the abutment base slab. Concrete shall be poured directly from concrete lorries that access the worksite from the adjacent N70.
- Reinforcement for the new abutment walls shall be placed in situ, formwork shall be erected, and concrete shall be poured.

- Concrete shall be transferred from the concrete lorry directly or using a mechanical excavator with a concrete skip if required. Once the concrete has cured the formwork shall be removed.

4.2.2.1.3 Backfill Abutments

- The area around the sides of the abutment footings shall then be backfilled with a clean granular material to existing ground level.
- The sheet pile cofferdams shall be removed. The sheet piles shall be extracted using an excavator mounted vibrator. The sheet piles on the front face of the south abutment (along the edge of the river) shall be left in place and cut down to just below ground level. These piles shall act as permanent scour protection to the abutment foundation.
- The abutment walls shall be backfilled to 300mm below bearing shelf level. This shall be undertaken in conjunction with the construction of the adjacent approach embankments.

4.2.2.1.4 Bridge Superstructure

- The bridge superstructure (steel deck including handrail posts) shall be fabricated offsite in a steel fabrication yard.
- The bridge superstructure shall then be delivered to site via the N70 (under a police escort and/or night-time closure(s) of the N70 if required) using a lorry and trailer complete with rear steering bogie. The lorry shall be positioned on the existing masonry arch road bridge to facilitate crane set up.
- If necessary, the bridge could be delivered to a suitable staging area close to the site in two or three pieces and welded together to form a single structure before transporting the complete structure up the N70 under a night-time road closure.
- A crane (or tandem cranes) shall be setup on the N70 under a night-time road closure. Crane outriggers shall extend over the newly constructed approach embankments. The deck superstructure shall be lifted into position and fixed in place in a single operation.

4.2.2.1.5 Bridge Finishing Works

- Stone masonry facing shall be constructed on the outside faces of the abutment walls. Stone masonry approach walls shall be constructed on the approaches to the bridge. The handrailing cables shall be installed, tensioned and completed.

4.2.2.1.6 Roadside finishing works

- Drainage on the approaches to the bridge shall be completed and the bridge deck drainage connected. The approach paths shall be surfaced, safety barriers installed, and landscaping completed.

4.2.2.1.7 Remove Water Protection Measures

- Following completion of all earthworks, landscaping of the approach embankments, the runoff system shall be removed and the sandbag cofferdam bunding shall be lifted out using a mechanical excavator and removed from site using dumpers. Access to the sandbags is available via a track at the base of the new permanent embankment within the temporarily acquired lands.
- The ground within the temporarily acquired lands shall be reinstated and grass seeded as per landscape design.

4.2.3 *Section 3*

The last section of the proposed works is a 320m stretch of road heading towards Waterville Town from the Currane River Bridge. A 3m wide shared two-way cycle and pedestrian facility is

proposed on the western side of the carriageway, with a footpath required on the eastern side to run from a private road junction back towards Waterville. Pavement repair and renewal is required along this section of carriageway as well as delineation and improved signage. Overlay and carriageway widening will also be provided along this section of carriageway. The widening works will require the construction of retaining walls.

4.2.4 *Proposed Drainage System*

There is currently no formal drainage system in place to cater for road runoff along the section of the N70 road outside of the Waterville village extents. A new drainage system, in accordance with DN-DNG-03022, is therefore proposed and will include the following:

- A kerb and gully system will be used to collect surface water from the mainline and side road paved areas. The gullies will outfall to a combined filter drain running in the grass verge/margin adjacent to the kerb. The cycleway will fall towards the verge with water flowing over the edge to the grass verge and ultimately to the combined filter drain.
- Two outfall pipes are proposed within the drainage system: one (the northern outfall) will be located adjacent of the Currane River Bridge, and the second (the southern outfall) will be located south of the existing pumping station. A description of the two outfalls is provided hereunder.
- Minor instream works will be undertaken along the northern bank of the Currane River to facilitate the proposed drainage system works. The instream works will be small-scale (ca. 2m^2 in size).

4.2.4.1 Northern Outfall

One outfall pipe and headwall will be constructed to the northern bank of the Currane River adjacent to the eastern side (lakeside) of the existing bridge (as shown in below). This outfall will cater for surface water runoff from Chainage (Ch) 1060m to 1240m on the northern end of the scheme. This runoff will go through treatment via a grassed channel / swale and petrol interceptor.

A section of the pipeline works (ca. 5m pf the pipeline and the proposed headwall) will be located within the Killarney National Park, Macgillycuddy's Reeks and River Caragh River Catchment SAC. The pipeline and headwall will be constructed in an existing access track, which consists of gravel and amenity grassland and is currently being used to access a boat house from Waterville House (refer to Figure 4-6).

Figure 4-5: Proposed Northern Outfall

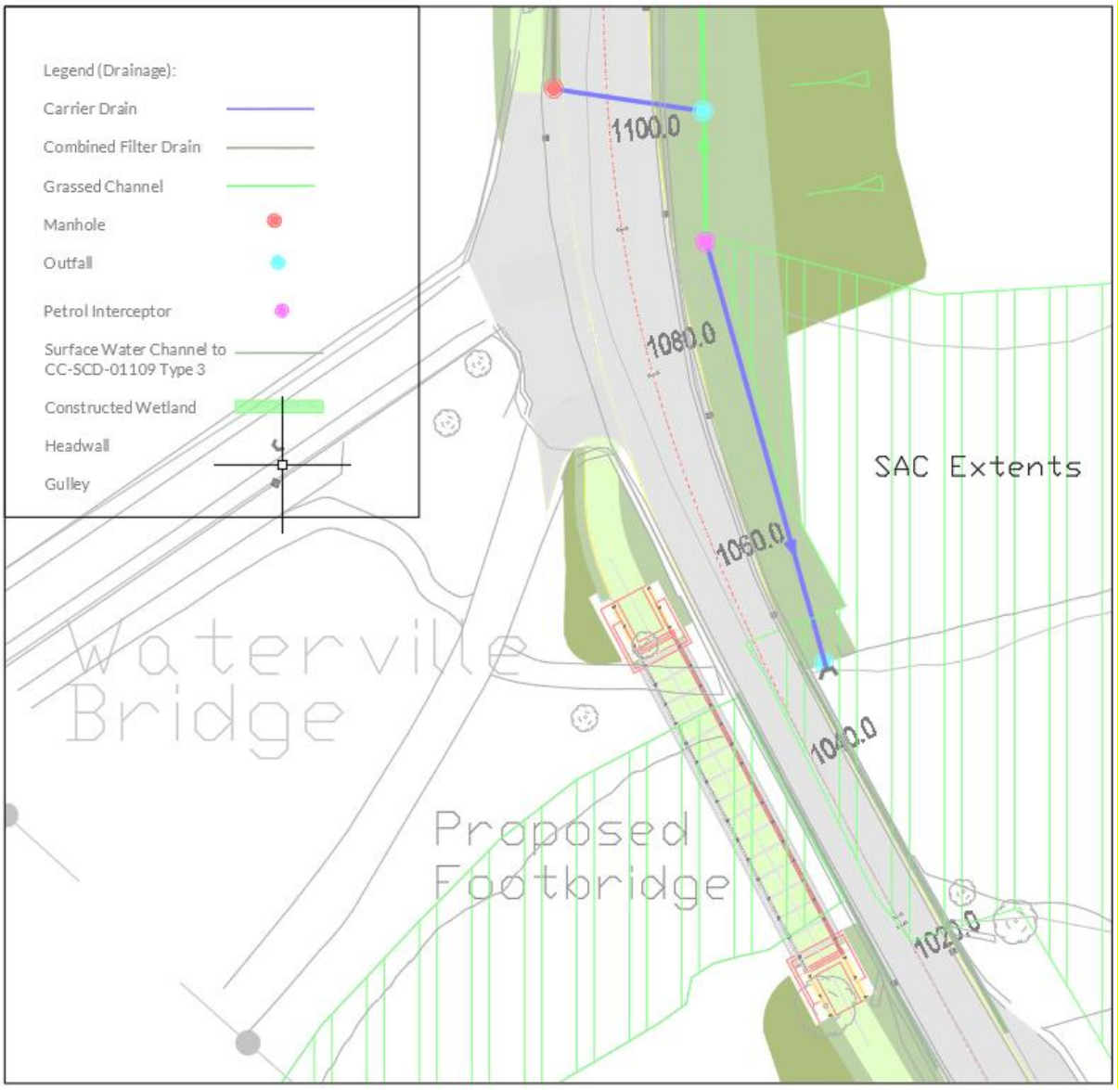


Figure 4-6: Existing Access Track Through the SAC

4.2.4.2 Southern Outfall

A second outfall pipe is proposed south of an existing pumping station to accommodate road drainage from the south of the scheme. Currently runoff runs untreated off the road into the verge, eventually depositing at the lowest spot located adjacent to the existing pumping station.

To improve road drainage within this area, the new proposed drainage scheme will include a combined filter drain which will run on the southern side of the mainline from Ch 0 to Ch 785m where it crosses the road to Ch 812m via a carrier pipe. From Ch 812m to 978m a combined filter drain will convey the water to a petrol interceptor and wetland area. Drainage across the bridge will be provided by surface water Channels to CC-SCD-01109 Type 3 tight to the parapet wall with gullies conveying to the outfall manhole at CH 978m.

A petrol interceptor will be buried into the embankment adjacent to the manhole. The outlet of the interceptor will be piped to a head wall supporting the embankment. The existing ground will be shaped slightly to ensure water from the headwall travels slowly through the wetland to the outlet stream. The minor excavation required for this is shown in Figure 4-7 below.

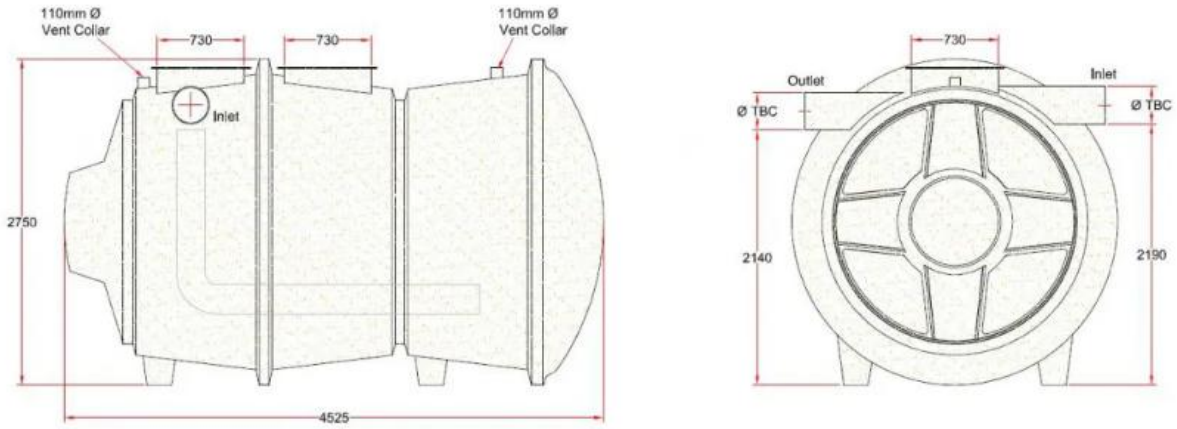
Figure 4-7: Southern Outfall

The drainage design incorporates filter drains and is run at the same gradient as the road. This ensures that there is a certain amount of filtration, attenuation and flow control before reaching the outfall. From old ordnance survey mapping, it was established that there was an old pond at this outfall location, but the pumping station was built on top of it. The area lends itself to the use of the existing wetland as an outfall location for the following reasons:

- Contours and Flow Arrows provide for a slow movement of water towards the stream adjacent to the Currane River.
- It is the low point of the scheme.
- There is existing wetland at this location.
- There is no requirement for excavation or entry into the SAC.

Water from all gullies from Ch 965m south will discharge into a manhole at Ch 965m. This manhole will also pick up the bridge drainage. The petrol interceptor will have similar dimensions to that shown in Figure 4-8 Petrol Interceptor. The embankment will be mainly imported material, and the depth of the interceptor will be such so that the invert of the manhole will be slightly higher than the inlet of the interceptor.

Figure 4-8 Petrol Interceptor



The outlet of the interceptor will be piped to a head wall supporting the embankment. The existing ground will be shaped slightly to ensure water from the headwall travels slowly through the wetland to the outlet stream.

4.2.4.3 Proposed Construction Phase Activities

Subject to statutory approval, the proposed development is expected to commence in 2025 for a duration of 12 months.

Normal work hours during the construction phase are expected to be Monday to Friday 08:00 to 18:00 hours. During certain stages of the construction phase there is potential that some work will have to be carried out outside of normal working hours. However, this will be kept to a minimum.

The installation of the Pedestrian / Cycle Bridge across the Currane River will be undertaken at night. Traffic during this period will be diverted. It is anticipated that this work will be completed in two nights. Diversions will be well advertised in advance and disruption will be kept to a minimum. The only viable diversion is around the Ring of Kerry, and this has been used on a similar scheme in Sneem.

The construction compound and welfare facilities will be located adjacent to the road within the site application boundary.

4.3 OPERATIONAL PHASE

During the operational phase, the proposed development will continue to function as a road. The new cyclist and pedestrian facility will result in the attraction of pedestrians and cyclists utilising the route.

5.0 DESCRIPTION OF THE EXISTING ENVIRONMENT

5.1 BASELINE ENVIRONMENT

The findings of the desktop study and field survey are summarised hereunder.

5.1.1 *Habitats and Flora*

The proposed development will be undertaken along the N70 road which is an existing road comprising a tarmacadam surface (BL3). The road is narrow with no roadside verges present. Stone walls (BL1) with varying heights, border both sides of the existing road. There are several one-off domestic houses along the eastern border of Section 1 of the proposed improvement scheme which are set back from the road with fences/walls or landscaped hedges bordering the existing road.

Habitats located immediately adjacent to the road, to be removed to facilitate the proposed works include mixed broadleaved woodland (WD1), scrub (WS1), hedgerows (WL1), wet grassland (GS4), unimproved agricultural grassland (GA1) and amenity grassland (GA2).

The Currane River Bridge is located within the proposed development site, within Section 2. The Currane River Bridge traverses over the Currane River (refer to Plate 1). The Currane River, at this section, is a lowland depositing river (FW2) and occurs within the site boundaries of both the Killarney National Park, Macgillycuddy's Reeks and Caragh River Catchment SAC (Site Code: 000365) and the Ballinskelligs Bay and Inny Estuary SAC (Site Code 000335).

The Finglas River (Waterville) (IE_SW_21F051000) is located to the west of the N70 and flows into the Currane River, approximately 130m downstream of the Currane River Bridge. There is no downstream hydrological connectivity between the proposed development site and the Finglas River (Waterville).

No habitats designated under Annex I of the EU Habitats Directive were recorded within the proposed development site boundary. In addition, no plant species listed under the Flora Protection Order (FPO) were recorded within the footprint of the proposed development site during the surveys.

Several invasive plant species, including Japanese knotweed (*Fallopia japonica*) and Giant rhubarb (*Gunnera tinctoria*), listed in the Third Schedule of the SI 477/2011, were recorded in several locations within the scrub and woodland habitat adjacent to the N70 road. In addition to this several other invasive species were identified within the proposed development site, these included Montbretia (*Crocosmia x crocosmiiflora*), Buddleia (*Buddleja davidii*) and Himalayan honeysuckle (*Leyesteria formosa*).

A large patch of Japanese knotweed was recorded at the southern section of the proposed development site, on the eastern boundary of the road (coordinates: 51.815471, -10.161984). The infestation included over 80 stands of Japanese knotweed ranging between 2-3m in height. The area of Japanese knotweed is located within the works area and will be directly disturbed by the proposed construction works.

A second large infestation was recorded further north, along the road (coordinates: 51.816227, -10.163250), with over 200 stands of 4m in height present. Similarly, to the previous

occurrence, the patch of Japanese knotweed is located within the works area and will be disturbed.

A third infestation of Japanese knotweed was recorded along the bank of the River Finglas (coordinates: 51.818727, -10.170685). The large patch of Japanese knotweed occurs along the eastern bank of the river. The Japanese knotweed in this area is not located within the proposed development site boundary and will therefore not be disturbed by the proposed works.

The Giant rhubarb was observed growing in scrub on the southern side of the N70 (coordinates: 51.8183795, -10.166156).

It was noted in the September 2024 surveys that a treatment program for the elimination of the Japanese Knotweed had begun on the N70, and this included the proposed development site.

Plate 1: Currane River (Left), and stone walls located adjacent to the road (Right)

5.1.2 *Fauna*

Otter

An otter survey was undertaken along the Currane River on the 9th of June 2021, 24th-26th of January 2022 and on the 11th of September 2024. No evidence of otter, including otter holts and resting sites were recorded during the surveys. A review of the NBDC dataset[2] indicates that otter have previously been recorded along the coast, to the west of the proposed development site, along the southern reaches of the Finglas River (ca. 2.7km south-west of the proposed development site) and also on the southern boundary of Lough Currane (ca. 4km south-east of the proposed development site). Despite the lack of evidence of the species recorded during the

field surveys, considering the previous records of otter in proximity to the proposed development site and the suitability of the habitat, it is likely that otter may commute and / or forage along the two rivers in proximity to the proposed development site, at least on occasion.

Bats

All bat species and their roost sites are protected under the Wildlife Acts. There is additional protection for lesser horseshoe bat (*Rhinolophus hipposideros),* as it is listed under the Annex II of the EU Habitats Directive. The lesser horseshoe bat is a qualifying interest of the Killarney National Park, Macgillycuddy's Reeks and Caragh River Catchment SAC.

A bat roost assessment of the Currane River Bridge was undertaken to identify the presence of any potential bat roost sites within the structure, as bridges can be important roost sites for bat species. The bridge arches and wingwalls were inspected and no cracks or crevices sufficiently sized to support bats were recorded. The arches of the bridge were covered in shotcrete, which has filled in all the crevices between the stones in the bridge. Small lights were also present at the base of each arch under the bridge, which is likely to be illuminating the base of the bridge. In addition, the bridge is in an open exposed landscape, adjacent to the coast with no connectivity to linear features (i.e. treelines). The survey determined that there is no potential for the bridge to support lesser horseshoe bat or any other bat species.

A Batlogger M2 bat detector was installed, and two passive bat surveys took place on the 16th and 17th of September 2024, in a strip of woodland along the N70, adjacent to the Hoggs Head Golf Course (coordinates 51.818015, -10.165718). It should be noted that this woodland/scrub area is not designated a Special Area of Conservation (SAC). The purpose of this study was to identify what bat species were using the habitat. The surveys took place from 30 minutes before sunset, to 30 minutes after sunrise. Weather conditions were ideal for the survey.

Six bat species were identified foraging within the survey area, and these included:

- Common pipistrelle (Pipistrellus pipistrellus);
- Soprano pipistrelle (Pipistrellus pygmaeus);
- Brown long-eared bat (Plecotus auritus);
- Leisler's bat (Nyctalus leisleri);
- Natterer's bat (Myotis nattereri); and,
- Lesser horseshoe bat (Rhinolophus hipposideros).

Kerry Slug

A targeted Kerry slug survey was undertaken within the proposed development site. The Kerry slug is listed as a qualifying interest of the Killarney National Park, Macgillycuddy's Reeks and Caragh River Catchment SAC.

No Kerry slugs were recorded during the survey. The woodland, although holding mixed deciduous species, is immature in nature and shows signs of previous disturbance from construction works. There is also very little moss and lichen cover within the woodland which is the main food source for Kerry slug (EHLG, 2010). Habitat within the proposed development site was determined to be unsuitable for Kerry slug.

Marsh Fritillary

Marsh fritillary is a qualifying interest of the Killarney National Park, Macgillycuddy's Reeks and Caragh River Catchment SAC. Considering the proximity of the proposed development site to the SAC site boundary a marsh fritillary survey was undertaken.

On the 9th of June 2021, the proposed development site was searched for suitable habitat for marsh fritillary, which is largely dependent on the presence of devil's bit scabious (*Succisa pratensis*), the species main food source (Phelan et al., 2021). No devil's bit scabious was recorded within the habitats within the proposed development site. All vegetation which is proposed to be removed to facilitate the proposed development was determined to be unsuitable for marsh fritillary.

Aquatic Species

A robust desktop assessment and reference to previous aquatic surveys undertaken in the watercourses was carried out to inform the assessment.

The Currane River downstream of the Currane River Bridge is one of the most well-known private salmonid fisheries in the country[4]. The section of river by the Currane River Bridge is located at the seaward entrance of the entire catchment and is therefore an important migration route for diadromous fish species, including salmon (*Salmo salar*) and lamprey (e.g., *Petromyzon marinus*). Inland Fisheries Ireland (IFI) operates a fish counter at Waterville, downstream of the bridge in the grounds of Waterville House. Counter data for Waterville in 2018 (IFI, 2019), 2020 (IFI, 2021), 2021(IFI, 2022) and 2022(IFI, 2023) is outlined in the Table 5-1: Counter Data for Waterville below. Unfortunately, due to technical difficulties at this site there was no data collected for the period January to December 2023 (IFI, 2024).

Table 5-1: Counter Data for Waterville

Fish Species	Numbers recorded in 2018	Numbers recorded in 2020	Numbers recorded in 2021	Numbers recorded in 2022
Spring salmon	196	89	345	382
Grilse	431	662	719	260
Late summer salmon	42	231	183	195
Sea *trout (Salmo trutta trutta)*	1,216	2,426	3,500	1,280

An aquatic survey, which included a snorkelling survey of the Currane River was undertaken in 2017 by Lauren Williams (Williams, 2017). The survey included snorkelling of the Currane River, upstream and downstream of the Currane River Bridge. A high value salmonid habitat was recorded throughout the watercourse. The report concluded that this stretch of river is an important salmonid nursery and is a critical migration route for anadromous species moving in and out of the catchment.

No surveys have been undertaken for lamprey species within the Currane River to date, and the location of lamprey populations have not been recorded within the sites' Conservation Objective Document (NPWS, 2017a). Taking a precautionary approach, it is assumed lamprey species occur throughout the Dunmanus-Bantry-Kenmare WFD Catchment. It is therefore

[4] https://fishinginireland.info/salmon/southwest/watervilleriver/ [Accessed: January 2022]

likely that the Currane River in proximity to the Currane River Bridge is an important migration route for lamprey as they migrate upstream to spawn.

The freshwater pearl mussel (*Margaritifera margaritifera*) is a qualifying interest of the Killarney National Park, Macgillycuddy's Reeks and Caragh River Catchment SAC and is known to occur in the Cummeragh-Currane catchment located upstream of Lough Currane. The population is estimated to be approximately 100,000 and occurs in the lower reaches of both the Cummeragh and the Capall River (NS2, 2009). During the snorkelling survey, no freshwater pearl mussel was recorded, and the river was considered to be sub-optimal to unsuitable for the species (Williams, 2017).

5.1.3 *Hydrology*

The proposed development will include construction works Northeast of the Finglas River (Waterville). The Finglas River joins the Currane River approximately 120m West of the existing Currane River Bridge and they flow into Ballinskelligs Bay approximately another 200m downstream. Table 5-2 lists the WFD water bodies within the ZOI of the proposed development site. According to EPA's latest WFD status classification for the period 2016-2021, the Finglas is currently at 'Good' status and Ballinskelligs Bay is at 'High' status.

Table 5-2: WFD Water Bodies and their corresponding Water Quality Status

EPA Name	WFD Name	EU Code	WFD Water Quality Status 2016 - 2021
Waterville	Finglas (Waterville)_001	IE_SW_21F051000	Good
N/A	Ballinskelligs Bay	IE_SW_200_0000	High

6.0 OVERVIEW OF POTENTIAL IMPACTS

An overview of potential impacts from the construction and operational phases of the proposed development on the receiving environment is discussed hereunder. There are several elements associated with the proposed works that may give rise to potential direct and indirect impacts on the receiving environment that have the potential to result in negative effects on European sites.

6.1 CONSTRUCTION PHASE IMPACTS

Potential construction phase impacts associated with the proposed development are discussed hereunder.

6.1.1 *Loss of Habitat*

The proposed development will result in the clearance and loss of habitat. Habitat to be removed includes areas of mixed broadleaf woodland (ca. 2,950m^2), scrub (2,850m^2), wet grassland (ca. 2,420 m^2), agricultural grassland (ca. 720m^2), amenity grassland (ca. 1,720m^2) and approximately 320m of hedgerow. The abovementioned habitat occurs outside the boundary of any European site.

The proposed construction works will include the installation of a pedestrian bridge adjacent to the existing Currane River bridge which will include foundation works and land take on the

banks of the river. The bridge works however will be set back outside the SAC site boundary. The installation of the bridge will not result in a loss of habitat within any European sites.

Minor works associated with the drainage system, which will include the installation of an outfall pipe and headwall, will be constructed within a small section of the Killarney National Park, Macgillycuddy's Reeks and Caragh River Catchment SAC (refer to above). Most of the proposed outfall pipeline will be confined to outside the SAC boundary, however approximately 5m of the pipeline and the proposed headwall will be located within the SAC site boundary. An approximate works area of 2m^2 will be required to facilitate the headwall works on the bank of the river. Habitat which will be disturbed within the SAC site boundary to facilitate the works includes a gravel and amenity grassland track, an existing stone wall and a small area of scrub vegetation comprising dense gorse (*Ulex europaeus*) and bramble (*Rubus fruticosus*)(refer to Figure 4-6). Following completion of the construction works all disturbed lands will be fully reinstated. No Annex I habitats or Annex II plant species were identified within this area.

6.1.2 *Runoff of Sediment and/or Construction Pollution*

The proposed development will require excavation activities. Site clearance, excavations, and the stockpiling of material have the potential to result in sediment laden runoff, if not appropriately managed. Construction works will be carried out near the Currane River, there is therefore a potential for the sedimentation of the watercourse if works are not appropriately managed. Increased silt loading in watercourses can stunt aquatic plant growth, limit dissolved oxygen capacity and overall reduce the ecological quality of watercourses, with the most critical period associated with low flow conditions.

The pouring of concrete will be required to facilitate the foundation works associated with the proposed pedestrian bridge. Surface water runoff can be contaminated by leaks and spills of fuel, oil or other construction material from construction vehicles/machinery if not effectively managed. The runoff of contaminated surface water can result in the degradation of water quality and impacts to aquatic fauna and flora, particularly if concrete is present.

6.1.3 *Noise and Disturbance*

The proposed construction works will result in an increase in noise levels during the duration of the construction phase. The construction works will also result in an increase in personnel and traffic movement to and from the site. It should be noted that no rock breaking or blasting will be required during the construction works. It is likely that temporary construction lighting will be required during the construction works. Fugitive lighting could deter movement of species in the area. A temporary increase in noise levels, disturbance and lighting within the proposed development site may result in disturbance to wildlife within the immediate vicinity of the site.

Sheet piles will be installed to create a cofferdam around the abutment works associated with the bridge. The sheet piles will be installed on the banks of the river, no works will be undertaken within the river. The sheet piles are likely to be 200mm-450mm wide and will be installed to an approximate depth of 2m below ground level. Ground investigation (GI) works which included trail pits and boreholes, have been undertaken at the pedestrian bridge location to determine the condition of the soil. The results of the GI works indicated that the soil 2m below ground level comprises a slightly sandy gravel silt, with fine to coarse sand and fine to coarse gravel. Between 2-4m, the soil content comprised slightly silty very sandy gravel with a high cobble content, with cobble ranging between 63mm to 150mm in diameter. No rock was encountered within the soil. Considering the composition of the soil at the proposed pedestrian bridge location and the shallow depth (2m) which the sheet piles will be inserted to, impact driving will not be required and instead the sheet piles will be pushed into the ground using an excavator or

an excavator mounted vibrator. Any vibration associated with installing the sheet piles are likely to be minimal. Considering the setback distance of the sheet piles from the river and the minimal vibrations, there is not likely to be any impacts to migratory fish which might travel through the Currane River.

6.1.4 *Dispersion of Invasive Species*

Japanese knotweed was recorded within the proposed development site and will be directly disturbed by the proposed development construction phase. Japanese knotweed and Giant Rhubarb are listed under the Third Schedule of the European Communities Regulations 2011 (S.I. No. 477 of 2011), and it is an offence to disperse, or promote the dispersion, of these plant species without a licence. The spread of invasive species can result in the out competing and excluding of native plant species, which, if spread onto riverbanks, can also result in erosion and compromise bank stability (TII, 2020). Due to the proximity of the construction works to the Killarney National Park, Macgillycuddy's Reeks and Caragh River Catchment SAC and Ballinskelligs Bay and Inny Estuary SAC, there is also potential for the invasive species to be dispersed into the European sites, if not appropriately managed.

6.2 OPERATIONAL PHASE IMPACTS

6.2.1 *Noise and Disturbance*

During the operational phase of the proposed development, increased human presence on the road is anticipated. However, the proposed development's improvements are planned to attract cyclists, due to the installation of the cycle path, whereas the existing motor vehicle traffic is not anticipated to change significantly from pre-construction levels. Therefore, motor vehicle noise will be of similar magnitude and intensity as pre-construction, which is not likely to cause any added stress to local fauna.

6.2.2 *Pollution Runoff*

During the operational phase there is potential for accidental hydrocarbon emissions, which could cause contamination if they enter surface waterbodies. All contaminated surface water will be captured within the proposed drainage system, however if the drainage system requires maintenance and fails to operate correctly there is potential that hydrocarbons may discharge into the Currane River. The release of hydrocarbons into a watercourse can result in a degradation in water quality and negatively impact aquatic fauna and flora. This potential exists at present.

7.0 DETERMINING THE LIKELY ZONE OF INFLUENCE

As an initial approach, all European sites within a 15km radius were examined. Additionally, the source-pathway-receptor model (OPR, 2021) was used to identify viable pathways between the proposed development and European sites which may result in likely significant effects on their qualifying interests or special conservation interests. This conceptual model is a standard tool in environmental assessment. In order for an effect to occur, all three elements of this model must be in place. The absence or removal of one of the elements of the model means there is no likelihood for the effect to occur. In the context of the proposed development, the model comprises:

- Source (s) – potential impacts from the proposed development, e.g., the runoff of sediment/construction pollution;

- Pathway (s) – hydrological, physical or ecological connectivity between the proposed development and the European site; and
- Receptor (s) – qualifying interests and/or special conservation interests of the European sites.

To determine the extent of impacts (the source) the zone of influence (ZoI) needs to be established. The Chartered Institute of Ecology and Environmental Management (CIEEM) defines the ZoI of a project as the area(s) over which ecological features may be affected by the biophysical changes caused by the proposed project and associated activities (CIEEM, 2018). To appraise the ZoI of the proposed development, the likely key biophysical changes associated with the proposed works were determined having regard to their characteristics, set out in Section 4.0 of this report.

Impacts associated with the loss of habitats will be confined to the proposed development site boundary. The ZoI is, therefore, defined as all lands within the Planning Application Site Boundary.

With regards potential water quality degradation effects associated with the release of sediment and other pollutants to surface water, the ZoI of the proposed development is considered to include receiving water bodies adjacent to, or downstream of the proposed development site. The distance downstream is associated with the current biological condition of the accepting water body and its capacity to accept and assimilate sediment and other pollutants.

Considering the sources for impacts on European sites, for the definition of the ZoI for impacts associated with water pollution, hydrological connectivity will not be considered effective past the first water body of depositional nature is reached (e.g., lake water body; transitional water body). The hydrological pathway for impacts from the proposed development will therefore include all surface water bodies from the proposed development location until Ballinskelligs Bay.

Excavation activities may result in the temporary generation of dust in the locality of the works area. The Institute of Air Quality Management provide guidelines; *'Guidance on the Assessment of Dust from Demolition and Construction'* (Holman *et al.*, 2014), which prescribes potential dust emission risk classes to ecological receptors and notes receptor sensitivity is 'High' up to 20m from the source and reduces to 'Medium' at 50m. The spatial limit of dust impacts was therefore established as 50m from the proposed development site boundary.

Noise from the construction activity has the potential to cause disturbance to resting, foraging and commuting qualifying and special conservation interest species. Individual species will elicit differing behavioural responses to disturbance at different distances from the source of disturbance. Below is a summary of the documented zones of influence for varying species.

- Transport Infrastructure Ireland (formally the National Roads Authority) has produced a series of best practice planning and construction guidelines for the treatment of certain protected mammal species (i.e., otter), which indicate that disturbance to terrestrial mammals would not extend beyond 150m (NRA, 2008b).
- Cutts *et al.* (2013) notes that different types of disturbance stimuli are characterised by different avifaunal reactions, however as a general rule of thumb, a distance of 300m can be used to represent the maximum likely disturbance distance for waterfowl. However, disturbance to species will be considered individually.

The ZoI for noise/disturbance was therefore established as the proposed development site plus a 300m buffer.

In addition, to further establish any pathways to SPA's and SACs, the foraging/commuting ranges of Special Conservation Interest (SCIs) and Qualifying Interest (QI) species will be considered.

7.1 EUROPEAN SITES WITHIN THE ZOI

7.1.1 *Conclusions of Appropriate Assessment Screening Report*

As noted, TOBIN have undertaken an AA Screening Report which is included in Appendix 3 of this report. The AA Screening Report identified six European sites within 15km of the proposed development site, despite a viable source-pathway-receptor link for likely significant effects was only identified for one European site. The AA screening process considered potential significant effects which may arise during the construction, operational and decommissioning phases of the proposed development.

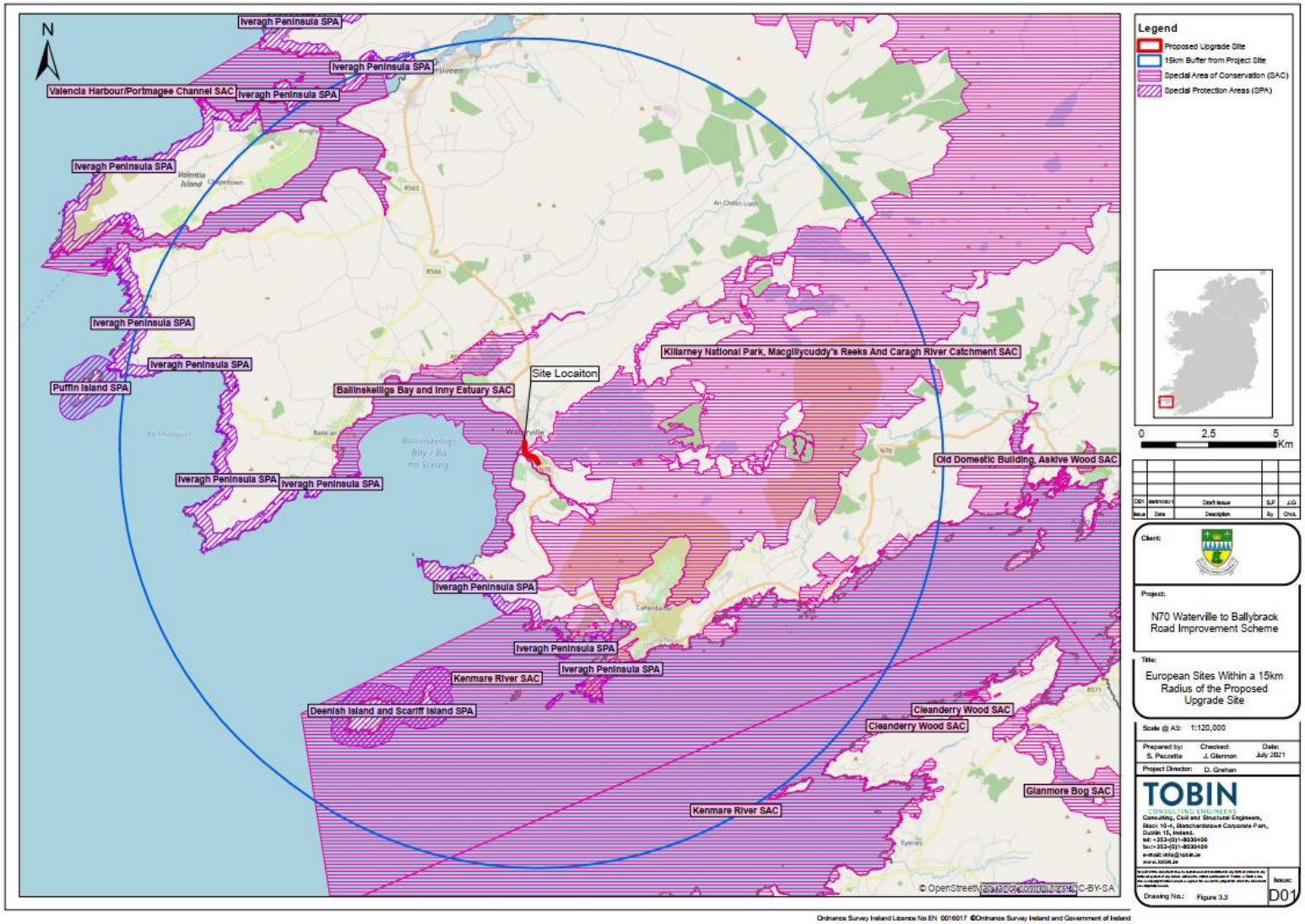
The conclusion of the AA Screening was as follows:

'in view of best scientific knowledge and in the absence of mitigation measures, potential likely significant effects from the proposed development cannot be ruled out for the Killarney National Park, Macgillycuddy's Reeks and Caragh River Catchment SAC. It is therefore recommended that a Stage 2 Natura Impact statement (NIS) be prepared to assist the competent authority in undertaking an assessment of potential adverse effects of the proposed improvement works either alone or in-combination with other plans and projects on the integrity of the Killarney National Park, Macgillycuddy's Reeks and Caragh River Catchment SAC'.

Thus, this NIS was prepared for the purposes of Article 6(3) of the Habitats Directive and Part XAB of the Planning and Development Act 2000, as amended, providing information to enable the competent authority to perform its statutory function to undertake an AA in respect of the proposed development.

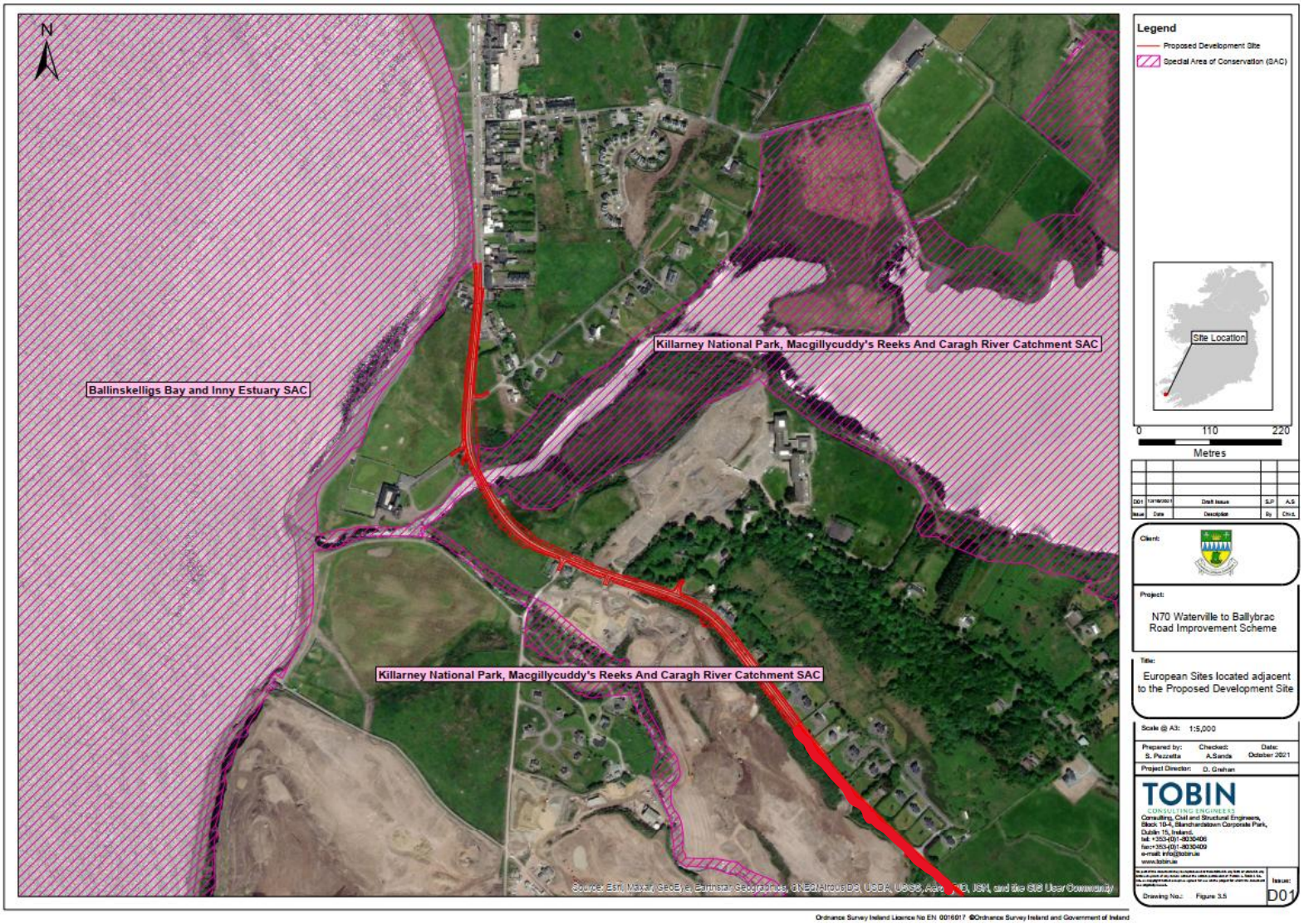
(Blank Page)

Figure 7-1: European Sites Map



(Blank Page)

Figure 7-2: European Sites located adjacent to the Proposed Development



7.2 KILLARNEY NATIONAL PARK, MACGILLYCUDDY'S REEKS AND CARAGH RIVER CATCHMENT SAC

The Killarney National Park, Macgillycuddy's Reeks and River Caragh River Catchment SAC are located immediately adjacent to the proposed development site. This SAC 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 1,039m. 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 (NPWS, 2013).

7.2.1 *Qualifying Interests*

Killarney National Park, Macgillycuddy's Reeks and Caragh River Catchment SAC are designated for 14 qualifying interest habitats and 12 qualifying interest species, as detailed in Table 7-1 below.

7.2.2 *Conservation Status*

European and national legislation places a collective obligation on Ireland and its citizens to maintain or restore habitats and species in the Natura 2000 Network to favourable conservation condition. Ireland has determined conservation objectives for European Sites which define favourable conservation condition for habitats and species protected under the Habitats Directive and Birds Directive.

Site-specific conservation objectives have been set by the NPWS for each of the listed qualifying interests of the SAC (NPWS, 2017a). The conservation objective aims to define favourable conservation condition using attributes, measures and targets.

An assessment of the potential impacts (during the construction and operational phases) identified in section 6.0 to adversely affect the integrity of the SAC was undertaken in relation to the attributes, measures and targets that would be expected to define the favourable conservation condition of the qualifying interests of the SAC is presented in Table 7-1.

Table 7-1: Evaluation of Potential Adverse Effects on the Conservation Objectives of the Killarney National Park, Macgillycuddy's Reeks and Caragh River Catchment SAC as a Result of the Proposed Development

Qualifying Interests *indicates a priority habitat	Closest Proximity	Conservation Objective	Attribute	Target	Potential for Adverse Effects
Atlantic Salmon *(Salmo salar)* [1106]	Suitable salmon nursery and holding habitat was recorded along the Currane River in proximity to the proposed development site (Williams, 2017).	To maintain the favourable conservation condition of Salmon in the SAC.	Distribution: extent of anadromy	100% of river channels down to second order accessible from estuary.	Minor instream works will be undertaken along the northern bank of the Currane River to facilitate the proposed drainage system works. The instream works may result in the impediment of access along the northern periphery of the river, particularly if undertaken within the migration period. The instream works will be small-scale (ca. 2m^2 in size) and temporary and will not result in a complete barrier of the watercourse. There is no potential for adverse effects.
			Adult spawning fish	Conservation Limit (CL) for each system consistently exceeded.	A CL is defined by the North Atlantic Salmon Conservation Organisation (NASCO) as 'the spawning stock level that produces long-term average maximum sustainable yield as derived from the adult-to-adult stock and recruitment relationship.' The Ferta River is currently exceeding its CL and the Cummeragh, Caragh, and Flesk/Laune are currently exceeding both the 1 sea winter and multi sea winter CL (NPWS, 2017a). The above-mentioned watercourses are all located upstream of the proposed development site. There is no potential for impacts to their CL levels and thus no potential for adverse effects.
			Salmon fry abundance	Maintain or exceed 0+ fry mean catchment-wide abundance	Salmon fry are likely to occur upstream of the proposed development site within spawning grounds in freshwater. No spawning habitat was identified within the proposed

Qualifying Interests *indicates a priority habitat	Closest Proximity	Conservation Objective	Attribute	Target	Potential for Adverse Effects
				threshold value. Currently set at 17 salmon fry/5 min sampling.	development site. There is no potential for adverse effects.
			Out-migrating smolt abundance	No significant decline.	Minor instream works will be undertaken along the northern bank of the Currane River to facilitate the proposed drainage system works. The instream works may result in the impediment of access along the northern periphery of the river, particularly if undertaken within the migration period. The instream works will be small-scale (ca. 2m^2 in size) and temporary and will not result in a complete barrier of the watercourse. There is no potential for impacts to the out-migrating smolt abundance.
			Number and distribution of redds	No decline in number and distribution of spawning redds due to anthropogenic causes.	No redds were recorded within the proposed development site. Redds are likely to occur further upstream within suitable spawning habitat. There is no potential for adverse effects.
			Water quality	At least Q4 at all sites sampled by EPA.	The Cummeragh River and Isknagahiny Lough Stream located upstream of Lough Currane both have a Q value of Q4-5. A degradation of water quality due to the proposed construction works within the Currane River could prevent the watercourse from maintaining a Q4 value. A degradation in water quality would constitute **an adverse effect on the integrity of the site**.

Qualifying Interests *indicates a priority habitat	Closest Proximity	Conservation Objective	Attribute	Target	Potential for Adverse Effects
Otter *(Lutra lutra)* [1355]	Otter has been identified within the catchment, with commuting occurring along the Currane River into Lough Currane	To maintain the favourable conservation condition of Otter in the Killarney National Park, Macgillycuddy's Reeks and Caragh River Catchment SAC.	Distribution	No significant decline	The current range of otter within the SAC is estimated at 93.6% (NPWS, 2017a). The proposed construction works have the potential to result in the disturbance of otter and degradation of their feeding resources though a degradation in water quality. Disturbance and changes to the species feeding resources could affect the distribution of otter within the SAC. A change or decline in the distribution of otter would **constitute an adverse effect on the integrity of the site**.
			Extent of terrestrial habitat	No significant decline. Area mapped and calculated as 390ha along riverbanks/lake shoreline/around ponds.	The proposed construction works will include the installation of a pedestrian bridge adjacent to the existing Currane River Bridge which will include foundation works and land take on the banks of the river. The SAC's Conservation Objective Document (NPWS, 2017a) indicates that the extent of terrestrial habitat for otter is mapped to include a 10m terrestrial buffer along shorelines and riverbanks. The new pedestrian bridge will be constructed on the banks of the Currane River. Both bridge abutments will be located within 10m of the riverbanks. This will result in a loss terrestrial habitat (ca. 60m^2 or 0.006ha) for otter at this location. It should be noted however that the existing bridge arches extend to the bank of the river and the area which will be lost currently comprises stone walls. Considering the total extent of terrestrial habitat available to otter equates to 1936.8ha, the loss of 0.006ha to facilitate the works are considered negligible and will not result in adverse effects to otter.

Qualifying Interests *indicates a priority habitat	Closest Proximity	Conservation Objective	Attribute	Target	Potential for Adverse Effects
			Extent of freshwater (lake) habitat	No significant decline. Area mapped and calculated as 354ha	No construction works will occur within any lake habitat. There will be no loss of suitable lake habitats.
			Extent of freshwater (river) habitat	No significant decline. Length mapped and calculated as 182.2km	Minor instream works will be undertaken along the northern bank of the Currane River to facilitate the proposed drainage system works. This will result in a temporary loss of freshwater habitat. However, considering the short-term and small-scale nature of the construction works, there will be no permanent loss or significant decline of freshwater habitat. There is no potential for adverse effects.
			Couching sites and holts	No significant decline	No holts or couching sites were recorded along the Currane River during the field survey. The proposed new pedestrian bridge will include the installations of foundations on the bank of the river. The riverbank in this area is unlikely to provide suitable habitat for holts or resting sites for otter considering the open and exposed nature of the area and proximity to the existing road. Therefore, there is no potential for adverse effects on the number and/or distribution of couching sites and holts.
			Fish biomass available	No significant decline	A potential degradation in water quality and the impediment of fish migration within the Currane River could affect the availability of fish biomass to otter. A significant decline in fish biomass available for otter

Qualifying Interests *indicates a priority habitat	Closest Proximity	Conservation Objective	Attribute	Target	Potential for Adverse Effects
					would **constitute an adverse effect on the integrity of the site**.
			Barriers to connectivity	No significant increase.	Minor instream works will be undertaken along the northern bank of the Currane River to facilitate the proposed drainage system works. The construction works will require small works area (ca. 2m^2) on the northern bank of the river which may result in a temporary barrier to otter movement in that area. Construction works associated with the pedestrian bridge which will include night-time works, which may also result in a temporary barrier to otter commuting along the banks or within the watercourse. The construction works will be short-term however and will not result in a permanent barrier. The shared cycle/pedestrian bridge once constructed will be set back from the river in line with the existing Currane River Bridge and will not result in a barrier to connectivity. Considering the above, there is no potential for impacts to otter.
Oligotrophic waters containing very few minerals of sandy plains *(Littorelletalia*	The Annex I habitat is considered likely to occur in most lakes within the SAC (NPWS, 2017)	To restore the favourable conservation condition of Oligotrophic to mesotrophic standing	Habitat area	Area stable or increasing, subject to natural processes	A review of the site's Conservation Objective document (NPWS, 2017a) indicates that the Annex I habitat is likely to occur in most lakes within the SAC. All lakes within the SAC are located upstream of the proposed development site. The proposed construction works will therefore not result in adverse effects on the qualifying interest.

Qualifying Interests *indicates a priority habitat	Closest Proximity	Conservation Objective	Attribute	Target	Potential for Adverse Effects
uniflorae) [3110]		waters with vegetation of the *Littorelletea uniflorae* and/or of the *Isoeto-Nanojuncetea* in Killarney National Park, Macgillycuddy's Reeks and Caragh River Catchment SAC	Habitat distribution	No decline, subject to natural processes	
			Typical species	Typical species present, in good condition, and demonstrating typical abundances and distribution	
			Vegetation composition: characteristic zonation	All characteristic zones should be present, correctly distributed and in good condition	
			Vegetation distribution: maximum depth	Maintain maximum depth of vegetation, subject to natural processes	
			Hydrological regime: water level fluctuations	Maintain appropriate natural hydrological regime necessary to support the habitat	

Qualifying Interests *indicates a priority habitat	Closest Proximity	Conservation Objective	Attribute	Target	Potential for Adverse Effects
			Lake substratum quality	Maintain appropriate substratum type, extent and chemistry to support the vegetation	
			Water quality: transparency	Maintain appropriate Secchi transparency. There should be no decline in Secchi depth/transparency	
			Water quality: nutrients	Maintain the concentration of nutrients in the water column at sufficiently low levels to support the habitat and its typical species	
			Water quality: phytoplankton biomass	Maintain/restore appropriate water quality to support the habitat, including high	

Qualifying Interests *indicates a priority habitat	Closest Proximity	Conservation Objective	Attribute	Target	Potential for Adverse Effects
				chlorophyll *a* status	
			Water quality: phytoplankton composition	Maintain/restore appropriate water quality to support the habitat, including high phytoplankton composition status.	
			Water quality: attached algal biomass	Maintain/restore trace/absent attached algal biomass (<5% cover) and high phytobenthos status.	
			Water quality: macrophyte status	Maintain/restore high macrophyte status.	
			Acidification status	Maintain appropriate water and sediment pH, alkalinity and cation concentrations to support the	

Qualifying Interests *indicates a priority habitat	Closest Proximity	Conservation Objective	Attribute	Target	Potential for Adverse Effects
				habitat, subject to natural processes	
			Water colour	Maintain appropriate water colour to support the habitat.	
			Dissolved organic carbon (DOC)	Maintain appropriate organic carbon levels to support the habitat	
			Turbidity	Maintain appropriate turbidity to support the habitat.	
Oligotrophic to mesotrophic standing waters with vegetation of the *Littorelletea uniflorae* and/or *Isoeto-Nanojuncetea* [3130]	Lake habitat 3130 is considered likely to occur in Loughs Acoose, Caragh, Leane, The Long Range and the Upper Lake in the SAC (NPWS, 2017)	To restore the favourable conservation condition of Oligotrophic to mesotrophic standing waters with vegetation of the *Littorelletea uniflorae*	Habitat area	Area stable or increasing, subject to natural processes	A review of the site's Conservation Objective document (NPWS, 2017a) indicates that the Annex I habitat is likely to occur upstream of the proposed development site. The proposed construction works will therefore not result in adverse effects on the qualifying interest.
			Habitat distribution	No decline, subject to natural processes	
			Typical species	Typical species present, in good condition, and demonstrating	

Qualifying Interests *indicates a priority habitat	Closest Proximity	Conservation Objective	Attribute	Target	Potential for Adverse Effects
		and/or of the *Isoeto-Nanojuncetea* in Killarney National Park, Macgillycuddy's Reeks and Caragh River Catchment SAC		typical abundances and distribution	
			Vegetation composition: characteristic zonation	All characteristic zones should be present, correctly distributed and in good condition	
			Vegetation distribution: maximum depth	Maintain maximum depth of vegetation, subject to natural processes	
			Hydrological regime: water level fluctuations	Maintain appropriate natural hydrological regime necessary to support the habitat.	
			Lake substratum quality	Maintain appropriate substratum type, extent and chemistry to support the vegetation	

Qualifying Interests *indicates a priority habitat	Closest Proximity	Conservation Objective	Attribute	Target	Potential for Adverse Effects
			Water quality: transparency	Maintain appropriate Secchi transparency. There should be no decline in Secchi depth/transparency	
			Water quality: nutrients	Maintain the concentration of nutrients in the water column at sufficiently low levels to support the habitat and its typical species	
			Water quality: phytoplankton biomass	Maintain/restore appropriate water quality to support the habitat, including high chlorophyll *a* status	
			Water quality: phytoplankton composition	Maintain/restore appropriate water quality to support the habitat, including high	

Qualifying Interests *indicates a priority habitat	Closest Proximity	Conservation Objective	Attribute	Target	Potential for Adverse Effects
				phytoplankton composition status.	
			Water quality: attached algal biomass	Maintain/restore trace/absent attached algal biomass (<5% cover) and high phytobenthos status.	
			Water quality: macrophyte status	Maintain/restore high macrophyte status.	
			Acidification status	Maintain appropriate water and sediment pH, alkalinity and cation concentrations to support the habitat, subject to natural processes	
			Water colour	Maintain appropriate water colour to support the habitat.	

Qualifying Interests *indicates a priority habitat	Closest Proximity	Conservation Objective	Attribute	Target	Potential for Adverse Effects
			Dissolved organic carbon (DOC)	Maintain appropriate organic carbon levels to support the habitat	
			Turbidity	Maintain appropriate turbidity to support the habitat.	
			Fringing habitat: area and condition	Maintain the area and condition of fringing habitats necessary to support the natural structure and functioning of habitat 3130.	
Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-*	This qualifying interest not been mapped in detail for the SAC (NPWS, 2017a)	To maintain the favourable conservation condition of Water courses of plain to montane levels	Habitat area	Area stable or increasing, subject to natural processes	The Annex I habitat was not recorded during surveys within the Currane River at the proposed development site or within 150m upstream or downstream of the site. However, the habitat can occur within upland, flashy, oligotrophic, bryophyte- and algal-dominated stretches, to tidal reaches dominated by higher plants (NPWS, 2019). Therefore, taking a precautionary approach, it is
			Habitat distribution	No decline, subject to natural processes	

Qualifying Interests *indicates a priority habitat	Closest Proximity	Conservation Objective	Attribute	Target	Potential for Adverse Effects
Batrachion vegetation [3260]		with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation in Killarney National Park, Macgillycuddy's Reeks and Caragh River Catchment SAC			assumed that the Annex I habitat may occur within the ZoI of the proposed development. The proposed development has the potential to result in the degradation of water quality and the release of suspended solids which can negatively impact *Ranuncullion fluitantis* and *Callitricho-batrachion* vegetation (Ní Bhroin, 2016). Impacts to the vegetation would result in a change of the area and distribution of the habitat which would **constitute an adverse effect on the integrity of the site.**
			Hydrological regime: river flow	Maintain/restore appropriate hydrological regimes	The proposed development site will not result in any changes to the existing flow regime of the Currane River or any associated tributaries. There is no potential for adverse effects.
			Hydrological regime: groundwater discharge	Maintain appropriate hydrological regime	The proposed development will not result in a change or impact to the tidal influence of the SAC. Therefore, there is no potential for adverse effects.
			Substratum composition: particle size range	Maintain/restore appropriate substratum particle size range, quantity and quality, subject to natural process	The proposed development has the potential to result in the release of suspended solids into the watercourse. The release of large amounts of suspended solids has the potential to impact the substratum which would **constitute an adverse effect on the integrity of the site.**

Qualifying Interests *indicates a priority habitat	Closest Proximity	Conservation Objective	Attribute	Target	Potential for Adverse Effects
			Water quality	Maintain/restore appropriate water quality to support the natural structure and functioning of the habitat	The proposed development has the potential to result in the degradation of water quality and the release of suspended solids into the Currane River. *Ranuncullion fluitantis* can tolerate slight pollution but is sensitive to rises in water turbidity (Ní Bhroin, 2016). The release of suspended solids and/or construction pollution has the potential to impact water quality and alter the vegetation composition, which would **constitute an adverse effect on the integrity of the site.**
			Typical species	Typical species of the relevant habitat sub-type should be present and in good condition	
			Floodplain connectivity: area	The area of active floodplain at and upstream of the habitat should be maintained	The proposed development will not result in a change in the river connectivity to the floodplains. There is no potential for adverse effects.
Northern Atlantic wet heaths with *Erica tetralix* [4010]	This qualifying interest not been mapped in detail for the SAC	To restore the favourable conservation condition of Northern Atlantic wet heaths with	Habitat area	Area stable or increasing, subject to natural processes	Northern Atlantic wet heath is a terrestrial habitat (NPWS, 2019) and was not recorded within the proposed development site during surveys. Due to the lack of connectivity and separation distance the proposed development poses no risk of affecting any of the attributes and targets supporting the favourable conservation status of this habitat in the SAC.
			Habitat distribution	No decline, subject to natural processes	

Qualifying Interests *indicates a priority habitat	Closest Proximity	Conservation Objective	Attribute	Target	Potential for Adverse Effects
		Erica tetralix in Killarney National Park, Macgillycuddy's Reeks and Caragh River Catchment SAC	Ecosystem function: soil nutrients	Maintain soil nutrient status within natural range	
			Community diversity	Maintain variety of vegetation communities subject to natural processes	
			Vegetation composition: cross-leaved heather	Cross-leaved heath (*Erica tetralix*) present within a 20m radius of each monitoring stop	
			Vegetation composition: positive indicator species	Cover of positive indicator species at least 50%	
			Vegetation composition: lichens and bryophytes	Total cover of *Cladonia* and *Sphagnum* species, *Racomitrium lanuginosum* and pleurocarpous	

Qualifying Interests *indicates a priority habitat	Closest Proximity	Conservation Objective	Attribute	Target	Potential for Adverse Effects
				mosses at least 10%	
			Vegetation composition: ericoid species and crowberry	Cover of ericoid species and crowberry (*Empetrum nigrum*) at least 15%	
			Vegetation composition: dwarf shrub species	Cover of dwarf shrubs less than 75%	
			Vegetation composition: non-native species	Cover of non-native species less than 1%	
			Vegetation composition: native trees and shrubs	Cover of scattered native trees and shrubs less than 20%	
			Vegetation composition: bracken	Cover of bracken (*Pteridium aquilinum*) less than 10%	
			Vegetation composition: soft rush	Cover of soft rush (*Juncus effusus*) less than 10%	

Qualifying Interests *indicates a priority habitat	Closest Proximity	Conservation Objective	Attribute	Target	Potential for Adverse Effects
			Vegetation structure: *Sphagnum* condition	Less than 10% of the *Sphagnum* cover is crushed, broken and/or pulled up	
			Vegetation structure: signs of browsing	Less than 33% collectively of the last complete growing season's shoots of ericoids, crowberry (*Empetrum nigrum*) and bog-myrtle (*Myrica gale*) showing signs of browsing	
			Vegetation structure: burning	No signs of burning in sensitive areas, into the moss, liverwort or lichen layer or exposure of peat surface due to burning	
			Physical structure: disturbed bare ground	Cover of disturbed bare ground less than 10%	

Qualifying Interests *indicates a priority habitat	Closest Proximity	Conservation Objective	Attribute	Target	Potential for Adverse Effects
			Physical structure: drainage	Area showing signs of drainage from heavy trampling, tracking or ditches less than 10%	
			Indicators of local distinctiveness	No decline in distribution or population sizes of rare, threatened or scarce species associated with the habitat and no decline in status of hepatic mats associated with this habitat	
European Dry Heaths [4030]	European Dry Heaths have not been mapped in detail for Killarney National Park, Macgillycuddy's Reeks and Caragh River Catchment SAC and thus total area of the qualifying habitat is unknown (NPWS, 2017a).	To restore the favourable conservation condition of Transition mires and quaking bogs in the River Finn SAC	Habitat area	Area stable or increasing, subject to natural processes	European dry heath is a terrestrial habitat (NPWS, 2019) and was not recorded within the proposed development site during surveys. Due to the lack of connectivity and separation distance the proposed development poses no risk of affecting any of the attributes and targets supporting the favourable conservation status of this habitat in the SAC.
			Habitat distribution	No decline, subject to natural processes	
			Ecosystem function: soil nutrients	Maintain soil nutrient status within natural range	

Qualifying Interests *indicates a priority habitat	Closest Proximity	Conservation Objective	Attribute	Target	Potential for Adverse Effects
			Community diversity	Maintain variety of vegetation communities, subject to natural processes	
			Vegetation composition: lichens and bryophytes	Number of bryophyte or non-crustose lichen species present at each monitoring stop is at least three, excluding *Campylopus* and *Polytrichum* mosses	
			Vegetation composition: number of positive indicator species	Number of positive indicator species present at each monitoring stop is at least two	
			Vegetation composition: cover of positive indicator species	Cover of positive indicator species at least 50% for siliceous dry heath and 50- 75% for calcareous dry heath	

Qualifying Interests *indicates a priority habitat	Closest Proximity	Conservation Objective	Attribute	Target	Potential for Adverse Effects
			Vegetation composition: dwarf shrub composition	Proportion of dwarf shrub cover composed collectively of bog-myrtle (*Myrica gale*), creeping willow (*Salix repens*) and western gorse (*Ulex gallii*) is less than 50%	
			Vegetation composition: negative indicator species	Total cover of negative indicator species less than 1%	
			Vegetation composition: non-native species	Cover of non-native species less than 1%	
			Vegetation composition: native trees and shrubs	Cover of scattered native trees and shrubs less than 20%	
			Vegetation composition: bracken	Cover of bracken (*Pteridium aquilinum*) less than 10%	

Qualifying Interests *indicates a priority habitat	Closest Proximity	Conservation Objective	Attribute	Target	Potential for Adverse Effects
			Vegetation composition: soft rush	Cover of soft rush (*Juncus effusus*) less than 10%	
			Vegetation structure: senescent ling	Senescent proportion of ling (*Calluna vulgaris*) cover less than 50%.	
			Vegetation structure: signs of browsing	Less than 33% collectively of the last complete growing season's shoots of ericoids and crowberry (*Empetrum nigrum*) showing signs of browsing	
			Vegetation structure: burning	No signs of burning in sensitive areas	
			Vegetation structure: growth phases of ling	Outside sensitive areas, all growth phases of ling (*Calluna vulgaris*) should occur throughout, with at least 10% of	

Qualifying Interests *indicates a priority habitat	Closest Proximity	Conservation Objective	Attribute	Target	Potential for Adverse Effects
				cover in the mature phase	
			Physical structure: disturbed bare ground	Cover of disturbed bare ground less than 10%	
			Indicators of local distinctiveness	No decline in distribution or population sizes of rare, threatened or scarce species associated with the habitat	
Alpine and Boreal heaths [4060]	Alpine and Boreal heaths have not been mapped in detail for Killarney National Park, Macgillycuddy's Reeks and Caragh River Catchment SAC and thus total area of the qualifying habitat is unknown (NPWS, 2017a).	To restore the favourable conservation condition of Alpine and Boreal heaths in Killarney National Park, Macgillycuddy's Reeks and Caragh River Catchment SAC	Habitat area	Area stable or increasing, subject to natural processes	Alpine and boreal heaths is a terrestrial habitat (NPWS, 2019) and was not recorded within the proposed development site during surveys. Due to the lack of connectivity and separation distance the proposed development poses no risk of affecting any of the attributes and targets supporting the favourable conservation status of this habitat in the SAC.
			Habitat distribution	No decline, subject to natural processes	
			Ecosystem function: soil nutrients	Maintain soil nutrient status within natural range	
			Community diversity	Maintain variety of vegetation communities,	

Qualifying Interests *indicates a priority habitat	Closest Proximity	Conservation Objective	Attribute	Target	Potential for Adverse Effects
				subject to natural processes	
			Vegetation composition: lichens and bryophytes	Number of bryophyte or non-crustose lichen species present at each monitoring stop is at least three	
			Vegetation composition: positive indicator species	Cover of positive indicator species at least 66%	
			Vegetation composition: dwarf shrub species	Cover of dwarf shrub species at least 10%	
			Vegetation composition: negative indicator species	Total cover of negative indicator species less than 10%	
			Vegetation composition: non-native species	Cover of non-native species less than 1%	

Qualifying Interests *indicates a priority habitat	Closest Proximity	Conservation Objective	Attribute	Target	Potential for Adverse Effects
			Vegetation structure: signs of grazing	Less than 10% collectively of the live leaves of specific graminoids showing signs of grazing	
			Vegetation structure: signs of browsing	Less than 33% collectively of the last complete growing season's shoots of ericoids and crowberry (*Empetrum nigrum*) showing signs of browsing	
			Vegetation structure: burning	No signs of burning within the habitat	
			Physical structure: disturbed bare ground	Cover of disturbed bare ground less than 10%	
			Indicators of local distinctiveness	No decline in distribution or population sizes of rare, threatened or scarce species	

Qualifying Interests *indicates a priority habitat	Closest Proximity	Conservation Objective	Attribute	Target	Potential for Adverse Effects
				associated with the habitat and no decline in status of hepatic mats associated with this habitat	
Juniperus communis formations on heaths or calcareous grasslands [5130]	*Juniperus communis* formations on heaths or calcareous grasslands have not been mapped in detail for Killarney National Park, Macgillycuddy's Reeks and Caragh River Catchment SAC and thus total area of the qualifying habitat is unknown (NPWS, 2017a).	To maintain the favourable conservation condition of Juniperus communis formations on heaths or calcareous grasslands in Killarney National Park, Macgillycuddy's Reeks and Caragh River Catchment SAC	Habitat area	Area stable or increasing, subject to natural processes	*Juniperus communis* formations on heaths or calcareous grasslands is a terrestrial habitat (NPWS, 2019) and was not recorded within the proposed development site during surveys. Due to the lack of connectivity and separation distance the proposed development poses no risk of affecting any of the attributes and targets supporting the favourable conservation status of this habitat in the SAC.
			Habitat distribution	No decline, subject to natural processes	
			Juniper population size	At least 50 plants per formation	
			Vegetation composition: typical species	At least 50% of the listed positive indicator species for the relevant vegetation group present	
			Vegetation composition: negative indicator species	Negative indicator species, particularly non-native invasive species, absent or under control	

Qualifying Interests *indicates a priority habitat	Closest Proximity	Conservation Objective	Attribute	Target	Potential for Adverse Effects
			Vegetation structure: cone bearing plant	At least 10% of plants are bearing cones	
			Vegetation structure: seedling recruitment	At least 10% of juniper plants are seedlings	
			Vegetation structure: dead juniper	Mean percentage of each juniper plant dead less than 10%	
Calaminarian grasslands of the *Violetalia calaminariae* [6130]	The Annex I habitat has been recorded at two locations within the SAC; at Muckross Lake (ca. 45km north-east of the proposed development site) and at Ross Island (ca. 48km north-east of the proposed development site).	To maintain the favourable conservation condition of Calaminarian grasslands of the *Violetalia calaminariae* in Killarney National Park, Macgillycuddy's Reeks and Caragh River Catchment SAC	Habitat area	No decline, subject to natural processes	Calaminarian grasslands of the *Violetalia calaminariae* is a terrestrial habitat (NPWS, 2019) and was not recorded within the proposed development site during surveys. Due to the lack of connectivity and separation distance the proposed development poses no risk of affecting any of the attributes and targets supporting the favourable conservation status of this habitat in the SAC.
			Distribution	No decline, subject to natural processes. See map 4 for recorded location	
			Physical structure: bare ground	Maintain adequate open ground	
			Soil toxicity: copper content	Maintain high copper (Cu) levels in soil	

Qualifying Interests *indicates a priority habitat	Closest Proximity	Conservation Objective	Attribute	Target	Potential for Adverse Effects
			Vegetation structure: height and cover	Maintain low and open vegetation	
			Vegetation composition: metallophyte bryophytes	Maintain diversity and populations of metallophyte bryophytes	
Molinia meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caeruleae*) [6410]	The full extent of the Annex I habitat is unknown; however, the habitat has been recorded in some area within the SAC within the closest area located approximately 50km north-east of the proposed development site.	To restore the favourable conservation condition of Molinia meadows on calcareous, peaty or clayey-silt-laden soils (Molinion caeruleae) in Killarney National Park, Macgillycuddy's Reeks and Caragh River Catchment SAC	Habitat area	Area stable or increasing, subject to natural processes, with a minimum area of 9.02ha, as per the locations noted in the conservation objectives document	*Molinia* meadows on calcareous, peaty or clayey-silt-laden soils is a terrestrial habitat (NPWS, 2019) and was not recorded within the proposed development site during surveys. Due to the lack of connectivity and separation distance the proposed development poses no risk of affecting any of the attributes and targets supporting the favourable conservation status of this habitat in the SAC.
			Habitat distribution	No decline, subject to natural processes, as per the locations noted in the conservation objectives document	
			Vegetation composition:	At least seven positive indicator	

Qualifying Interests *indicates a priority habitat	Closest Proximity	Conservation Objective	Attribute	Target	Potential for Adverse Effects
			positive indicator species	species present, including one "high quality" species as listed in O'Neill *et al.* (2013)	
			Vegetation composition: negative indicator species	Negative indicator species collectively not more than 20% cover, with cover by an individual species not more than 10%	
			Vegetation composition: non-native species	Cover of non-native species not more than 1%	
			Vegetation composition: moss species	Hair mosses (*Polytrichum* spp.) not more than 25% cover	
			Vegetation composition: woody species and bracken	Cover of woody species and bracken (*Pteridium aquilinum*) not	

Qualifying Interests *indicates a priority habitat	Closest Proximity	Conservation Objective	Attribute	Target	Potential for Adverse Effects
				more than 5% cover	
			Vegetation structure: broadleaf herb: grass ratio	Broadleaf herb component of vegetation between 40% and 90%	
			Vegetation structure: sward height	At least 30% of sward between 10cm and 80cm tall	
			Vegetation structure: litter	Litter cover not more than 25%	
			Physical structure: bare ground	Not more than 10% bare ground	
			Physical structure: bare soil	Not more than 10% bare soil	
			Physical structure: disturbance	Area showing signs of serious grazing or other disturbance less than 20m²	
	Blanket Bogs have not been mapped in detail	To restore the favourable	Habitat area	Area stable or increasing, subject	Blanket bog is a terrestrial habitat (NPWS, 2019) and was not recorded within the proposed development site

Qualifying Interests *indicates a priority habitat	Closest Proximity	Conservation Objective	Attribute	Target	Potential for Adverse Effects
Blanket bogs (* if active bog) [7130]	for the SAC and the exact extent of the habitat is unknown (NPWS, 2017a).	conservation condition of Blanket bogs (* if active bog) in Killarney National Park, Macgillycuddy's Reeks and Caragh River Catchment SAC		to natural processes	during surveys. Due to the lack of connectivity and separation distance the proposed development poses no risk of affecting any of the attributes and targets supporting the favourable conservation status of this habitat in the SAC.
			Habitat distribution	No decline, subject to natural processes	
			Ecosystem function: soil nutrients	Maintain soil nutrient status within natural range	
			Ecosystem function: peat formation	At least 99% of the total Annex I blanket bog area is active	
			Ecosystem function: hydrology	Natural hydrology unaffected by drains and erosion	
			Community diversity	Maintain variety of vegetation communities, subject to natural processes	
			Vegetation composition: positive indicator species	Number of positive indicator species present at each monitoring stop is at least seven	

Qualifying Interests *indicates a priority habitat	Closest Proximity	Conservation Objective	Attribute	Target	Potential for Adverse Effects
			Vegetation composition: lichens and bryophytes	Cover of bryophytes or lichens, excluding Sphagnum fallax, at least 10%	
			Vegetation composition: potential dominant species	Cover of each of the potential dominant species less than 75%	
			Vegetation composition: negative indicator species	Total cover of negative indicator species less than 1%	
			Vegetation composition: non-native species	Cover of non-native species less than 1%	
			Vegetation composition: native trees and shrubs	Cover of scattered native trees and shrubs less than 10%	
			Vegetation structure: *Sphagnum* condition	Less than 10% of the *Sphagnum* cover is crushed,	

Qualifying Interests *indicates a priority habitat	Closest Proximity	Conservation Objective	Attribute	Target	Potential for Adverse Effects
				broken and/or pulled up	
			Vegetation structure: signs of browsing	Last complete growing season's shoots of ericoids, crowberry (*Empetrum nigrum*) and bog-myrtle (*Myrica gale*) showing signs of browsing collectively less than 33%	
			Vegetation structure: burning	No signs of burning in sensitive areas, into the moss, liverwort or lichen layer or exposure of peat surface due to burning	
			Physical structure: disturbed bare ground	Cover of disturbed bare ground less than 10%	
			Physical structure: drainage	Area showing signs of drainage from heavy	

Qualifying Interests *indicates a priority habitat	Closest Proximity	Conservation Objective	Attribute	Target	Potential for Adverse Effects
				trampling, tracking or ditches less than 10%	
			Physical structure: erosion	Less than 5% of the greater bog mosaic comprises erosion gullies and eroded areas	
			Indicators of local distinctiveness	No decline in distribution or population sizes of rare, threatened or scarce species associated with the habitat	
Depressions on peat substrates of the *Rhynchosporion* [7150]	Depressions on peat substrates of the *Rhynchosporion* have not been mapped in detail in the SAC and thus total area of the qualifying habitat is unknown.	To restore the favourable conservation condition of Depressions on peat substrates of the Rhynchosporion in Killarney National Park, Macgillycuddy'	Habitat area	Area stable or increasing, subject to natural processes	Depressions on peat substrates of the *Rhynchosporion* is a terrestrial habitat (NPWS, 2019) and was not recorded within the proposed development site boundary during surveys. Due to the lack of connectivity and separation distance the proposed development poses no risk of affecting any of the attributes and targets supporting the favourable conservation status of this habitat in the SAC.
			Habitat distribution	No decline, subject to natural processes	
			Ecosystem function: soil nutrients	Maintain soil nutrient status within natural range	

Qualifying Interests *indicates a priority habitat	Closest Proximity	Conservation Objective	Attribute	Target	Potential for Adverse Effects
		s Reeks and Caragh River Catchment SAC	Vegetation composition: positive indicator species	Number of positive indicator species at each monitoring stop is at least five	
			Vegetation composition: *Rhynchospora* spp.	Total cover of white beaked sedge (*Rhynchospora alba*) and brown beaked sedge (*R. fusca*) at least 10%	
			Vegetation composition: potential dominant species	Vegetation composition: potential dominant species	
			Vegetation composition: negative indicator species	Total cover of negative indicator species less than 1%	
			Vegetation composition: non-native species	Cover of non-native species less than 1%	
			Vegetation composition:	Cover of scattered native trees and	

Qualifying Interests *indicates a priority habitat	Closest Proximity	Conservation Objective	Attribute	Target	Potential for Adverse Effects
			native trees and shrubs	shrubs less than 10%	
			Vegetation structure: *Sphagnum* condition	Less than 10% of the *Sphagnum* cover is crushed, broken and/or pulled up	
			Vegetation structure: signs of browsing	Last complete growing season's shoots of ericoids, crowberry (*Empetrum nigrum*) and bog-myrtle (*Myrica gale*) showing signs of browsing collectively less than 33%	
			Vegetation structure: burning	No signs of burning in sensitive areas, into the moss, liverwort or lichen layer or exposure of peat surface due to burning	
			Physical structure:	Cover of disturbed bare	

Qualifying Interests *indicates a priority habitat	Closest Proximity	Conservation Objective	Attribute	Target	Potential for Adverse Effects
			disturbed bare ground	ground less than 10%	
			Physical structure: drainage	Area showing signs of drainage from heavy trampling, tracking or ditches less than 10%	
			Physical structure: erosion	Less than 5% of the greater bog mosaic comprises erosion gullies and eroded areas	
			Indicators of local distinctiveness	No decline in distribution or population sizes of rare, threatened or scarce species associated with the habitat	
Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles [91A0]	Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles have been mapped in detail for the SAC, with the nearest area of habitat (site code:	To restore the favourable conservation condition of Old sessile oak woods with Ilex and Blechnum in	Habitat area	Area stable or increasing, subject to natural processes, with a minimum area of 1,254.4ha, as per the locations notes in the	Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles are a terrestrial habitat (NPWS, 2019) and was not recorded within the proposed development site boundary during surveys. Due to the lack of connectivity and separation distance, the proposed development poses no risk of affecting any of the attributes and targets

Qualifying Interests *indicates a priority habitat	Closest Proximity	Conservation Objective	Attribute	Target	Potential for Adverse Effects
	1737) located approximately 9km east of the proposed development site (NPWS, 2017a).	the British Isles in Killarney National Park, Macgillycuddy's Reeks and Caragh River Catchment SAC		conservation objectives document	supporting the favourable conservation status of this habitat in the SAC.
			Habitat distribution	No decline, subject to natural processes. The mapped woodland locations are shown in the conservation objectives document	
			Woodland size	Area stable or increasing. Where topographically possible, "large" woods at least 25ha in size and “small” woods at least 3ha in size	
			Woodland structure: cover and height	Diverse structure with a relatively closed canopy containing mature trees; subcanopy layer with semimature trees and shrubs; and	

Qualifying Interests *indicates a priority habitat	Closest Proximity	Conservation Objective	Attribute	Target	Potential for Adverse Effects
				well-developed herb layer	
			Woodland structure: community diversity and extent	Maintain diversity and extent of community types	
			Woodland structure: natural regeneration	Seedlings, saplings and pole age-classes occur in adequate proportions to ensure survival of woodland canopy	
			Woodland structure: dead wood	At least 30m^3/ha of fallen timber greater than 10cm diameter; 30 snags/ha; both categories should include stems greater than 40cm diameter	
			Woodland structure: veteran trees	No decline	
			Woodland structure:	No decline	

Qualifying Interests *indicates a priority habitat	Closest Proximity	Conservation Objective	Attribute	Target	Potential for Adverse Effects
			indicators of local distinctiveness		
			Vegetation composition: native tree cover	No decline. Native tree cover not less than 95%	
			Vegetation composition: typical species	A variety of typical native species present, depending on woodland type, including oak (*Quercus petraea*) and birch (*Betula pubescens*)	
			Vegetation composition: negative indicator species	Negative indicator species, particularly non-native invasive species, absent or under control	
Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (Alno-	Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (Alno-Padion, Alnion incanae, Salicion	To restore the favourable conservation condition of Alluvial forests	Habitat area	Area stable or increasing, subject to natural processes, with a minimum area of	Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior (Alno-Padion, Alnion incanae, Salicion albae)* is a is periodically inundated habitat by the annual rise of river levels (NPWS, 2019). The habitat is known to occur within the floodplains of Lough Leane, at Cloghreen Pool

Qualifying Interests *indicates a priority habitat	Closest Proximity	Conservation Objective	Attribute	Target	Potential for Adverse Effects
Padion, Alnion incanae, Salicion albae) [91E0]	albae) have been mapped in detail for the SAC with the closest area of habitat located approximately 50km north-east of the proposed development site.	with Alnus glutinosa and Fraxinus excelsior (Alno-Padion, Alnion incanae, Salicion albae)* in Killarney National Park, Macgillycuddy's Reeks and Caragh River Catchment SAC		170.84ha, as per the locations noted in the conservation objectives document	Wood, Carrigafreghane Wood and Bellview Wood, which all occur towards the north-eastern boundary of the SAC (ca. 50km north-east of the proposed development site) (NPWS, 2017a). No alluvial forest was recorded within or in proximity to the proposed development site. Considering the lack of connectivity and separation distance there is no risk of the proposed development affecting any of the attributes and targets supporting the favourable conservation status of this habitat in the SAC.
			Habitat distribution	No decline. The mapped woodland locations are shown within the conservation objectives document	
			Woodland size	Area stable or increasing. Where topographically possible, "large" woods at least 25ha in size and “small” woods at least 3ha in size	
			Woodland structure: cover and height	Diverse structure with a relatively closed canopy containing mature trees; subcanopy layer with semimature trees and shrubs; and	

Qualifying Interests *indicates a priority habitat	Closest Proximity	Conservation Objective	Attribute	Target	Potential for Adverse Effects
				well-developed herb layer	
			Woodland structure: community diversity and extent	Maintain diversity and extent of community types	
			Woodland structure: natural regeneration	Seedlings, saplings and pole age-classes occur in adequate proportions to ensure survival of woodland canopy	
			Hydrological regime: flooding depth/height of water table	Appropriate hydrological regime necessary for maintenance of alluvial vegetation	
			Woodland structure: dead wood	At least 30m^3/ha of fallen timber greater than 10cm diameter; 30 snags/ha; both categories should include stems greater than 40cm	

Qualifying Interests *indicates a priority habitat	Closest Proximity	Conservation Objective	Attribute	Target	Potential for Adverse Effects
				diameter (greater than 20cm diameter in the case of alder (*Alnus glutinosa*))	
			Woodland structure: veteran trees	No decline	
			Woodland structure: indicators of local distinctiveness	No decline	
			Vegetation composition: native tree cover	No decline. Native tree cover not less than 95%	
			Vegetation composition: typical species	A variety of typical native species present, depending on woodland type, including alder (*Alnus glutinosa*), willows (*Salix* spp.), oak (*Quercus* spp.),	

Qualifying Interests *indicates a priority habitat	Closest Proximity	Conservation Objective	Attribute	Target	Potential for Adverse Effects
				ash (*Fraxinus excelsior*) and birch (*Betula pubescens*)	
			Vegetation composition: negative indicator species	Negative indicator species, particularly non-native invasive species, absent or under control	
Taxus baccata woods of the British Isles [91J0]	*Taxus baccata* woods of the British Isles have been mapped in detail for the SAC, with the nearest area of the habitat located over 40km from the proposed development site (NPWS, 2017a).	To restore the favourable conservation condition of *Taxus baccata* woods of the British Isles* in Killarney National Park, Macgillycuddy's Reeks and Caragh River Catchment SAC	Habitat area	Area stable or increasing, subject to natural processes, with a minimum area of 73.46ha, as per the location shown in the conservation objectives document	*Taxus baccata* woods of the British Isles is a terrestrial habitat (NPWS, 2019) and was not recorded within the proposed development site boundary during surveys. Due to the lack of connectivity and separation distance, the proposed development poses no risk of affecting any of the attributes and targets supporting the favourable conservation status of this habitat in the SAC.
			Habitat distribution	No decline. The mapped woodland locations are shown within the conservation objectives document	

Qualifying Interests *indicates a priority habitat	Closest Proximity	Conservation Objective	Attribute	Target	Potential for Adverse Effects
			Woodland size	Area stable or increasing	
			Woodland structure: cover and height	Diverse structure with a relatively closed canopy containing mature trees; subcanopy layer with semimature trees and shrubs; and herb and bryophyte layer	
			Woodland structure: community diversity and extent	Maintain diversity and extent of community types	
			Woodland structure: natural regeneration	Seedlings, saplings and pole age-classes occur in adequate proportions to ensure survival of woodland canopy	
			Woodland structure: dead wood	At least 30m^3/ha of fallen timber greater than 10cm diameter; 30	

Qualifying Interests *indicates a priority habitat	Closest Proximity	Conservation Objective	Attribute	Target	Potential for Adverse Effects
				snags/ha; both categories should include stems greater than 40cm diameter	
			Woodland structure: veteran trees	No decline	
			Woodland structure: indicators of local distinctiveness	No decline	
			Vegetation composition: native tree cover	No decline. Native tree cover not less than 95%	
			Vegetation composition: typical species	A variety of typical native species present, including yew (*Taxus baccata*) and ash (*Fraxinus excelsior*)	
			Vegetation composition:	Negative indicator species,	

Qualifying Interests *indicates a priority habitat	Closest Proximity	Conservation Objective	Attribute	Target	Potential for Adverse Effects
			negative indicator species	particularly non-native invasive species, absent or under control	
Kerry Slug (*Geomalacus maculosusl)* [1024]	The recorded distribution of Kerry Slug has been mapped across the SAC, using 1 km grid squares (NPWS, 2017a). The nearest record is approximately 7km from the proposed development site.	To maintain the favourable conservation condition of Kerry Slug in Killarney National Park, Macgillycuddy's Reeks and Caragh River Catchment SAC	Distribution: occupied 1km grid squares	Number of occupied 1km grid squares at least stable, subject to natural processes, as per the locations shown within the conservation objectives document	The closest known record of Kerry slug within the SAC is located approximately 7km from the proposed development site. Considering the distance there is no potential for impacts to the species. In addition, the Kerry slug survey undertaken at the proposed development site did not identify any specimens. In fact, the habitat within the proposed development site was assessed as being unsuitable to support the protected species. The proposed development poses no risk of affecting any of the attributes and targets supporting the favourable conservation status of this species in the SAC.
			Habitat extent: area of heath/bog with sandstone outcrops	Stable or increasing, subject to natural processes	
			Habitat extent: woodland area	Stable or increasing, subject to natural processes	
			Habitat quality: woodland	Proportion of sessile oak (*Quercus petraea*)	

Qualifying Interests *indicates a priority habitat	Closest Proximity	Conservation Objective	Attribute	Target	Potential for Adverse Effects
				in canopy at least stable	
			Habitat quality: non-native invasive species	Rhododendron (*Rhododendron ponticum*) in woodland and wet heath/blanket bog absent or under control	
Freshwater Pearl Mussel *Margaritifera margaritifera* [1029]	Suitable habitat and the distribution of the Caragh, Currane and Gearhameen freshwater pearl mussel populations is mapped within the SAC (NPWS, 2017a), and all occur upstream of within separate catchments to the proposed development site.	To restore the favourable conservation condition of Freshwater Pearl Mussel in Killarney National Park, Macgillycuddy's Reeks and Caragh River Catchment SAC	Distribution	Locations shown within the conservation objectives document. Note that the distribution target lengths include the perimeters of lakes in each catchment	Populations of freshwater pearl mussel are known to occur in the Caragh, Currane, and Gearhameen catchments (NPWS, 2017a). The above-mentioned catchments occur upstream of or within separate catchments to the proposed development site. During an aquatic snorkelling survey carried out in the Currane River in proximity to the Currane River Bridge, no freshwater pearl mussels were recorded, and the river was assessed as being unsuitable for the protected mollusc (Williams, 2017). There is no potential for the proposed development to result in impacts to the SAC populations thus there is no potential for adverse effects.
			Distribution: Caragh	Maintain Caragh distribution at 35.06km	The Caragh population occurs in a separate catchment (Laune-Maine-Dingle Bay WFD Catchment) to the proposed development site (Dunmanus-Bantry-Kenmare WFD Catchment). There is no potential for the proposed development to result in impacts to this population. There is no potential for adverse effects.

Qualifying Interests *indicates a priority habitat	Closest Proximity	Conservation Objective	Attribute	Target	Potential for Adverse Effects
			Distribution: Currane	Maintain Currane distribution at 14.90km	The Currane population is known to occur in the Cummeragh River and in the Isknagahiny Lough Stream which both occur upstream of the proposed development. Considering the freshwater pearl mussel population is located upstream the proposed development, there is no potential for the works to result in impacts to the qualifying interest. There is no potential for adverse effects.
			Distribution: Gearhameen	Maintain Gearhameen distribution at 4.45km	The Gearhameen population occurs in a separate catchment (Laune-Maine-Dingle Bay WFD Catchment) to the proposed development site (Dunmanus-Bantry-Kenmare WFD Catchment). There is no potential for the proposed development to result in impacts to this population. There is no potential for adverse effects.
			Population size	Restore populations to at least: 2.8 million adult mussels in the Caragh, 100,000 in the Currane and 100,000 in the Gearhameen	The Currane population is located upstream of the proposed development site, there no potential for impacts to the current population size and structure. There is no potential for adverse effects.
			Population structure: recruitment	Restore to at least 20% of each population no more than 65mm in length; and at least 5% of each	

Qualifying Interests *indicates a priority habitat	Closest Proximity	Conservation Objective	Attribute	Target	Potential for Adverse Effects
				population no more than 30mm in length	
			Population structure: adult mortality	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	
			Suitable habitat: extent	See targets below and locations shown in the conservation objectives document. Note that the suitable habitat target lengths include the perimeters of lakes in each catchment	The Caragh and Gearhameen populations occur in separate catchments (Laune-Maine-Dingle Bay WFD Catchment) to the proposed development (Laune-Maine-Dingle Bay WFD Catchment). There is no potential for impacts to existing suitable habitat.
			Suitable habitat: extent - Caragh	Restore suitable habitat in more than 33.18km in the Caragh and	

Qualifying Interests *indicates a priority habitat	Closest Proximity	Conservation Objective	Attribute	Target	Potential for Adverse Effects
				any additional stretches necessary for salmonid spawning	
			Suitable habitat: extent - Gearhameen	Restore suitable habitat in more than 4.45km in the Gearhameen and any additional stretches necessary for salmonid spawning	
			Suitable habitat: extent - Currane	Restore suitable habitat in more than 6.86km in the Currane and any additional stretches necessary for salmonid spawning	The Currane and Gearhameen population occur upstream of the proposed development. There is no potential for impacts to the suitable habitat located within the catchment. There is no potential for adverse effects.
			Water quality: macroinvertebrate and phytobenthos (diatoms)	Restore water quality - macroinvertebrates: EQR greater than 0.90 (Q4-5 or Q5);	

Qualifying Interests *indicates a priority habitat	Closest Proximity	Conservation Objective	Attribute	Target	Potential for Adverse Effects
				phytobenthos: EQR greater than 0.93	
			Substratum quality: filamentous algae (macroalgae); macrophytes (rooted higher plants)	Restore substratum quality - filamentous algae: absent or trace (less than 5%); macrophytes: absent or trace (less than 5%)	
			Substratum quality: sediment	Restore substratum quality - stable cobble and gravel substrate with very little fine material; no artificially elevated levels of fine sediment	
			Substratum quality: oxygen availability	Restore to no more than 20% decline from water column to 5cm depth in substrate	

Qualifying Interests *indicates a priority habitat	Closest Proximity	Conservation Objective	Attribute	Target	Potential for Adverse Effects
			Hydrological regime: flow variability	Restore appropriate hydrological regime	The proposed development will not result in the change in the existing hydrological regime of the Currane River. There is no potential for adverse effects.
			Host fish	Maintain sufficient juvenile salmonids to host glochidial larvae	The proposed development works have the potential to negatively impact Atlantic salmon, which migrate through the Currane River upstream to spawning grounds. Impacts to the host fish would indirectly impact freshwater pearl mussel. A decrease in juvenile salmonids to host glochidial larvae would **constitute an adverse effect on the integrity of the site.**
			Fringing habitat: area and condition	Maintain the area and condition of fringing habitats necessary to support the population	The proposed development will result in minor instream works on the northern bank of the Currane River which will result in the short-term loss of ca. 2m^2 of fringing habitat at this location to facilitate a temporary works area. The section of the Currane River at the proposed development site was identified as having no suitable habitat to support freshwater pearl mussel (Williams, 2017). The short-term loss of this habitat will there not result in any impacts to the existing pearl mussel populations. There is therefore no potential for adverse effects on the integrity of the site.
Marsh Fritillary *Euphydryas aurinia* [1065]	Marsh Fritillary *Euphydryas aurinia* have been mapped in detail for the SAC	To restore the favourable conservation condition of	Distribution: occupied 1km grid squares	No decline, subject to natural processes	During field surveys, no marsh fritillary or suitable habitat to support same were recorded within the proposed development site. A review of the site's Conservation Objectives indicates that one colony of marsh fritillary is

Qualifying Interests *indicates a priority habitat	Closest Proximity	Conservation Objective	Attribute	Target	Potential for Adverse Effects
	with the nearest record recorded over 50km from the proposed development site (NPWS, 2017a).	Marsh Fritillary in Killarney National Park, Macgillycuddy's Reeks and Caragh River Catchment SAC	Proof of breeding: larval webs	Proof of breeding, confirmed by detection of webs	known to occur in grid square V9586, which is located over 50km from the proposed development site (NPWS, 2017a). Considering the above, there is no potential for the proposed development to affect any of the attributes and targets supporting the favourable conservation status of this species in the SAC.
			Potential habitat: area	Area of potential habitat stable or increasing, subject to natural processes	
Sea Lamprey *Petromyzon marinus* [1095]	Due to lack of distribution data, the precautionary approach is used which assumes that this species is present throughout the catchment.	To maintain the favourable conservation condition of Sea Lamprey in Killarney National Park, Macgillycuddy's Reeks and Caragh River Catchment SAC	Distribution: extent of anadromy	Greater than 75% of main stem length of rivers accessible from estuary	There is potential that sea lamprey may occur within the Currane River. The proposed development has the potential to result in a degradation of water quality and sedimentation of the Currane River. Sea lamprey are known to be sensitive to pollution and require clean spawning gravel and nursery silts (Maitland, 2003). A minor decrease in suitable spawning and juvenile habitat within the SAC and a decrease in the population structure **would constitute an adverse effect on the integrity of the site**.
			Population structure of juveniles	At least three age/size groups present	
			Juvenile density in fine sediment	Juvenile density at least 1/m²	
			Extent and distribution of spawning habitat	No decline in extent and distribution of spawning beds	
			Availability of juvenile habitat	More than 10% of sample sites positive	

Qualifying Interests *indicates a priority habitat	Closest Proximity	Conservation Objective	Attribute	Target	Potential for Adverse Effects
Brook Lamprey ***Lampetra planeri*** **[1096]**	Due to lack of distribution data, the precautionary approach is used which assumes that this species is present throughout the catchment.	To maintain the favourable conservation condition of Brook Lamprey in Killarney National Park, Macgillycuddy's Reeks and Caragh River Catchment SAC	Distribution	Access to all water courses down to first order streams	Minor instream works will be undertaken along the northern bank of the Currane River, which will likely require a works area of approximately 2m^2. These works will be temporary, however, and will not result in a complete barrier to lamprey migration within the Currane River. There is no potential for adverse effects.
			Population structure of juveniles	At least three age/size groups of brook/river lamprey present	There is potential that Brook lamprey may occur within the Currane River. The Currane River is considered an important migration route for diadromous species, moving in and out of the catchment. The proposed development has the potential to result in a degradation of water quality within the watercourse, which can negatively impact this QI species and degrade suitable spawning habitat. Both sediment and pollution can have major impacts on lamprey by smothering both spawning gravels and nursey silts (Maitland, 2003). A decrease in suitable spawning and juvenile habitat within the SAC and a decrease in the population structure **would constitute an adverse effect on the integrity of the site**.
			Juvenile density in fine sediment	Mean catchment juvenile density of brook/river lamprey at least 5/m^2	
			Extent and distribution of spawning habitat	No decline in extent and distribution of spawning beds	
			Availability of juvenile habitat	More than 50% of sample sites positive	
River Lamprey ***Lampetra fluviatile*** **[1099]**	Due to lack of distribution data, the precautionary approach is used which assumes that	To maintain the favourable conservation condition of River Lamprey	Distribution	Access to all water courses down to first order streams	Minor instream works will be undertaken along the northern bank of the Currane River which will likely require a works area of approximately 2m^2. These construction works will be temporary, however, and will not result in complete barrier of the Currane River to

Qualifying Interests *indicates a priority habitat	Closest Proximity	Conservation Objective	Attribute	Target	Potential for Adverse Effects
	this species is present throughout the catchment.	in Killarney National Park, Macgillycuddy's Reeks and Caragh River Catchment SAC			lamprey migration. There is no potential for adverse effects.
			Population structure of juveniles	At least three age/size groups of river/brook lamprey present	There is potential that river lamprey may occur within the Currane River. The Currane River is considered an important migration route for anadromous species moving in and out of the catchment. The proposed development has the potential to result in a degradation of water quality within the watercourse. A degradation in water quality can negatively impact the species and degrade suitable spawning habitat. Both sediment and pollution can have major impacts on lamprey by smothering both spawning gravels and nursey silts (Maitland, 2003). A decrease in suitable spawning and juvenile habitat within the SAC and a decrease in the population structure **would constitute an adverse effect on the integrity of the site**.
			Juvenile density in fine sediment	Mean catchment juvenile density of river/brook lamprey at least 5/m²	
			Extent and distribution of spawning habitat	No decline in extent and distribution of spawning beds	
			Availability of juvenile habitat	More than 50% of sample sites positive	
Lesser Horseshoe Bat *Rhinolophus hipposideros* [1303]	Known lesser horseshoe roost sites have been mapped within the Conservation Objectives Document, which indicates that the closest known roost is located approximately 17km	To maintain the favourable conservation condition of Lesser Horseshoe Bat in Killarney National Park, Macgillycuddy's Reeks and	Population per roost	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	Based on the distribution data illustrated in the site's Conservation Objectives (NPWS, 2017a) there are no known roosts within the immediate vicinity of the proposed development site. The closest known roost is located approximately 17km east. The foraging range of lesser horseshoe bat is 2.5km (NPWS, 2018). Considering the distance between the closest roost and the proposed development site, there is no potential for the disturbance of roosts within the SAC.

Qualifying Interests *indicates a priority habitat	Closest Proximity	Conservation Objective	Attribute	Target	Potential for Adverse Effects
	east of the proposed development site (NPWS, 2017a).	Caragh River Catchment SAC		summer for Roost ID 296; minimum number of 218 in summer for Roost ID 615, as per locations noted within conservation objectives document	During the bat survey which included a visual roost assessment of the Currane River Bridge. No suitable roost habitat for lesser horseshoe bats was identified within the existing bridge structure . The proposed development will not result in a loss of suitable foraging / commuting habitat for the species. There is no potential for impacts. Considering the above, there is no potential for the proposed development to affect any of the attributes and targets supporting the favourable conservation status of this species in the SAC.
			Winter roosts	No decline	
			Summer roosts	No decline	
			Number of auxiliary roosts	No decline	
			Extent of potential foraging habitat	No significant decline	
			Linear features	No significant loss, within 2.5km of qualifying roosts, as per locations noted within conservation	

Qualifying Interests *indicates a priority habitat	Closest Proximity	Conservation Objective	Attribute	Target	Potential for Adverse Effects
				objectives document	
			Light pollution	No significant increase in artificial light intensity adjacent to named roosts or along commuting routes within 2.5km of those roosts. See map 10	
Killarney Fern *Trichomanes speciosum* [1421]	The Killarney fern have not been mapped in detail in the SAC and thus the location of the qualifying interest is unknown.	To maintain the favourable conservation condition of Killarney Fern in Killarney National Park, Macgillycuddy's Reeks and Caragh River Catchment SAC	Distribution	No loss in geographical spread of populations, subject to natural processes	The Killarney fern occupies damp, shady and humid habitats, such as caves, cliffs, crevices in woodland and on the floor of damp woodlands (Ni Dhuill, *et al.* 2015). During the field surveys, the qualifying interest, or suitable habitat to support the species was not recorded within the proposed development site. Considering the above, there is no potential for the proposed development to affect any of the attributes and targets supporting the favourable conservation status of this species in the SAC.
			Number of populations	No decline, subject to natural processes	
			Number of colonies	No decline, subject to natural processes	
			Population: life-cycle stage	Maintain life-cycle stage composition of populations,	

Qualifying Interests *indicates a priority habitat	Closest Proximity	Conservation Objective	Attribute	Target	Potential for Adverse Effects
				subject to natural processes	
			Population size: area of occupancy	No decline, subject to natural processes	
			Population size: living sporophyte fronds	No decline, subject to natural processes	
			Population structure: young and unfurling fronds	Young (not fully expanded) and/or unfurling (crozier) fronds present in populations previously observed to have these, subject to natural processes	
			Population structure: fertile fronds	Fertile fronds present in populations previously observed to have these, subject to natural processes	
			Population structure: juvenile	No decline, subject to natural processes	

Qualifying Interests *indicates a priority habitat	Closest Proximity	Conservation Objective	Attribute	Target	Potential for Adverse Effects
			sporophyte fronds emerging from gametophytes		
			Habitat extent	No loss of suitable habitat, subject to natural processes	
			Hydrological conditions: wet/damp microhabitats	Maintain hydrological conditions at the locations of known populations - visible water source, with dripping or seeping water present and/or substrate wet/damp to touch, subject to natural processes	
			Hydrological conditions: relative humidity	Maintain relative humidity levels at known colonies at not less than 80%,	

Qualifying Interests *indicates a priority habitat	Closest Proximity	Conservation Objective	Attribute	Target	Potential for Adverse Effects
				subject to natural processes	
			Hydrological conditions: desiccated fronds	No increase, subject to natural processes	
			Light levels: shading	At least 4 for woodland sporophyte-only and mixed colonies; at least 5 for open upland sporophyteonly and mixed colonies; at least 6 for gametophyteonly colonies, subject to natural processes	
			Woodland canopy cover	No loss of woodland canopy at, or in the vicinity of, the locations of known populations and canopy cover here maintained at	

Qualifying Interests *indicates a priority habitat	Closest Proximity	Conservation Objective	Attribute	Target	Potential for Adverse Effects
				more than 33%, subject to natural processes	
			Invasive species	Maintain absence of invasive non-native and vigorous native plant species at the locations of known populations or, if present, maintain vegetation cover of these at less than 10%, considering the habitat requirements of *T. speciosum*	
Slender Naiad *Najas flexilis*	The Conservation Objective Document indicates that the closest record of slender naiad is located approximately 30km from the proposed development site (NPWS, 2017a).	To maintain the favourable conservation condition of Slender Naiad in Killarney National Park, Macgillycuddy's Reeks and Caragh River	Population extent	No change to the spatial extent of *Najas flexilis* within the lakes, subject to natural processes. See conservation objectives document for known locations	The distribution of slender naiad is documented within the site Conservation Objectives (NPWS, 2017a). The species is known to occur in Loughs Acoose, Caragh, Leane, the Upper Lake and the Long Range. There is no hydrological connectivity between the proposed development site and the abovementioned lakes. The qualifying interest was not recorded within the proposed development site. The qualifying interest is a submerged macrophyte of freshwater lakes (NPWS, 2017b) and therefore, it is not likely to be present within the

Qualifying Interests *indicates a priority habitat	Closest Proximity	Conservation Objective	Attribute	Target	Potential for Adverse Effects
		Catchment SAC	Population depth	No change to the depth range of *Najas flexilis* within the lakes, subject to natural processes	proposed development site which is subject to tidal influence. Considering the above there is no potential for the proposed development to affect any of the attributes and targets supporting the favourable conservation status of this species in the SAC.
			Population viability	No decline in plant fitness, subject to natural processes	
			Population abundance	No change to the cover abundance of *Najas flexilis*, subject to natural processes	
			Species distribution	No decline, subject to natural processes	
			Habitat extent	No decline, subject to natural processes	
			Hydrological regime: water level fluctuations	Maintain appropriate natural hydrological regime necessary to support the	

Qualifying Interests *indicates a priority habitat	Closest Proximity	Conservation Objective	Attribute	Target	Potential for Adverse Effects
				habitat for the species	
			Lake substratum quality	Maintain appropriate substratum type, extent and chemistry to support the populations of the species	
			Water quality	Maintain/restore appropriate water quality to support the populations of the species	
			Acidification status	Maintain appropriate water and sediment pH, alkalinity and cation concentrations to support the populations of *Najas flexilis*, subject to natural processes	
			Water colour	Maintain appropriate water	

Qualifying Interests *indicates a priority habitat	Closest Proximity	Conservation Objective	Attribute	Target	Potential for Adverse Effects
				colour to support the populations of *Najas flexilis*	
			Associated species	Maintain appropriate associated species and vegetation communities to support the populations of *Najas flexilis*	
			Fringing habitat: area and condition	Maintain the area and condition of fringing habitats necessary to support the populations of *Najas flexilis*	
Killarney Shad *Alosa fallax killarnensi* [5046]	The Killarney Shad has only been identified within Lough Leane in Killarney, approximately 50km from the proposed development site proposed	To restore the favourable conservation condition of Killarney shad in Killarney National Park, Macgillacuddy's Reeks and Caragh River	Distribution	Widespread recording during appropriate fish sampling operations (e.g., netting, hydroacoustics); access into inflowing and outflowing rivers for potential	The Killarney shad is confined to Lough Leane (NPWS, 2017a), which is not hydrologically connected to the proposed development site. Considering the above there is no potential for the proposed development to affect any of the attributes and targets supporting the favourable conservation status of this species in the SAC.

Qualifying Interests *indicates a priority habitat	Closest Proximity	Conservation Objective	Attribute	Target	Potential for Adverse Effects
	development site (NPWS, 2017a).	Catchment SAC		spawning migrations	
			Population structure: age classes	Full range of age classes present	
			Extent and distribution of spawning habitat	No decline in extent and distribution of spawning habitats	
			Water quality: oxygen levels	No lower than 5mg/l	
			Spawning habitat quality: filamentous algae; macrophytes; sediment	Maintain stable gravel substrate with very little fine material, free of filamentous algal (macroalgae) growth and macrophyte (rooted higher plants) growth	

8.0 SUMMARY OF QUALIFYING INTERESTS WITH POTENTIAL FOR ADVERSE EFFECTS

Taking into consideration the precautionary principle, there is a potential for adverse effects on the integrity of one European site as a result of the proposed development via a degradation in water quality and disturbance effects during the construction and operational phases of the proposed development.

The assessment of the potential for adverse effects on the qualifying interests of the Killarney National Park, Macgillycuddy's Reeks and Caragh River Catchment SAC, using the source-receptor-pathway model, identified seven qualifying interests at risk of potential adverse effects associated with the proposed development, in the absence of any mitigation measures.

These qualifying interests are water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation, otter, sea lamprey, river lamprey, Brook lamprey, Atlantic salmon and freshwater pearl mussel.

9.0 MITIGATION MEASURES

For the purposes of Article 6(3) of the Habitats Directive, the following mitigation measures are prescribed hereunder to avoid and/or reduce the significance of the potential impacts from the proposed development (Section 6.0) and prevent the occurrence of likely significant adverse effects on European sites.

The mitigation measures are described with respect to:

- How the measures will avoid/reduce the adverse impacts on the site;
- The degree of confidence in their likely success;
- The timescale, relative to the project, when they will be implemented and secured; and
- How and when the measures will be monitored.

9.1 CONSTRUCTION PHASE MITIGATION

Mitigation measures which will be implemented during the construction phase are detailed hereunder.

9.1.1 *Ecological Clerk of works and Construction Environmental Management Plan*

A suitably qualified Ecological Clerk of Works (ECoW) will be appointed by the Contractor. The ECoW will be present for the duration of the construction phase programme and will ensure that all mitigation measures outlined within this report are implemented during the proposed construction works.

A Construction Environmental Management Plan (CEMP) will be prepared and will be implemented during the construction phase of the development. All mitigation measures outlined within the NIS will be incorporated within the CEMP.

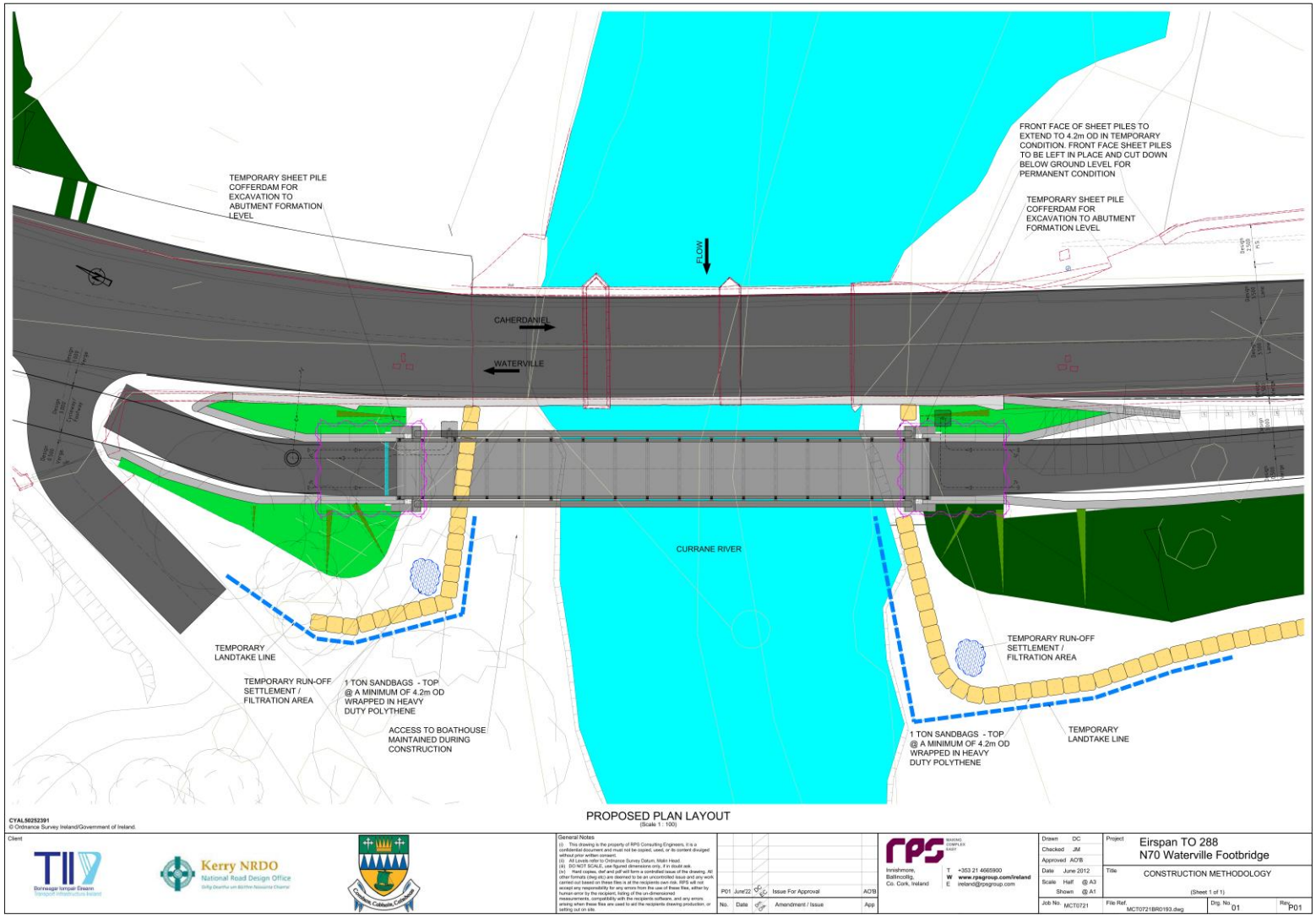
9.1.2 *Bridge Installation Mitigation Measures*

The following mitigation measures will be implemented during the construction of the Cycleway / Footway bridge and foundations:

- Prior to the construction works commencing, silt fences will be installed, by hand, along both banks of the Currane River. Once the silt fences are installed, sandbags, typically 1m high x 1m wide and wrapped in heavy gauge polythene will be installed creating cofferdam bunding as per Figure 9-1. The sandbags will be lifted into place using a mechanical excavator. A sheet of heavy gauge polythene will also be laid on the ground. The top of the sandbag cofferdam shall be at a minimum of 4.2m OD (1% AEP flood level) to prevent flood water from entering the worksite.
- Sheet pile cofferdams will be installed around the two bridge abutments to ensure there is no runoff from the works area (refer to Figure 9-1 below). The sheet piles will be carefully pushed into the ground using an excavator mounted vibrator. Impact driving of sheet piles will not be permitted. In-situ concrete will be poured into the formwork within the sheet pile excavation to form the abutment base slab.
- A run-off settlement area shall be set up within the sandbag cofferdam (refer to Figure 9-1). This shall consist of a mobile settlement tank with a pump to discharge to a vegetated grassed area (>50m from the river) to act as natural filter. No direct discharge to the river shall be permitted at any time during the works. Terrastop silt fencing shall be placed below where the water is discharged to the grassed area. Any sediment collected by settlement tanks/silt fencing shall be transported off site by a licensed waste operator for appropriate disposal.
- No spoil shall be stockpiled or stored within 50m of the Currane River.

(Blank Page)

Figure 9-1: Bridge Works and Mitigation Measures



9.1.3 *Management of Outfall and Headwall Works*

Two stormwater outfall pipes will be installed as part of the proposed development (refer to and Figure 4-7). One outfall pipe and headwall will be constructed to the north bank of the Currane River adjacent to the existing bridge and the second will include an outfall pipe located south of the existing pumping station discharging into a wetland.

The construction works associated with the installation of the headwall and outfall pipe on the northern bank of the Currane River will be undertaken in the dry and isolated from the river using small sandbags. Although the works area will be predominantly located on the bank of the river, a small area may extend into the river. The works area may therefore require the removal of any water ingress which will be over pumped to a grassy area located a minimum of 50m from the river.

Prior to the removal of any water, the isolated area will be inspected by the ECoW for the presence of fish and lamprey which will be translocated downstream if found. In addition, all excavated material from this area will be checked for the presence of lamprey.

Once a dry works area has been established minor excavation works will be undertaken either by hand or with a single tracked excavator. No machinery will be allowed into the watercourse. A pre-cast headwall will be used and brought to site and lifted into place. No onsite batching of concrete will be undertaken. Once the headwall has been installed the sandbag cofferdam will be removed.

All works associated the installation of the headwall on the northern bank of the Currane River will be undertaken during the period July-September, outside the salmon spawning season. Consultation with Inland Fisheries Ireland (IFI) has taken place. Further consultation will be carried out prior to works commencing and a detailed method statement outlining the proposed works and timing of works will be agreed as part of the implementation of the mitigation contained within the NIS.

The southern outfall pipe will be constructed on land. Silt fences will be installed around the perimeter of the excavation works.

9.1.4 *Mitigation Measures to ensure the Protection of the Currane River*

To avoid the release of construction pollution/contaminates and silt into the Currane River, the following procedures will be implemented:

- An emergency plan for the construction phase of the proposed development to deal with accidental spillages will be drawn up, which all site personnel must adhere to and receive training in.
- All machinery will be regularly maintained and checked for leaks. Any refuelling of construction machinery/vehicles will not be undertaken within 50m of any surface water feature. If it is not possible to bring machinery to the refuelling point, fuel will be delivered in a double-skinned mobile fuel bowser. A drip tray will be used beneath the fill point during refuelling operations to contain any accidental spillages that may occur. No refuelling will be carried out within 50m of the Currane River.
- Excavation works will not be carried out during or following heavy rainfall (i.e. if there is a yellow weather warning in place or 5mm in a 1-hour period). Excavations will be covered during high rainfall to avoid the creation of surface water with high concentrations of suspended solids that would require dewatering.

- All silt fences will be positioned to allow an appropriate working area but will not be placed within areas prone to flood. A permeable fabric (Hy-Tex Terraston Premium silt fence, or similar) will be used for the silt fences. The silt fencing will be erected as per the manufacturer's guidelines and will be installed under the ECoW supervision and will be maintained until all ground disturbance has ceased and vegetation re-established. Once installed, the silt fence will be inspected regularly during construction and more frequently during heavy rainfall events.
- The concrete works associated with the foundations of the bridge will be scheduled during dry weather only. Any waste concrete will be taken off-site to a licenced waste facility.
- No on-site batching will be permitted at the proposed development area. All concrete will be transported to the site by truck.
- Wash-down of concrete contaminated equipment will not take place within the proposed development site. All washdown of vehicles/equipment will be undertaken off-site, in a designated area, separated by at least 50m of any surface water feature. All concrete waste will be managed in accordance with waste legislation.
- No water will be abstracted from the Currane River. Any water requirements will be obtained from the existing water network.
- On completion of the construction phase of the proposed development, all apparatus, plant, tools, offices, sheds, surplus materials, rubbish and temporary erections or works of any kind will be removed from the site.
- The construction compound and welfare facility will be located at an existing setback area adjacent to the Hogs Head Golf Course at Ch 640m approximately. The location of the compound is set back from any watercourse.
- The temporary welfare facilities will not have any discharge to ground or surface waters and will be located a minimum of 50m from the Currane River. All wastewater will be collected in a large tank and will be emptied as required by a licenced waste collector according to the manufacturer's guidelines.

9.1.5 *Pre-construction Otter Surveys*

No otter holts or resting/breeding sites of any protected species was recorded within the proposed development site. A pre-construction otter survey will be undertaken by an appropriately experienced ecologist along the Currane River prior to the commencement of any works. This will be carried out to identify any changes in otter activity or the establishment of any new holts. The pre-construction survey should be conducted no more than 10—12 months in advance of the construction works, as per the NRA (2008b) guidelines. If any new otter holts are identified within the ZoI of the proposed development, a derogation license will be sought from NPWS.

9.1.6 *Disturbance /Displacement Mitigation Measures*

No otter holts or resting/breeding sites of any protected species was recorded within the proposed development site. There is potential, however, for the disturbance (noise emissions and visual disturbance) of designated QIs (e.g., otter), which may forage or commute within the area, at least on occasion.

To reduce noise and visual disturbance, construction noise will be kept to a minimum in accordance with British Standard BS 5228 1:2009 *'Code of Practice for Noise and Vibration Control on Construction and Open Sites –Part 1: Noise'*. Noise levels will be monitored using standard noise meters.

The night-time work associated with the installation of the pedestrian / cycle bridge will extend over two nights. Considering the temporary nature of these works, which will be undertaken adjacent to a road with existing elevated noise levels, the disturbance is likely to be negligible.

To reduce disturbance, all temporary lighting associated with the construction works will be placed strategically by the Contractor following consultation with the appointed ECoW. This will ensure that illumination beyond the works area is controlled. Lighting will be cowled and directional to reduce significant light splay. No lighting will be directed towards the Currane River.

No impact piling will be permitted during the construction works. The sheet piles will instead be gently pushed into the ground using an excavator or a machine mounted vibrator.

9.1.7 *Management of Habitats*

9.1.7.1 Removal of Vegetation

The proposed construction works area will be clearly demarcated to ensure no works or vegetation removal occurs outside the designated works area. Minor construction works (e.g., the installation of the outfall pipe and headwall on the northern bank of the Currane River) will be undertaken within the SAC site boundary. Following the completion of the works the disturbed lands will be fully reinstated. No machinery will be allowed within the watercourse.

In the first instances, breeding bird habitats (e.g., hedgerows, treelines, scrub and wet grassland) will not be removed, cleared or trimmed between the 1st of March and 31st August, to avoid impacts on nesting birds, which are protected under the Irish Wildlife Acts. In the event however that the construction programme does not allow this time restriction to be observed, then these areas will be inspected by a qualified ecologist for the presence of breeding birds prior to commencement of construction works. Where any nests are found, the appointed ECoW will provide recommendations as to whether a licence is required for vegetation removal and will detail the process for obtaining such derogation licence from the NPWS.

9.1.7.2 Management of Invasive Species

Japanese knotweed was recorded in two locations within the proposed development site boundary and at one location outside the proposed development site. Giant Rhubarb and Himalayan Honeysuckle were also identified within the site boundary. An Invasive Species Management Plan (ISMP) has been prepared and is included in Appendix 4. The ISMP Plan has been prepared in line with Transport Infrastructure Ireland (TII) guidelines for invasive species (TII, 2020a) and (TII, 2010). The ISMP Plan includes control measures and will guarantee the complete eradication of the invasive species. No construction works will commence until there is no presence of invasive species within the works areas. The works area will include a 7m buffer from the Planning Application site boundary to account for the horizontal distance which Japanese knotweed roots can extend (TII, 2020a).

In addition, the appointed Contractor will ensure general biosecurity measures are implemented throughout the construction phase of the proposed development to ensure the introduction and translocation of new invasive species is prevented. The following mitigation measures are prescribed to control the translocation or spread of invasive species and/or pathogens:

- All machinery and equipment used during the construction works on arrival to and when leaving the proposed development site, will be thoroughly cleaned and then dried using a high-pressured steam cleaning, with water >65 °C, in addition to the removal of all

vegetation material. Disinfectant, such as a Virkon® Aquatic solution, will be used. The appointed Contractor will establish and clearly delineate a bunded cleaning/washing area which will be located within the construction compound.

- No removed material or run-off will be allowed to enter any water bodies (e.g., drainage ditches) .
- A strict biosecurity demarcation area will be installed by the ECoW within zones where invasive species exist.
- Evidence that all machinery and equipment has been cleaned will be required to be on file for review by the statutory authorities and the appointed ECoW.

9.2 OPERATION PHASE MITIGATION

9.2.1 *Road and Drainage Maintenance*

Maintenance of the road drainage system will be periodically monitored by Kerry County Council to ensure the system is operating sufficiently. Any maintenance vehicles utilised during the operational phase will be regularly maintained and checked to ensure damages leakages are corrected. Any erosion to the road surfaces will also be monitored and managed where required.

9.3 MITIGATION EFFECTIVENESS

The appointed Contractor and ECoW will be responsible for ensuring all mitigation measures listed above, including any additional planning conditions as part of statutory approval, are fully implemented during construction works.

The above listed mitigation measures will be implemented prior to the construction works commencing and/or undertaken throughout the duration of the works and operational phase.

The abovementioned mitigation measures are standard best practise and are proven technologies / methods. These mitigation measures will avoid potential impacts on the receiving environment, thereby ensuring avoidance of adverse effects on the integrity of the Killarney National Park, Macgillycuddy's Reeks and Caragh River Catchments SAC.

The abovementioned surface water mitigation measures will also ensure there is no deterioration of the 'Good' and 'High' status of the Currane River and Ballinskelligs Bay and is compliant with the WFD.

9.4 ANALYSIS OF POTENTIAL IN-COMBINATION EFFECTS

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 be considered in-combination with any other relevant plans or projects in the region. The purpose of this is to identify at this early stage any possible cumulative effects on the Natura 2000 Sites from the

upgrade works, in-combination with other plans and projects. A search of the EIA portal[5] and the Kerry County Council planning portal[6] was therefore undertaken.

9.4.1 *Projects*

Hogs Head Golf Club (Planning Ref.: 16455)

A&M Hogs Head Golf Club Ltd. recently completed the development of a golf club and carpark at Waterville directly adjacent to the N70 road. The existing club house consists of a two-story structure built into the existing ground profile. The proposed development was subject to Appropriate Assessment (AA) (Malachy Walsh and Partners, 2016). The screening for AA report identified five European sites within 15km of the proposed club house; Ballinskelligs Bay and Inny estuary SAC, Killarney National Park, MacGillycuddy's Reek and Caragh River Catchment SAC, Iveragh Peninsula SPA, Kenmare River SAC and Deenish Island and Scariff Island SPA. The screening assessment concluded that the five European sites are not likely to be impacted by the proposed development and there is no potential for likely significant effects on the European sites. There is therefore no potential for the existing recent development of the club house to result in in-combination effects with the proposed road improvement works on any European sites.

Waterville Lake Hotel (Planning Ref.: 16787 & 17481)

A&M Hogs Head Golf Club Ltd. recently completed the redevelopment of the existing Waterville Lake Hotel which included the demolition of an existing three story 100-bedroom hotel, swimming pool building and ancillary structures. A smaller hotel and commercial cottages were constructed in its place. The development is located adjacent to Lough Currane and approximately 370m east of the N70 road. The development was subject to Appropriate Assessment (Malachy Walsh and Partners, 2017). The AA Screening report concluded that the development would have significant effects on the qualifying interests of the Killarney National Park, Macgillycuddy's Reek and Caragh River Catchment SAC due to habitat alterations, disturbance and water quality impacts. The NIS provided further detail on the potential impacts and prescribes mitigation measures during the construction and operational phases of the development that would eliminate the risk of adverse effects on the integrity of the European site. Considering the implementation of the stringent mitigation measures, there is no potential for any in combination effects with the development under appraisal in this report.

Minor Residential Developments

There are several small-scale residential developments / conversions proposed in proximity to the proposed development site. These include planning references 2561084, 22325, 21490, 19474, 19814, 18992, 18660 and 161014. Proposed works associated with the residential developments include extensions, conversions and small-scale demolition. The small residential developments however have no connectivity to any nearby European sites. Considering the small scale and temporary nature of the proposed residential developments, coupled with the lack of connectivity, there is no potential for in-combination effects.

9.4.2 *Plans*

Kerry County Development Plan 2022-2028

[5] https://housinggovie.maps.arcgis.com/apps/webappviewer
[6] https://kerry.maps.arcgis.com/apps/webappviewer/index.html?id=33565bc13600476c8c4bae1eadb8c22d

The proposed development site is located within the Kerry County administrative area. A review of the Kerry County Development Plan 2022-2028 was undertaken. The Plan includes objectives associated with the protection of European Sites and the environment (KCDP 11-1, KCDP 11-10, KCDP 11-15). All new plans and projects proposed within the county must adhere to the above-mentioned policies and objectives. Adherence to the Council's policies and objectives will therefore ensure that all plans and projects proposed will not result in significant effects on biodiversity and European sites and includes the requirement that any future proposed plans or projects to be subject to Screening for Appropriate Assessment and/or Appropriate Assessment to examine and assess their effects on European sites, alone and in-combination with other plans and projects.

Kenmare Municipal District Local Area Plan (2024-2030)

A review of the Kenmare Municipal District Local Area Plan (LAP) was undertaken to inform the in-combination assessment. The LAP similarly includes objectives for the protection of the natural environment and the Natura 2000 network. In preparing the LAP, the Planning Authority determined that the proposed plan will not significantly affect the environment and no adverse effects on integrity of the Natura 2000 sites were considered likely.

10.0 CONCLUSION

Following an analysis and evaluation of the relevant information including, in particular, the nature of the proposed development including mitigation measures, characteristics of the qualifying interests, the potential link between the proposed development and the Killarney National Park, Macgillycuddy's Reeks and Caragh River Catchment SAC, no adverse effect on the integrity of any European sites during development and operation of the proposed improvement works is anticipated alone or in-combination with any other plans or projects.

11.0 REFERENCES

Chanin, P (2003). Monitoring the Otter *Lutra lutra*. Conserving Natura 2000 Rivers Monitoring Series No. 10, English Nature, Peterborough.

CIEEM 2018. Guidelines for Ecological Impact Assessment in the UK and Ireland – Terrestrial, Freshwater, Coastal and Marine (2018).

Collins, J. (2023) Bat Surveys for Professional Ecologists: Good Practice Guidelines (4th edn). The Bat Conservation Trust, London. ISBN-13 978-1-872745-96-1.

Countryside Bird Survey (CBS) (2012). CBS Manual, Guidelines for Countryside Bird Survey Participants.

Cutts, N., Hemingway, K., Spencer, J. (2013). Waterbird Disturbance Mitigation Toolkit Informing Estuarine Planning and Construction Projects.

Department of the Environment, Heritage, and Local Government (DEHLG) (2010). Appropriate Assessment of Plans and Projects in Ireland, Guidance for Planning Authorities.

Environment, Heritage, and Local Government (EHLG) (2010). Threat Response Plan. Kerry Slug *Geomalacus maculosus.*

European Commission (2000) Communication from the Commission on the Precautionary Principle. Office for Official Publications of the European Communities, Luxembourg.

European Commission (2001) Assessment of plans and projects significantly affecting Natura 2000 sites. Methodological guidance on the provisions of Article 6(3) and (4) of the Habitat Directive 92/43/EEC.

European Commission (2006) Nature and biodiversity cases: Ruling of the European Court of Justice. Office for Official Publications of the European Communities, Luxembourg.

European Commission (2013). Interpretation Manual of European Habitats. Eur 28. April 2013.

European Commission (2018) Managing Natura 2000 Sites – The provisions of Article 6 of the 'Habitats Directive' 92/43/EEC. European Commission.

European Commission (2021) Assessment of Plans and Projects in relation to Natura 2000 sites – Methodological guidance on Article 6(3) and (4) of the Habitats Directive 92/43/EEC.

Fossitt, J. A. (2000). A guide to habitats in Ireland. Heritage Council/Chomhairle Oidhreachta.

Inland Fisheries Ireland (2018) Inland Fisheries Ireland Summary Fish Counter Report. IFI/2019/1-4462.

Inland Fisheries Ireland (2020). IFI Consolidated Fish Counter Summary Report. IFI/2021/1/-4540.

Holman, C., Barrowcliffe, R., Birkenshaw, D., Dalton, H., Gray, G., Harker, G., & Vining, L.

(2014). IAQM Guidance on the Assessment of Dust from Demolition and Construction. Institute of Air Quality Management, London.

Maitland PS (2003). *Ecology of the River, Brook and Sea Lamprey*. Conserving Natura 2000 Rivers Ecology Series No. 5. English Nature, Peterborough.

Malachy Walsh and Partners (2016). Screening for Appropriate Assessment. Clubhouse Development at Hogs Head Golf Club, Baslickane, Waterville, Co. Kerry. (Unpublished Report).

Malchy Walsh and Partners (2017). Natura Impact Statement, Hogs Head Lodge and Cottages Development. (Unpublished Report).

Ní Bhroin (2016). Ecological Impact Assessment (EcIA) of the effects of Statutory Arterial Drainage Maintenance Activities on Water Courses of Plain to Montane levels with Aquatic vegetation (Floating River Vegetation). OPW.

Ní Dhúill, E., Smyth, N., Waldren, S. & Lynn, D. (2015) Monitoring methods for the Killarney Fern (Trichomanes speciosum Willd.) in Ireland. Irish Wildlife Manuals, No. 82. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht, Ireland.

NPWS, 2013. Site Synopsis: Killarney National Park, Macgillycuddy's Reeks and Caragh River Catchment SAC. (https://www.npws.ie/sites/default/files/protected-sites/synopsis/SY000365.pdf).

National Roads Authority (NRA) (2008a). Ecological Surveying Techniques for Protected Flora and Fauna during the Planning of National Road Schemes.

National Roads Authority (NRA) (2008b). Guidelines for the Treatment of Otters prior to the Construction of national Road Schemes. National Road Authority, Dublin.

NPWS (2017a) 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 (2017b) Killarney National Park, Macgillycuddy's Reeks and Caragh River Catchment SAC (Site Code 000365). Conservation objectives supporting document – *Najas flexilis* (Willd.) Rostk. & W.L.E Schmidt. Version 1.

NPWS (2018). Conservation Objectives Supporting document – lesser horseshoe bat (*Rhinolophus hipposideros)* Version 1. Conservation Objectives Supporting Document Series. National parks and Wildlife Service, Department of Culture, Heritage and the Gaeltacht, Dublin, Ireland.

NPWS (2019). The Status of EU Protected Habitats and Species in Ireland. Volume 1: Summary Overview. Unpublished NPWS Report.

NS 2 Freshwater Pearl Mussel Sub-Basin Management (2009). Report on Morphological Monitoring and Catchment Walkover Risk Assessments in the Currane catchment.

Office of the Planning Regulator (OPR) (2021) OPR Practice Note PN01 Appropriate Assessment Screening for Development Management.

Phelan, N., Nelson, B. & Lysaght, L., (2021) Ireland's Butterflies Series No. 1: Habitat Management for the Marsh Fritillary. National Biodiversity Data Centre, Waterford.

Smith, G.F., O'Donoghue, P., O'Hora, K., Delaney, E. (2011). *Best Practice Guidance for Habitat Survey and Mapping*. The Heritage Council, Kilkenny.

Transport Infrastructure Ireland (TII) (2010). Guidelines on the Management of Noxious Weeds and Non-Native Invasive Plant Species on National Roads.

Transport Infrastructure Ireland (TII) (2020). The Management of Invasive Alien Plant Species on National Roads – Technical Guidance. GE-ENV-01105.

Williams, L (2017) Waterville N70 Road Improvement Scheme Aquatic Ecological Impact Assessment. (Unpublished Report).

(Blank Page)

Appendix 1 – Proposed Site Location - Provided Separately

(Blank Page)

Appendix 2 – Scheme Drawings - Provided Separately

(Blank Page)

Appendix 3 – Screening for Appropriate Assessment Report

(Blank Page)

Kerry County Council

N70 Waterville to Ballybrack Road Improvement Scheme

Screening for Appropriate Assessment

October 2024

Table of Contents

Contents

Table of Tables

Table of Figures

1.0 INTRODUCTION

This Appropriate Assessment (AA) Screening Report has been prepared for submission to An Bord Pleanála under Section 177AE of the Planning and Development Act, 2000 (as amended) in the context of the preparation of a Natura Impact Statement.

The proposed development is not directly connected with or necessary for the management of any European site and hence the requirements of Article 6(3) of the Habitats Directive and Part XAB of the Planning and Development Act 2000, as amended, in respect of AA are engaged.

1.1 STATEMENT OF AUTHORITY

This AA Screening report has been completed by members of the Ecology Team of TOBIN.

Áine Sands (B.Sc.) is a qualified Senior Ecologist with seven years post-graduate experience in ecology and environmental consultancy. She has predominantly been involved in large public and private infrastructure projects where she has carried out numerous Screenings for Appropriate Assessments, Natura Impact Statements and Ecological Impact Assessments for the proposed developments. Áine has a strong understanding of National and European legislation associated with biodiversity and is cognisant of relevant rulings by the Court of Justice of the European Union (CJEU) associated with Appropriate Assessment. Áine also has experience with undertaking ecology surveys for protected habitats and species.

Joao Martins B.E. (Hons) M.Sc., Senior Ecologist with 13 years' relevant professional experience in freshwater ecology including monitoring of both lotic and lentic systems. Mr Martins has extensive experience of preparation of screenings for Appropriate Assessment (AA), Natura Impact Statements (NIS), Ecological Impact Assessments (EcIA) and Environmental Impact Assessment Reports (EIAR). He additionally has specific field surveys experience of Invasive Alien Plant Species, Bat Activity, Habitats, Mammals, amongst others.

2.0 THE APPROPRIATE ASSESSMENT PROCESS

The AA process is an assessment of the potential for likely significant effects or negative effects of a plan or project, alone and/or in-combination with other plans or projects, on the conservation objectives of a European site(s). The Natura 2000 network is made up of European sites including Special Protection Areas (SPAs), established under the EU Birds Directive (2009/147/EC) (more generally referred to as the 'Birds Directive') and Special Areas of Conservation (SACs), established under the E.U. Habitats Directive (92/43/EEC) (more generally referred to as the 'Habitats Directive'). The Natura 2000 network helps provide for the protection and long-term survival of Europe's most valuable and threatened species and habitats.

2.1 LEGISLATIVE CONTEXT

The European Communities (EC) Habitats Directive 92/43/EEC or "the Habitats Directive" and the Council Directive 2009/147/EC on the conservation of wild birds or "the Birds Directive" have been transposed into Irish law, inter alia, by EC (Birds and Natural Habitats) Regulations 2011 (S.I. No. 477/2011; hereafter referred to as the Birds and Habitats Regulations), the Planning Acts, the Roads Acts and related legislation. The Birds Directive seeks to protect birds of special importance by the designation of SPAs. The Habitats Directive does the same for habitats and other species groups with SACs.

Article 6(3) establishes the requirement for AA:

'Any plan or project not directly connected with or necessary to the management of the [Natura 2000] site but likely to have a significant effect thereon, either individually or in combination with other plans or projects, shall be subjected to appropriate assessment of its implications for the site in view of the site's conservation objectives. In light of the conclusions of the assessment of the implications for the site and subject to the provisions of paragraph 4, the competent national authorities shall agree to the plan or project only after having ascertained that it will not adversely affect the integrity of the site concerned and, if appropriate, after having obtained the opinion of the general public.'

The provisions for Appropriate Assessment are transposed into Irish law by Part XAB of the Planning and Development Act 2010 (as amended).

2.2 GUIDANCE

This report has been prepared having regard to the following legislation, guidance (and relevant case law):

- European Communities (Birds and Natural Habitats) Regulations, 2011 (S.I. No. 477 of 2011).
- Planning & Development Act 2000, as amended including Part XAB.
- Communication from the Commission on the Precautionary Principle. Office for Official Publications of the European Communities, Luxembourg (European Commission [EC] 2000)[1].
- Nature and biodiversity cases: Ruling of the European Court of Justice. Office for Official Publications of the European Communities, Luxembourg (EC, 2006)[2].
- Managing Natura 2000 Sites – The provisions of Article 6 of the 'Habitats Directive' 92/43/EEC. European Commission (EC, 2018)[3].
- Interpretation Manual of European Union Habitats. Version EUR 28. European Commission (EC, 2013)[4].
- Appropriate Assessment of Plans and Projects in Ireland, Guidance for Planning Authorities, Department of the Environment, Heritage and Local Government (DoEHLG, 2010)[5].
- Guidance document on Article 6(4) of the 'Habitats Directive' 92/43/EEC – Clarification of the concepts of: alternative solutions, imperative reasons of overriding public interest, compensatory measures, overall coherence, opinion of the commission. Office for Official Publications of the European Communities, Luxembourg (EC, 2007)[6].

[1] Communication from the Commission on the Precautionary Principle. Office for Official Publications of the European Communities, Luxembourg (European Commission [EC] 2000
[2] Nature and Biodiversity Cases: https://friendsoftheirishenvironment.org/images/EULaw/ecj_rulings_en.pdf
[3] European Commission (2018) https://ec.europa.eu/environment/nature/natura2000/management/docs/art6/Provisions_Art_6_nov_
[4] Interpretation Manual: https://ec.europa.eu/environment/nature/legislation/habitatsdirective/docs/Int_Manual_EU28.pdf
[5] Appropriate Assessment of Plans and Projects: https://www.npws.ie/sites/default/files/publications/pdf/NPWS_2009_AA_Guidance.pdf
[6] Guidance Document on Article 6 (4): https://ec.europa.eu/environment/nature/natura2000/management/docs/art6/guidance_art6_4_en.pdf

- Appropriate Assessment Screening for Development Management. Office of the Planning Regulator (OPR) Practice Note PN01 (OPR, 2021)[7].
- 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, Office for Official Publications of the European Communities, Luxembourg (EC, 2021)[8].

Definitions of conservation status, integrity and significance used in this assessment are defined in accordance with '*Managing Natura 2000 sites: The provisions of Article 6 of the 'Habitats' Directive 92/43/EEC*' (EC, 2018):

- Favourable conservation status (FCS) can only be defined and achieved at the level of the natural range of a species or a habitat type. A broad conservation objective aiming at achieving FCS can therefore only be considered at an appropriate level, such as for example the national, biogeographical or European level. The conservation measures have to correspond to the ecological requirements of the natural habitat types in Annex I and of the species in Annex II present on the site. The ecological requirements of those natural habitat types and species involve all the ecological needs which are deemed necessary to ensure the conservation of the habitat types and species. They can only be defined on a case-by-case basis and using scientific knowledge.
- The integrity of a European site is defined as the coherent sum of the site's ecological structure, function, and ecological processes, across its whole area, which enables it to sustain the habitats, complex of habitats and/or populations of species for which the site is designated.
- Significant effect should be determined in relation to the specific features and environmental conditions of the protected site concerned by the plan or project, taking particular account of the site's conservation objectives and ecological characteristics.

2.3 STAGES INVOLVED IN THE APPROPRIATE ASSESSMENT PROCESS

There are potentially four stages in the AA process; the result of each stage determines the requirement for assessment under the next. Stages 1 and 2 provide for Screening for Appropriate Assessment and Appropriate Assessment for the purposes of Article 6[3] of the Habitats Directive.

Stage 1: Screening / Test of Significance

This process identifies the likely significant effects upon a European site from a proposed project or plan. Its purpose is to determine, on the basis of a preliminary assessment and objective criteria, whether a plan or project which is not directly connected with or necessary to the management of the site as a European site, individually or in-combination with other plans or projects is likely to have a significant effect upon the European site, in view of its conservation objectives. A project may be 'screened-in' if there is a possibility or uncertainty of possible effects upon the European site, requiring a Stage Two AA. If there is no evidence to suggest significant effects due to the proposed plan or development the project is 'screened-out' from further assessment.

[7] Appropriate Assessment Screening for Development Management: 9729-Office-of-the-Planning-Regulator- Appropriate-Assessment-Screening-booklet-15.pdf

Stage 2: Appropriate Assessment

In this stage, consideration is given to ascertain whether the plan or project would adversely affect the integrity of a European site(s), either alone or in- combination with other plans or projects, with respect to the European site's structure and function and its conservation objectives. This stage of the assessment is carried out by the consenting authority and is informed by a Natura Impact Statement (NIS). A NIS is required where there is uncertainty as to whether or not an adverse effect arises, uncertainty of the effect itself, or a potential effect has been defined which requires further procedures/mitigation to remove uncertainty of a defined impact (i.e. significant effects cannot be excluded). Where there are adverse effects, an assessment of the potential mitigation to ameliorate those effects is required. If the assessment results in a negative conclusion, i.e., adverse effects on the integrity of a site cannot be excluded (by design or mitigation) or there is uncertainty as to whether an adverse impact arises, then the process must consider alternatives (Stage 3) or proceed to Stage 4.

3.0 SCREENING FOR APPROPRIATE ASSESSMENT

This report comprises a Screening Assessment of the proposed development. Potential impacts on European sites are considered.

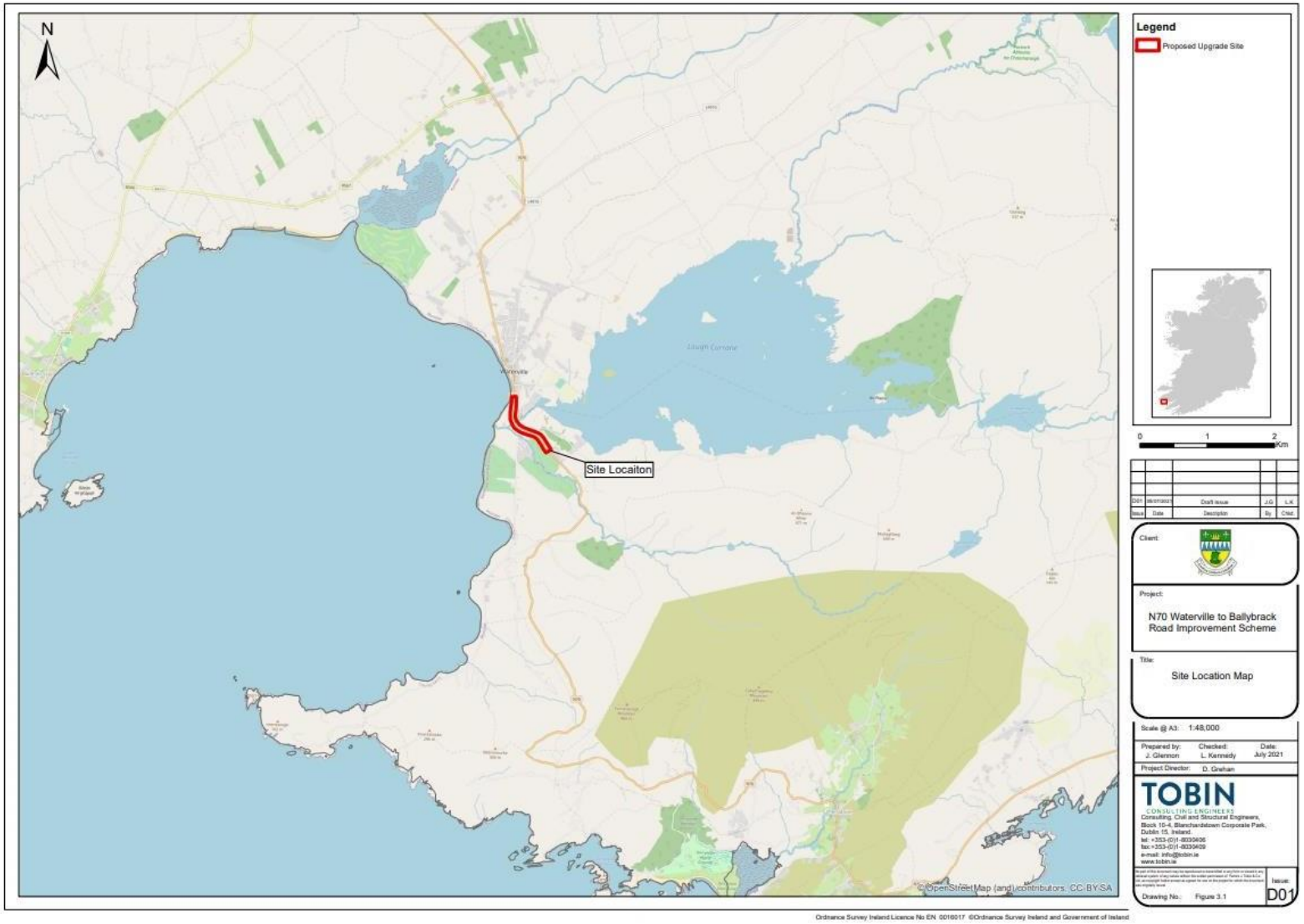
3.1 DESCRIPTION OF THE PROPOSED SCHEME

3.1.1 Site Location and Existing Environment

The proposed development site is located on the N70 National Secondary Road. The proposed development will commence in the townland of Eightercua adjacent to the existing Benjamin Close housing development and terminate at the promenade in Waterville. The mainline carriageway improvement works will be 1373m in length and will include improvements at two local road junctions as well as several private accesses. The shared cycle/pedestrian facility will connect the Benjamin Close housing development to the promenade in Waterville and will be 1253m in length serving several residences, the Hogs Head Golf Course, Kerry Way, a hotel and guest house. The scheme also includes a proposed shared pedestrian and cycleway bridge over the Currane (Waterville) River (EPA_Code: 21W01), along the western side of the existing bridge. The location of the proposed development within the wider geographical setting is shown on Figure 3-1 below. The Currane catchment drains to Lough Currane, from which the Currane River outflows.

(Blank Page)

Figure 3-1: Site Location Map



3.1.2 Description of the Proposed Development

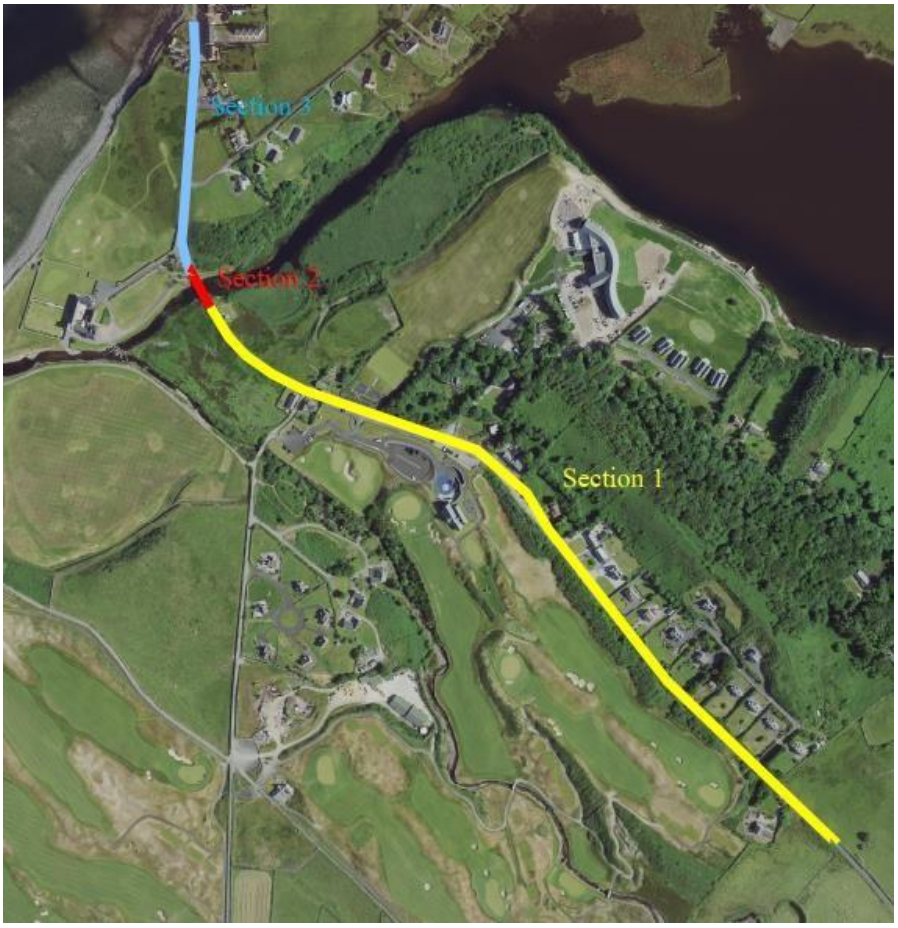
The N70 Waterville to Ballybrack section of the route currently consists of a narrow, single carriageway cross-section without hard-shoulders and has both a poor horizontal and vertical alignment. Due to the narrow cross-section and high vehicle speeds, it is unsafe for vulnerable road users. As a legacy route, it has both a substandard horizontal and vertical alignment, which as a result has no defined geometric design.

The current forward visibility is as low as 40m in areas which is insufficient visibility for vehicles to stop safely in an emergency. The two junctions at the L-7539-0 and L-11590-0 have substandard visibility envelopes. There are currently no facilities for vulnerable road users.

This section of the N70 also coincides with the Kerry Way walking trail and can have a large number of vulnerable road users, particularly during the summer months. There is a Transport Infrastructure Ireland (TII) traffic counter at Kells to the north of the project which indicated an Average Annual Daily Traffic (AADT) figure of 2,901 for 2019, with similar numbers in the preceding years. The heavy goods traffic is 3.7% of the total.

A description of the proposed development works is provided hereunder. The three sections are illustrated on Figure 3-2.

Figure 3-2: Location of Proposed Development

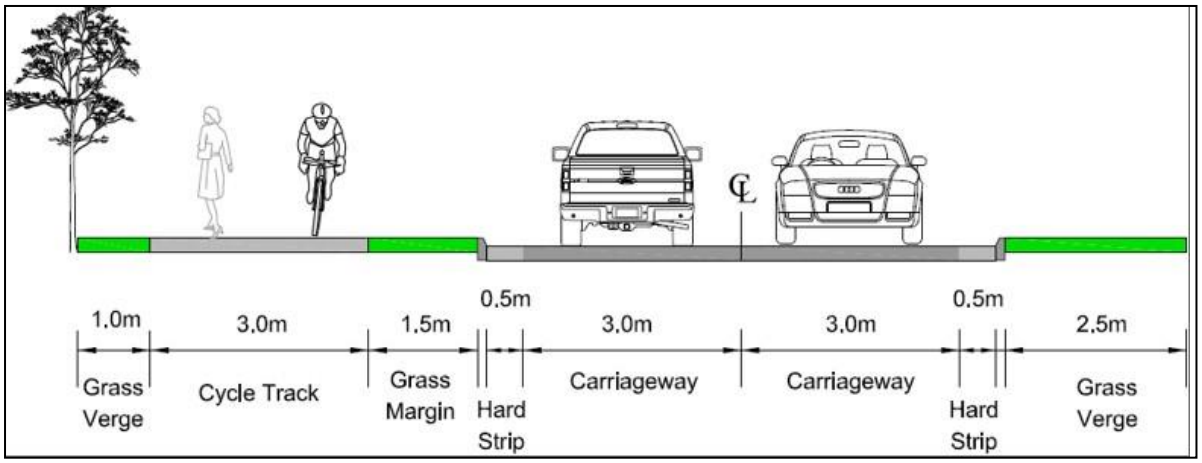


Section 1

This section of the scheme extends from the Townland of Eightercua in the South to the Currane River Bridge (1020m approx.). It will include road alignment works and pavement improvement, as well as the provision of a two-way cycle and pedestrian facility, situated on one side of the road only. Figure 3-3 illustrates a cross section proposed as part of the upgrade works. The width of the proposed new road will be 6m with a 0.5m hard strip on each side.

The proposed development will also result in the removal of some existing hedgerows and stone walls along the road.

Figure 3-3: Cross Section of the Proposed Development



Section 2

The second section of the scheme is at the Currane River Bridge, an existing masonry bridge which spans over the Currane River which flows into Ballinskelligs Bay downstream.

The proposed development will include the construction of a new two-way cycle and pedestrian bridge installed over the Currane River, on the western side (coastal side) of the existing masonry bridge. A photomontage of the proposed pedestrian bridge is shown in

Figure 3-4 below. Pavement repair and renewal is also required for this section of carriageway.

The Currane River, at this location, forms part of the Killarney National Park, Macgillycuddy's Reeks and Caragh River Catchment SAC (Site code: 000365) Figure 3-10). Works associated with the proposed shared cycle/ pedestrian bridge will be undertaken from the riverbank, outside the SAC boundary.

Figure 3-4: Photomontage of the proposed pedestrian bridge which will be installed along the western boundary of the existing bridge

3.1.2.1 Bridge Construction Methodology

The following methodology will be applied to the construction of the Cycleway / Footway bridge and foundations:

3.1.2.1.1 Bridge Material

- The bridge superstructure (steel deck including handrail posts) will be fabricated offsite and brought to the proposed development site.

3.1.2.1.2 Construct Abutment Substructures

- Access tracks shall be created from the existing N70 to the abutment locations. This shall involve removal of existing topsoil and transporting it off site. Imported fill material shall be placed and levelled using a mechanical excavator to create access tracks from the N70 to the abutment locations. These access tracks shall be within the footprint proposed shared footway/cycleway.
- Foundations will be constructed on the banks of the river and the bridge will be installed by crane which will be situated on the existing road.
- Sheet pile cofferdams will be installed around the two bridge abutments to facilitate excavation to the founding level. The sheet piles will be installed to an approximate depth of 2m below ground level.
- Excavate to founding level within the sheet pile cofferdam using a mechanical excavator. The spoil shall be loaded into dumpers and removed from site or stockpiled for re-use elsewhere on site.
- If necessary, a sump shall be created within the excavation and groundwater pumped to the mobile settlement tank.
- Blinding shall be placed at the base of the excavation. Reinforcement shall be fixed, and formwork placed. In-situ concrete shall be poured into the formwork within the sheet pile excavation to form the abutment base slab. Concrete shall be poured directly from concrete lorries that access the worksite from the adjacent N70.

- Reinforcement for the new abutment walls shall be placed in situ, formwork shall be erected, and concrete shall be poured.
- Concrete shall be transferred from the concrete lorry directly or using a mechanical excavator with a concrete skip if required. Once the concrete has cured the formwork shall be removed.

3.1.2.1.3 Backfill Abutments

- The area around the sides of the abutment footings shall then be backfilled with a clean granular material to existing ground level.
- The sheet pile cofferdams shall be removed. The sheet piles shall be extracted using an excavator mounted vibrator. The sheet piles on the front face of the south abutment (along the edge of the river) shall be left in place and cut down to just below ground level. These piles shall act as permanent scour protection to the abutment foundation.
- The abutment walls shall be backfilled to 300mm below bearing shelf level. This shall be undertaken in conjunction with the construction of the adjacent approach embankments.

3.1.2.1.4 Bridge Superstructure

- The bridge superstructure (steel deck including handrail posts) shall be fabricated offsite in a steel fabrication yard.
- The bridge superstructure shall then be delivered to site via the N70 (under a police escort and/or night-time closure(s) of the N70 if required) using a lorry and trailer complete with rear steering bogie. The lorry shall be positioned on the existing masonry arch road bridge to facilitate crane set up.
- If necessary, the bridge could be delivered to a suitable staging area close to the site in two or three pieces and welded together to form a single structure before transporting the complete structure up the N70 under a night-time road closure.
- A crane (or tandem cranes) shall be setup on the N70 under a night-time road closure. Crane outriggers shall extend over the newly constructed approach embankments. The deck superstructure shall be lifted into position and fixed in place in a single operation.

3.1.2.1.5 Bridge Finishing Works

- Stone masonry facing shall be constructed on the outside faces of the abutment walls. Stone masonry approach walls shall be constructed on the approaches to the bridge. The handrailing cables shall be installed, tensioned and completed.

3.1.2.1.6 Roadside finishing works

- Drainage on the approaches to the bridge shall be completed and the bridge deck drainage connected. The approach paths shall be surfaced, safety barriers installed, and landscaping completed.

3.1.2.1.7 Remove Water Protection Measures

- Following completion of all earthworks, landscaping of the approach embankments, the runoff system shall be removed and the sandbag cofferdam bunding shall be lifted out using a mechanical excavator and removed from site using dumpers. Access to the sandbags is available via a track at the base of the new permanent embankment within the temporarily acquired lands.
- The ground within the temporarily acquired lands shall be reinstated and grass seeded as per landscape design.

Section 3

The final section of the proposed works is a 320m stretch of road heading towards Waterville Town from the Currane River Bridge. A 3m wide shared two-way cycle and pedestrian facility is proposed on the western side of the carriageway, with a footpath required on the eastern side to run from a private road junction back towards Waterville. Pavement repair and renewal is required along this section of carriageway as well as delineation and improved signage. Overlay and carriageway widening will also be provided along this section of carriageway. The widening works will require the construction of retaining walls .

3.1.3 Proposed Drainage System

There is currently no formal drainage system in place to cater for road runoff along the section of the N70 road outside of the Waterville village extents. A new drainage system, in accordance with DN-DNG-03022, is therefore proposed and will include the following:

- A kerb and gully system will be used to collect surface water from the mainline and side road paved areas. The gullies will outfall to a combined filter drain running in the grass verge/margin adjacent to the kerb. The cycleway will fall towards the verge with water flowing over the edge to the grass verge and ultimately to the combined filter drain (refer to Figure 3-3 above).
- Two outfall pipes are proposed within the drainage system: one (the northern outfall) will be located adjacent of the Currane River bridge, and the second (the southern outfall) will be located south of the existing pumping station. A description of the two outfalls are provided hereunder.
- Minor instream works will be undertaken along the northern bank of the Currane River to facilitate the proposed drainage system works. The instream works will be small-scale (ca. 2m^2 in size).

3.1.3.1 Northern Outfall

One outfall pipe and headwall will be constructed to the northern bank of the Currane River adjacent to the eastern side (lakeside) of the existing bridge (as shown in Figure 3-5 below). This outfall will cater for surface water runoff from Chainage (Ch) 1060 to 1240m on the northern end of the scheme. This runoff will go through treatment via a grassed channel / swale and petrol interceptor.

A section of the pipeline works (ca. 5m pf the pipeline and the proposed headwall) will be located within the Killarney National Park, Macgillycuddy's Reeks and River Caragh River Catchment SAC. The pipeline and headwall will be constructed in an existing access track, which consists of gravel and amenity grassland and is currently being used to access a boat house from Waterville House (refer to Figure 3-6Figure 3-5).

Figure 3-5: Proposed Northern Outfall

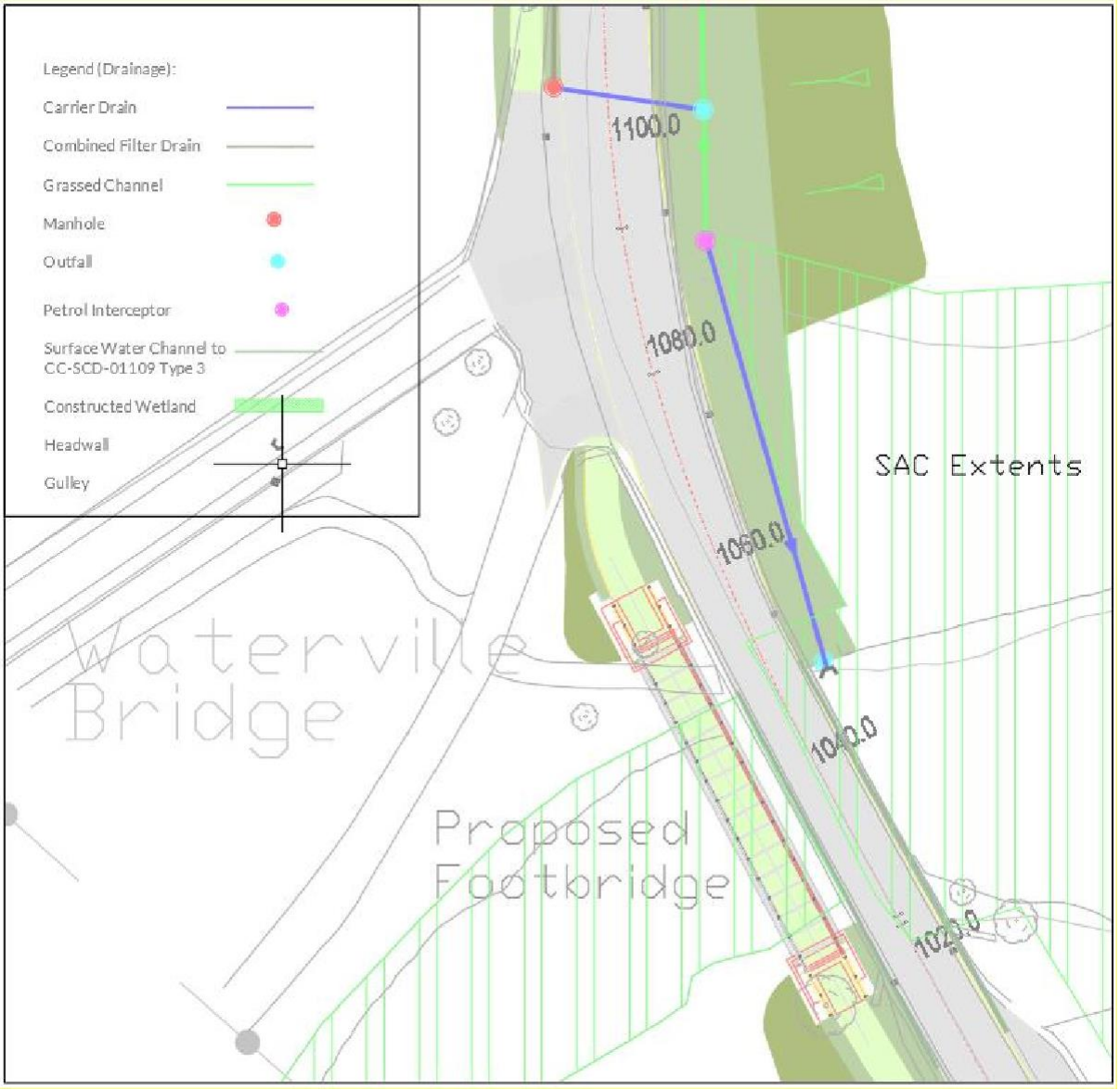


Figure 3-6: Existing Access Track Through the SAC

3.1.3.2 Southern Outfall

A second outfall pipe is proposed south of an existing pumping station to accommodate road drainage from the south of the scheme. Currently runoff runs untreated off the road into the verge, eventually depositing at the lowest spot located adjacent to the existing pumping station.

To improve road drainage within this area, the new proposed drainage scheme will include a combined filter drain which will run on the southern side of the mainline from Ch 0 to Ch 782m where it crosses the road to Ch 812m via a carrier pipe. From Ch 812m to 978m a combined filter drain will convey the water to a petrol interceptor and wetland area. Drainage across the bridge will be provided by surface water Channels to CC-SCD-01109 Type 3 tight to the parapet wall with gullies conveying to the outfall manhole at Ch 978m.

A petrol interceptor will be buried into the embankment adjacent to the manhole. The outlet of the interceptor will be piped to a head wall supporting the embankment. The existing ground will be shaped slightly to ensure water from the headwall travels slowly through the wetland to the outlet stream. The minor excavation required for this is shown in Figure 3-7 below.

Figure 3-7: Southern Outfall

The drainage design incorporates filter drains and is run at the same gradient as the road. This ensures that there is a certain amount of filtration, attenuation and flow control before reaching the outfall. From old ordnance survey mapping, it was established that there was an old pond at this outfall location, but the pumping station was built on top of it. The area lends itself to the use of the existing wetland as an outfall location for the following reasons:

- Contours and Flow Arrows provide for a slow movement of water towards the stream adjacent to the Currane River.
- It is the low point of the scheme
- There is existing wetland at this location
- There is no requirement for excavation or entry into the SAC

Water from all gullies from Ch 965m south will discharge into a manhole at Ch 965m. This manhole will also pick up the bridge drainage. The petrol interceptor will have similar dimensions to that shown in Figure 3-8 Petrol Interceptor. The embankment will be mainly imported material, and the depth of the interceptor will be such so that the invert of the manhole will be slightly higher than the inlet of the interceptor.

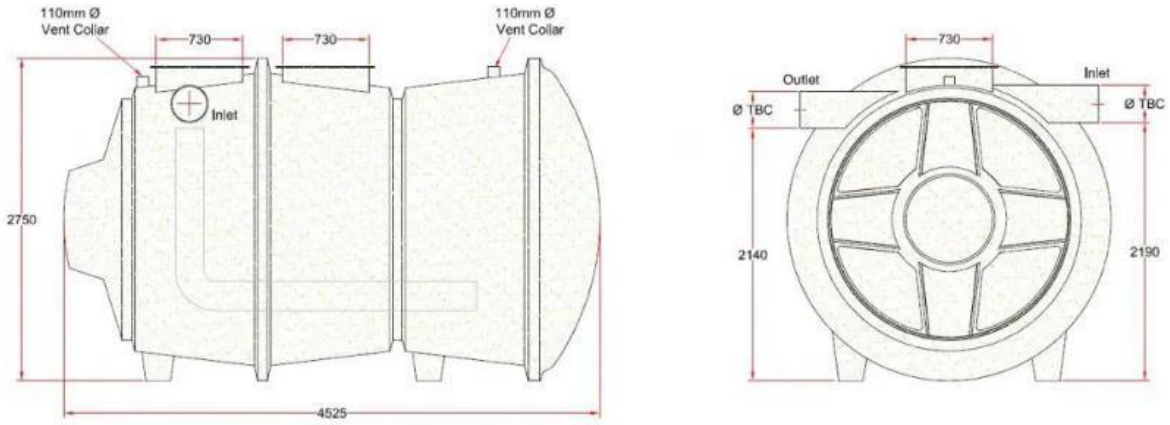


Figure 3-8 Petrol Interceptor

The outlet of the interceptor will be piped to a head wall supporting the embankment. The existing ground will be shaped slightly to ensure water from the headwall travels slowly through the wetland to the outlet stream.

3.1.4 Proposed Construction Phase Activities

Subject to statutory approval, the proposed development is expected to commence in 2025, for a duration of 12 months.

Normal work hours during the construction phase are expected to be Monday to Friday 08:00 to 18:00 hours. During certain stages of the construction phase there is potential that some work will have to be carried out outside of normal working hours. However, this will be kept to a minimum.

The installation of the Pedestrian / Cycle Bridge across the Currane River will be undertaken at night. Traffic during this period will be diverted. It is anticipated that this work will be completed in two nights. Diversions will be well advertised in advance and disruption will be kept to a minimum. The only viable diversion is around the Ring of Kerry, and this has been used on a similar scheme in Sneem.

The construction compound and welfare facilities will be located adjacent to the road within the site application boundary.

3.1.5 Operational Phase

During the operational phase the proposed development will continue to function as a road. The proposed cyclist and pedestrian facility will result in the attraction of pedestrians and cyclists utilising the route.

3.2 DESCRIPTION OF THE EXISTING ENVIRONMENT

3.2.1 Desktop Study and Information Sources

The ecological desktop study completed for the proposed development comprised a review of the following key datasets and information sources:

- Identification of European sites within the Zone of Influence (ZoI) of the proposed development through the identification of potential pathways/links from the proposed development and European sites and/or supporting habitats.
- Review of the National Parks and Wildlife Service (NPWS) site synopsis, Natura 2000 data forms and Conservation Objectives for European sites identified through potential pathways from the proposed development (https://www.npws.ie/protected-sites).
- Review of available literature and web data. This included a detailed review of the NPWS database of areas designated (and proposed) for nature conservation[8] and National Biodiversity Data Centre (NBDC)[9] websites and database including mapping and available reports for relevant sites and in particular Qualifying Interests and Special Conservation Interests described and their Conservation Objectives.
- Review of Inland Fisheries Ireland (IFI) research data. This included reviewing research studies carried out for the Habitats Directive and Red Data Book Fish species within the receiving environment[10].
- Information and data on water catchments from the River Basin Management Plan 2018-2021 [11] and the Water Framework Directive (WFD) Ireland Database[12].
- Environmental Protection Agency (EPA) Appropriate Assessment tool[13];
- Information and data on water catchments from the River Basin Management Plan 2018-2021 (www.catchments.ie);
- Heritage map viewer[14];
- Kerry County Development Plan, 2022-2028; and
- National Biodiversity Plan, 2017-2021.

In addition, aerial photography (Google Maps, Bing Maps) and mapping (Ordnance Survey of Ireland, Geological Survey of Ireland) were used to identify non-designated habitats such as rivers, woodlands, and hedgerows of local ecological importance and invasive species.

3.2.2 Field Survey

Multi-disciplinary ecological surveys of the proposed development site were undertaken by qualified and experienced Kerry County Council Ecologist on the 11th of September 2024. These ecological surveys supplemented the surveys undertaken by TOBIN ecologists on the 9th of June 2021 and on the 24th-26th of January 2022. The data collected was robust and allowed TOBIN to draw accurate, definitive and coherent conclusions on the possible impacts of the proposed development and the potential for likely significant effects.

The aim of the survey was to determine the presence or absence of protected habitats or species, including Annex I habitats and Annex II and IV species. The survey was also undertaken to assess the suitability of the habitats within the proposed development site to support protected species.

Further details of the survey methodologies undertaken are presented hereunder:

- Habitat and botanical surveys were undertaken within the proposed development site following the methodology outlined by '*Best Practice Guidance for Habitat Survey and Mapping*' (Smith *et al.,* 2011) and '*Ecological Surveying Techniques for Protected Flora*

[8] National Parks and Wildlife Service: https://www.npws.ie/maps-and-data
[9] National Biodiversity Data Centre (NBDC): https://maps.biodiversityireland.ie/Map
[10] https://www.fisheriesireland.ie/Projects/habitats-directive-and-red-data-book-fish-species.html
[11] https://www.catchments.ie/guide-water-framework-directive/
[12] Water Framework Directive (WFD) Ireland www.wfdireland.ie
[13] EPA Appropriate Assessment tool: https://gis.epa.ie/EPAMaps/AAGeoTool
[14] Data from the Heritage Map Viewer accessed through the heritage map viewer: https://heritagemaps.ie/WebApps/HeritageMaps/index.html

and Fauna during the Planning of National Road Schemes' (NRA, 2008). The data was recorded, and the habitats encountered during the site visit were classified in accordance with Fossitt (2000) with reference made to the '*Interpretation Manual of EU Habitats*' (EC, 2013) as appropriate.

- The proposed development site was also searched for evidence of invasive plant species listed in Part 1 of the Third Schedule of S.I No. 477/2011 - European Communities (Birds and Natural Habitats) Regulations 2011. Species protected under Flora (Protection) Order, 2015 (S.I. No. 356/2015) or listed under the Irish Red Data List of Irish Plants were also searched for.
- A walkover survey to detect the presence or likely presence of protected species, likely to occur within and in the vicinity of the proposed development site was, was undertaken. This included targeted surveys for otter following guidance outlined in the NRA (2008) guidelines.
- Bat surveys comprised a daytime visual assessment of suitable roosting and foraging habitat within and in the vicinity of the proposed works following methodologies outlined within '*Bat Surveys for Professional Ecologists: Good Practice Guidelines (4th edn)*' (Collins, 2023) and within '*Bat Mitigation Guidelines for Ireland*' (NPWS, 2022). Reference was also made to Bat Conservation Ireland guidelines; *Bats and Appropriate Assessment Guidelines* (Bat Conservation Ireland, 2012). Features surveyed included the Currane River Bridge, with a particular focus on lesser horseshoe bats (*Rhinolophus hipposideros*) as it is listed under the Annex II of the EU Habitats Directive.
- Observations of ornithological activity within the proposed development site were recorded with regards to the Countryside Bird Survey guidelines; '*CBS Manual, Guidelines for Countryside Bird Survey Participants*' (CBS, 2012).
- Targeted Kerry slug *(Geomalacus maculosus)* and marsh fritillary *(Euphydryas aurinia)* surveys were undertaken within areas of suitable habitat within the proposed development site following guidance within the NRA's *Ecological Surveying Techniques for Protected Flora and Fauna during the Planning of National Road Schemes (2008).*

3.2.2.1 Survey Limitations

Due to landowner access restrictions, only the southern bank of the Currane River, upstream of the Currane River Bridge, could be surveyed on foot.

In accordance with best practice guidelines (CIEEM, 2018), the northern bank and the sections of river located downstream of the bridge were instead visually assessed from adjacent lands and from the bridge using binoculars and was supported by information obtained from a review of aerial photography and desktop study data. Notwithstanding the small area of limited access, a comprehensive survey was undertaken, and sufficient data was gathered to reliably inform the assessment.

3.2.3 Baseline Environment

The findings of the desktop study and field surveys are summarised hereunder.

3.2.3.1 Habitats and Flora

The proposed development will be undertaken along the N70 road which is an existing road comprising a tarmacadam surface (BL3). The road is narrow with no roadside verges present. Stone walls (BL1) with varying heights, border both sides of the existing road. There are a number of one-off domestic houses along the eastern border of Section 1 of the proposed development. Houses are predominately set back from the road with fences/walls or landscaped hedges bordering the existing road.

Habitats adjacent to the road, to be removed to facilitate the proposed works include mixed broadleaved woodland (WD1), scrub (WS1), hedgerows (WL1), wet grassland (GS4), unimproved agricultural grassland (GA1) and amenity grassland (GA2).

The Currane River Bridge is located within the proposed development site, within Section 2. The Currane River bridge traverses over the Currane River (refer to Plate 1). The Currane River, at this section, is a lowland depositing river (FW2) and occurs within the site boundaries of both the Killarney National Park, Macgillycuddy's Reeks and Caragh River Catchment SAC (Site Code: 000365) and the Ballinskelligs Bay and Inny Estuary SAC (Site Code 000335).

The Finglas River (Waterville) (IE_SW_21F051000) is located to the west of the N70 and flows into the Currane River, approximately 130m downstream of the Currane River bridge. There is no downstream hydrological connectivity between the proposed development site and the Finglas River (Waterville).

No habitats designated under Annex I or plant species designated under Annex II of the EU Habitats Directive were recorded within the proposed development site boundary. In addition, no plant species listed under the Flora Protection Order (FPO) were recorded within the footprint of the proposed development site during the surveys.

Several invasive plant species, including Japanese knotweed (*Fallopia japonica*) and Giant rhubarb (*Gunnera tinctoria*), listed in the Third Schedule of the SI 477/2011, were recorded in several locations within the scrub and woodland habitat adjacent to the N70 road. In addition to this several other invasive species were identified within the proposed development site, these included Montbretia (*Crocosmia x crocosmiiflora*), Buddleia (*Buddleja davidii*) and Himalayan honeysuckle (*Leyesteria formosa*).

A large patch of Japanese knotweed was recorded at the southern section of the proposed development site, on the eastern boundary of the road (coordinates: 51.815471, -10.161984). The infestation included over 80 stands of Japanese knotweed ranging between 2-3m in height. The area of Japanese knotweed is located within the works area and will be directly disturbed by the proposed construction works.

A second large infestation was recorded further north, along the road (coordinates: 51.816227, -10.163250), with over 200 stands of 4m in height present. Similarly, to the previous occurrence, the patch of Japanese knotweed is located within the works area and will be disturbed.

A third infestation of Japanese knotweed was recorded along the bank of the River Finglas (coordinates: 51.818727, -10.170685). The large patch of Japanese knotweed occurs along the eastern bank of the river. The Japanese knotweed in this area is not located within the proposed development site boundary and will therefore not be disturbed by the proposed works.

The Giant rhubarb was observed growing in scrub on the southern side of the N70 (coordinates: 51.8183795, -10.166156).

It was noted in the September 2024 surveys that a treatment program for the elimination of the Japanese Knotweed had begun on the N70, and this included the proposed development site.

Plate: 1: Currane River (Left) and Stone walls located adjacent to the road (Right)

3.2.3.2 Fauna

Otter

An otter survey was undertaken along the Currane River on the 9th of June 2021 and on the 24th-26th of January 2022 and on the 11th of September 2024. An otter survey was also carried out along sections of the Finglas River (Waterville), located within 150m of the proposed development.

No evidence of otter, including otter holts and resting sites were recorded. A review of the NBDC dataset indicates however that otter have previously been recorded along the coast to the west of the proposed development site, along the southern reaches of the Finglas River (ca. 2.7km south-west) and also on the southern boundary of Lough Currane (ca. 4km south-east). Despite the lack of evidence of the species recorded during the field surveys, considering the previous records of otter in proximity to the site and the suitability of the habitat, it is likely that otter may commute and / or forage along the two rivers in proximity to the proposed development site, at least on occasion.

Bats

All bat species and their roost sites are protected under the Wildlife Acts. There is additional protection for lesser horseshoe bat), as it is listed under the Annex II of the EU Habitats Directive. The lesser horseshoe bat is a qualifying interest of the Killarney National Park, Macgillycuddy's Reeks and Caragh River Catchment SAC.

A daytime visual assessment of suitable roosting and foraging habitat within and in the vicinity of the proposed development site was undertaken.

A bat roost assessment of the Currane River Bridge was undertaken to identify the presence of any potential bat roost sites within the structure, as bridges can be important roost sites for bat species. The bridge arches and wingwalls were inspected and no cracks or crevices sufficiently sized to support bats were recorded. The arches of the bridge were covered in shotcrete, which

has filled in all the crevices between the stones in the bridge. Small lights were also present at the base of each arch under the bridge, which is likely to be illuminating the base of the bridge. The bridge is located in an open exposed landscape adjacent to the coast. The survey determined that there is no potential for the bridge to support lesser horseshoe bat.

A Batlogger M2 bat detector was installed, and two passive bat survey took place on the 16th and 17th of September 2024, in a strip of woodland along the N70, adjacent to the Hoggs Head Golf Course (coordinates: 51.818015, -10.165718). It should be noted that this woodland/scrub area in not designated a Special Area of Conservation (SAC). The purpose of this survey was to identify what bat species were using the habitat. The surveys took place from 30 mins before sunset to 30 mins after sunrise. Weather conditions were ideal for the survey.

Six bat species were identified foraging within the survey area, and these included:

- Common pipistrelle (Pipistrellus pipistrellus);
- Soprano pipistrelle (Pipistrellus pygmaeus);
- Brown long-eared bat (Plecotus auritus)
- Leisler's bat (Nyctalus leisleri);
- Natterer's bat (Myotis nattereri); and
- Lesser horseshoe bat (Rhinolophus hipposideros).

Kerry Slug

A targeted Kerry slug survey was undertaken within the proposed development. The Kerry slug is listed as a Qualifying Interest of the Killarney National Park, Macgillycuddy's Reeks and Caragh River Catchment SAC. Considering the proximity of the proposed development site to the Killarney National Park, Macgillycuddy's Reeks and Caragh River Catchment SAC, and to the presence of a small area of mixed broadleaved woodland, a targeted Kerry slug survey was undertaken within suitable habitat proposed to be removed to facilitate the proposed development. A hand search survey for Kerry slug was carried out on 25th of January 2022 following guidance outlined within the NRA (2008) guidelines.

No Kerry slugs were recorded during the survey. The woodland, although holding mixed deciduous species, is immature in nature and shows signs of previous disturbance by construction works. There is also very little moss and lichen cover within the woodland, which suggests the area is likely to be too dry for Kerry slug. Habitat within the proposed development site was determined to be unsuitable for Kerry slug.

Marsh Fritillary

Marsh fritillary is a qualifying interest of the Killarney National Park, Macgillycuddy's Reeks and Caragh River Catchment SAC. Considering the proximity of the proposed development site to the SAC site boundary a marsh fritillary survey was undertaken.

On the 9th June 2021, the proposed development site was searched for suitable habitat which could be utilised by marsh fritillary. The presence of marsh fritillary within these habitats is largely dependent on the presence of devil's bit scabious (*Succisa pratensis*) (the species main food source) and purple moor-grass (*Molinia caerulea*). No devil's bit scabious or purple moor-grass was recorded within the habitats within the proposed development site. All vegetation

which is proposed to be removed to facilitate the proposed development was determined to be unsuitable for marsh fritillary.

Aquatic Species

No aquatic surveys were undertaken within the Currane River. Instead, a robust desktop assessment and reference to previous aquatic surveys undertaken in the watercourses was carried out to inform the assessment.

Currane River downstream of the Currane River Bridge is one of the most well-known private salmonid fisheries in the country[15]. The section of river by the Currane River Bridge is located at the seaward entrance of the entire catchment and is therefore an important migration route for anadromous fish species, including salmon and lamprey. Inland Fisheries Ireland (IFI) operate a fish counter at Waterville, downstream of the bridge in the state grounds of Waterville House. Counter data for Waterville in 2018 (IFI, 2018) and 2020 (IFI, 2020) is outlined in the Table 3-1 below.

[15] https://fishinginireland.info/salmon/southwest/watervilleriver/ [Accessed: January 2022]

Table 3-1 Counter Data for Waterville

Fish Species	Numbers recorded in 2018	Numbers recorded in 2020	Numbers recorded in 2021	Numbers recorded in 2022
Spring salmon	196	89	345	382
Grilse	431	662	719	260
Late summer salmon	42	231	183	195
Sea *trout (Salmo trutta trutta)*	1,216	2,426	3,500	1,280

An aquatic survey of the Currane River was undertaken in 2017 by Lauren Williams (Williams, 2017). The survey included a snorkelling survey of the Currane River upstream and downstream of the Currane River bridge. High value salmonid habitat was recorded throughout the watercourse. The report concluded that the stretch of river is an important salmonid nursery and is a critical migration route for anadromous species moving in and out of the catchment.

No surveys have been undertaken for lamprey species within the Currane River to date. Lamprey species are known to occur in the upper reaches of the catchment (NPWS, 2017)[16]. It can therefore be assumed that the Currane River in proximity to the Currane River bridge is an important migration route for lamprey as they migrate upstream to spawn.

The freshwater pearl mussel *(Margaritifera margaritifera)* is a qualifying interest of the Killarney National Park, Macgillycuddy's Reeks and Caragh River Catchment SAC and is known to occur in the Cummeragh-Currane catchment located upstream of Lough Currane. The population is estimated to be approximately 100,000 and occurs in the lower reaches of both the Cummeragh and the Capall River (NS2, 2009). During the snorkelling survey no freshwater pearl mussel were recorded. The river was considered to be sub-optimal to unsuitable for the species (Williams, 2017).

3.3 OVERVIEW OF POTENTIAL IMPACTS: SCREENING FOR AA

An overview of potential impacts from the construction and operational phases of the proposed development on the receiving environment is discussed hereunder. There are several elements associated with the proposed works that may give rise to potential direct and indirect impacts on the receiving environment that have the potential to result in likely significant effects on European sites.

3.3.1 Construction Phase Impacts

Potential construction phase impacts associated with the proposed development works are discussed hereunder.

3.3.1.1 Loss of Habitat

The proposed development will result in the clearance and loss of habitat. Habitat to be removed includes areas of mixed broadleaf woodland (ca. 2,950m^2), scrub (2,850m^2), wet grassland (ca. 2,420 m^2), agricultural grassland (ca. 720m^2) and amenity grassland (ca. 1,720m^2) and approximately 320m of hedgerow. The abovementioned habitat occurs outside the boundary of any European site.

The proposed construction works will include the installation of a pedestrian bridge adjacent to the existing Currane River bridge which will include foundation works and land take on the banks of the river. The bridge works however will be set back outside the SAC site boundary. The installation of the bridge will not result in a loss of habitat within any European sites.

Minor works associated with the drainage system, which will include the installation of an outfall pipe and headwall, will be constructed within a small section of the Killarney National Park, Macgillycuddy's Reeks and Caragh River Catchment SAC (refer to Figure 3-10). The majority of the proposed outfall pipeline will be confined to outside the SAC boundary, however approximately 5m of the pipeline and the proposed headwall will be located within the SAC site boundary. An approximate works area of 2m2 will be required to facilitate the headwall works on the bank of the river within the SAC. Habitat which will be disturbed within the SAC site boundary to facilitate the works includes a gravel and amenity grassland track, an existing stone wall and a small area of scrub vegetation comprising of dense gorse (Ulex europaeus) and bramble (Rubus fruticosus) . Following completion of the construction works all disturbed lands will be fully reinstated. No Annex I habitats or Annex II plant species were identified within this area.

3.3.1.2 Runoff of Sediment and/or Construction Pollution

The proposed development will require excavation activities. Site clearance, excavations, and the stockpiling of material have the potential to result in sediment laden runoff, if not appropriately managed. Construction works will be carried out in close proximity to the Currane River, there is therefore a potential for the sedimentation of the watercourse if works are not appropriately managed. Increased silt loading in watercourses can stunt aquatic plant growth, limit dissolved oxygen capacity and overall reduce the ecological quality of watercourses, with the most critical period associated with low flow conditions.

The pouring of concrete will be required to facilitate the foundation works associated with the proposed pedestrian bridge. Surface water runoff can be contaminated by leaks and spills of fuel, oil or other construction material from construction vehicles/machinery if not properly managed. The runoff of contaminated surface water can result in the degradation of water quality and impacts to aquatic fauna and flora, particularly if concrete is present.

3.3.1.3 Noise and Disturbance

The proposed construction works will result in an increase in noise levels during the duration of the construction phase. The construction works will also result in an increase in personnel and traffic movement to and from the site. It should be noted that no rock breaking or blasting will be required during the construction works. It is likely that temporary construction lighting will be required during the construction works. Fugitive lighting could deter movement of species in the area. A temporary increase in noise levels, disturbance and lighting within the proposed development site may result in disturbance to wildlife within the immediate vicinity of the site.

Sheet piles will be installed to create a cofferdam around the abutment works associated with the bridge. The sheet piles will be installed on the banks of the river, no works will be undertaken within the river. The sheet piles are likely to be 200mm-450mm wide and will be installed to an approximate depth of 2m below ground level. Ground investigation (GI) works which included trail pits and boreholes, have been undertaken at the pedestrian bridge location to determine the condition of the soil. The results of the GI works indicated that the soil 2m below ground level comprises a slightly sandy gravel silt, with fine to coarse sand and fine to coarse gravel. Between 2-4m, the soil content comprised slightly silty very sandy gravel with a high cobble content, with cobble ranging between 63mm to 150mm in diameter. No rock was encountered within the soil. Considering the composition of the soil at the proposed pedestrian bridge location and the shallow depth (2m) which the sheet piles will be inserted to, it's likely that

impact driving will not be required and instead the sheet piles will be pushed into the ground using an excavator or excavator mounted vibrator. Any vibration associated with installing the sheet piles are likely to be minimal. Considering the setback distance of the sheet piles from the river and the minimal vibrations, there is not likely to be any impacts to migratory fish which might travel through the Currane River.

3.3.1.4 Dispersion of Invasive Species

Japanese knotweed was recorded within the proposed development site and will be directly disturbed by the proposed development construction phase. Japanese knotweed is listed under the Third Schedule of the European Communities Regulations 2011 (S.I. No. 477 of 2011), and it is an offence to disperse, or promote the dispersion, of these plant species without a licence. The spread of Japanese knotweed can result in the out competing and excluding of native plant species, which, if spread onto riverbanks, can also result in the erosion and compromise bank stability (TII, 2020). Due to the proximity of the construction works to the Killarney National Park, Macgillycuddy's Reeks and Caragh River Catchment SAC and Ballinskelligs Bay and Inny Estuary SAC, there is also potential for the invasive species to be dispersed into the European sites, if not appropriately managed.

3.3.2 Operational Phase Impacts

3.3.2.1 Noise and Disturbance

During the operational phase of the proposed development, increased human presence on the road is anticipated. However, the proposed development's improvements are planned to attract cyclists, due to the installation of the cycle path, whereas the existing motor vehicle traffic is not anticipated to change from pre-construction levels. Therefore, motor vehicle noise will be of similar magnitude and intensity as pre-construction, which is not likely to cause any added stress to local fauna.

3.3.2.2 Pollution Runoff

During the operational phase there is potential for accidental hydrocarbon emissions, which could cause contamination if they enter surface waterbodies. All contaminated surface water will be captured within the proposed drainage system, however in the event that the drainage system requires maintenance and fails to operate correctly there is potential that hydrocarbons may discharge into the Currane River. The release of hydrocarbons into a watercourse can result in a degradation in water quality and negatively impact aquatic fauna and flora. This potential exists at present.

3.4 DETERMINING THE LIKELY ZONE OF INFLUENCE

As an initial approach, all European sites within a 15km radius were examined.

Additionally , the source-pathway-receptor model (OPR, 2021) was used to identify viable pathways between the proposed development and European sites which may result in likely significant effects on their qualifying interests or special conservation interests. This conceptual model is a standard tool in environmental assessment. In order for an effect to occur, all three elements of this model must be in place. The absence or removal of one of the elements of the model means there is no likelihood for the effect to occur. In the context of the proposed development, the model comprises:

- Source (s) – potential impacts from the proposed development, e.g. the runoff of sediment/construction pollution;

- Pathway (s) – hydrological, physical or ecological connectivity between the proposed development and the European site; and
- Receptor (s) – qualifying interests and/or special conservation interests of the European sites.

The Chartered Institute of Ecology and Environmental Management (CIEEM) defines the ZoI of a project as the area(s) over which ecological features may be affected by the biophysical changes caused by the proposed project and associated activities.

In order to establish the ZoI of the proposed development, the likely key biophysical changes associated with the works were determined having regard to the proposed development works characteristics set out in Section 3.1 of this report. The ZoI of the proposed development is described hereunder.

Impacts associated with the loss of habitats will be confined to within the proposed development site boundary. The ZoI was therefore defined as all lands within the Planning Application Site Boundary.

With regards potential water degradation effects associated with the release of sediment and other pollutants to surface water, the ZoI of the proposed development is considered to include receiving waterbodies adjacent to or downstream of the proposed development site. The distance downstream is associated with the current biological condition of the accepting waterbody and its capacity to accept and assimilate sediment and other pollutants. Considering the sources for likely significant effects on European sites, for the definition of the ZoI for impacts associated with water pollution, hydrological connectivity will not be considered effective past the first water body of depositional nature is reached (e.g., lake water body; transitional water body). The hydrological pathway for impacts from the proposed development will therefore include all surface water bodies from the proposed development location until Ballinskelligs Bay.

Excavation activities may result in the temporary generation of dust in the locality of the works area. The Institute of Air Quality Management provide guidelines; *'Guidance on the Assessment of Dust from Demolition and Construction'* (Holman *et al.*, 2014), which prescribes potential dust emission risk classes to ecological receptors and notes receptor sensitivity is 'High' up to 20m from the source and reduces to 'Medium' at 50m. The spatial limit of dust impacts was therefore established as 50m from the proposed development site boundary.

Noise from the construction activity has the potential to cause disturbance to resting, foraging and commuting qualifying and special conservation interest species. Individual species will elicit differing behavioural responses to disturbance at different distances from the source of disturbance. Below is a summary of the documented zones of influence for varying species.

- Transport Infrastructure Ireland (formally the National Roads Authority) has produced a series of best practice planning and construction guidelines for the treatment of certain protected mammal species (i.e. otter), which indicate that disturbance to terrestrial mammals would not extend beyond 150m (NPWS, 2008).
- Cutts *et al.* (2013) notes that different types of disturbance stimuli are characterised by different avifaunal reactions, however as a general rule of thumb, a distance of 300m can be used to represent the maximum likely disturbance distance for waterfowl. However, disturbance to species will be considered individually.

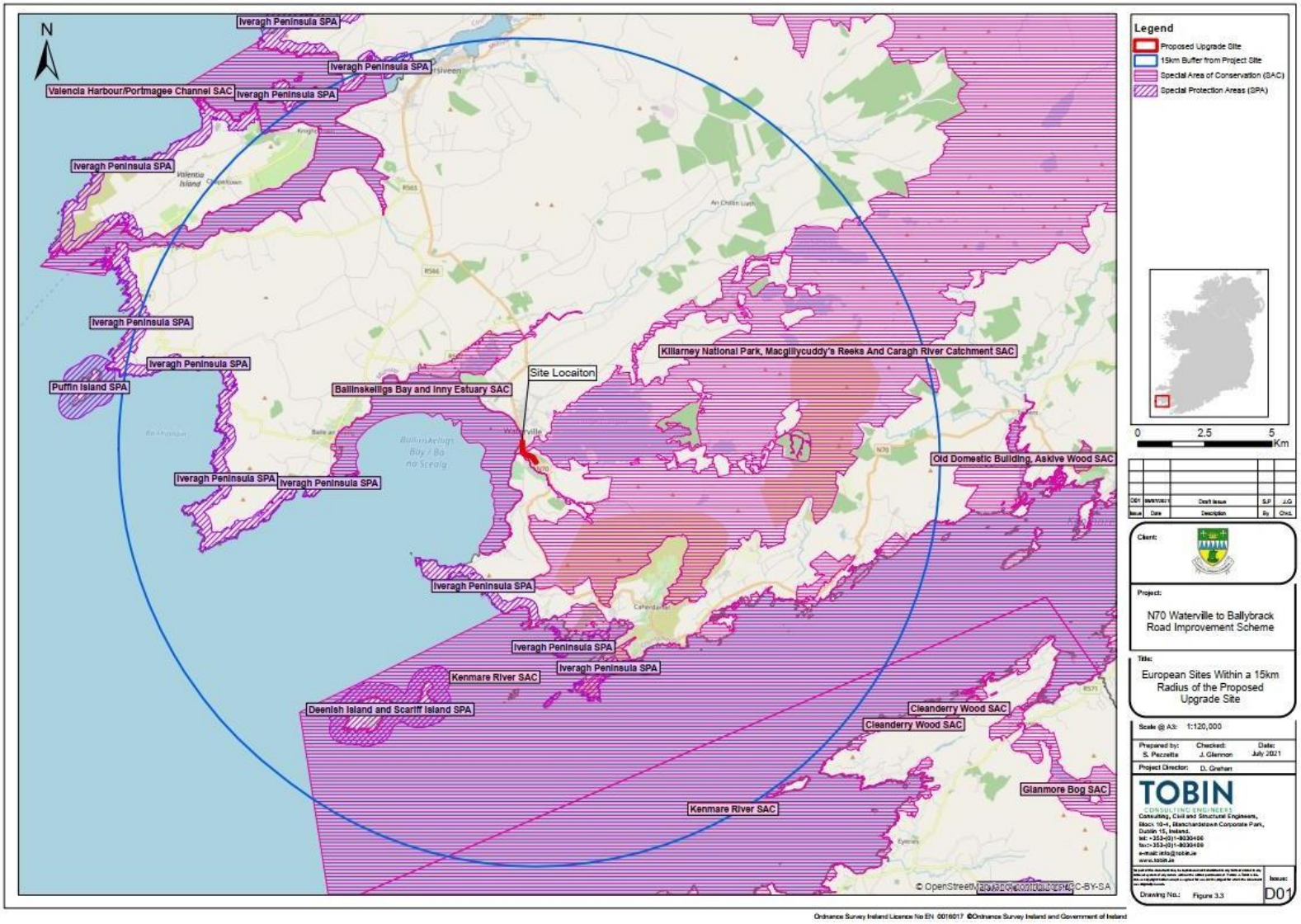
The ZoI for noise/disturbance was therefore established as the proposed development site plus a 300m buffer.

In addition, to further establish any pathways to SPA's and SACs, the foraging/commuting ranges of Special Conservation Interest (SCIs) and Qualifying Interest (QI) species will be considered.

3.5 IDENTIFICATION OF RELEVANT EUROPEAN SITES

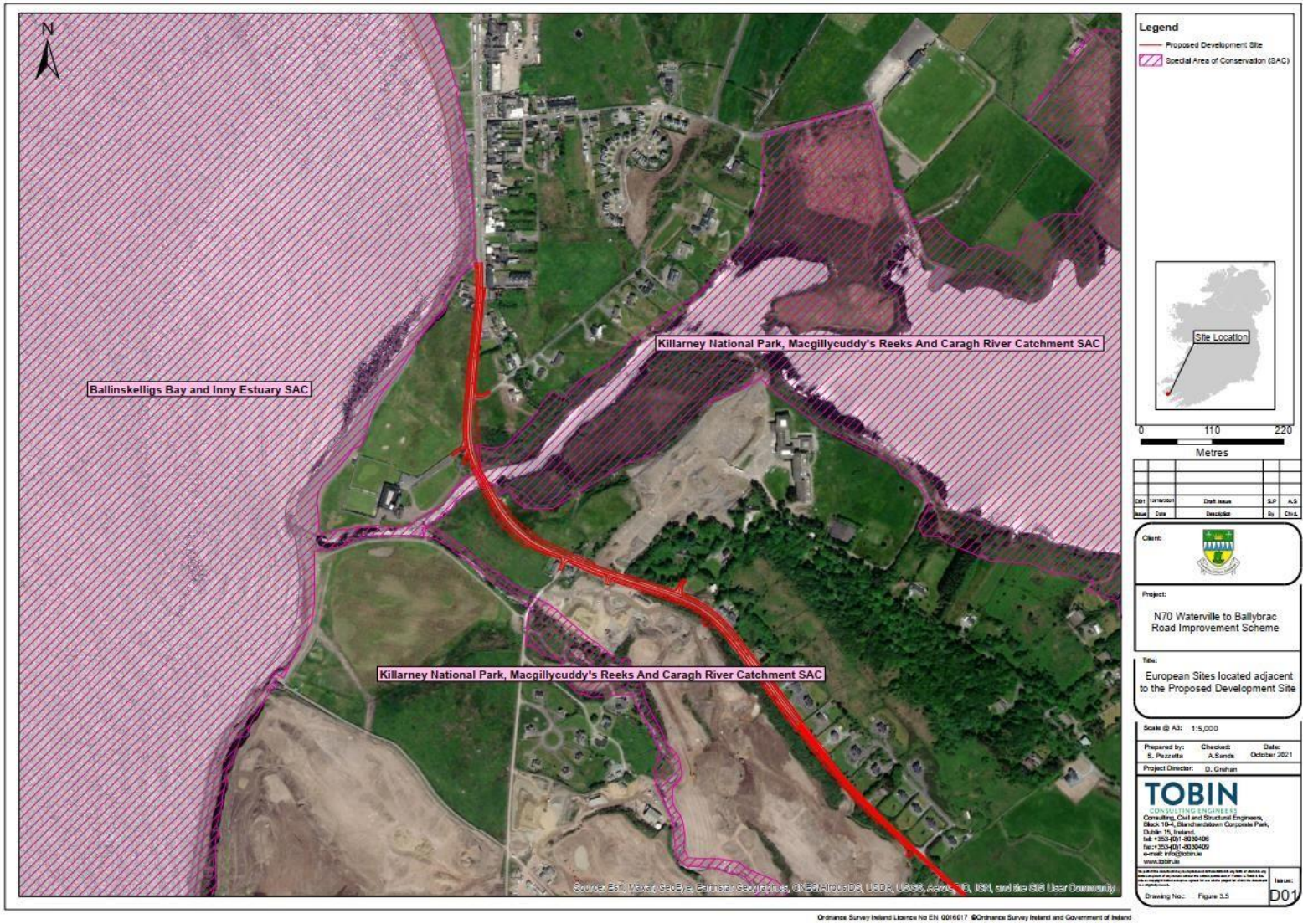
As mentioned above, as an initial step, all European sites within 1 5km radius or with a pathway to the proposed development, were reviewed and are illustrated on Figure 3-9 and Figure 3-10 and listed in Table 3-2 below. The source-pathway-receptor conceptual model (OPR, 2021) was then used to identify a list of 'relevant' European sites (i.e. those which could be potentially affected).

Figure 3-9: European Sites Map



(Blank Page)

Figure 3-10: European Sites located adjacent to the Proposed Development Site



(Blank Page)

Table 3-2: European Sites within 15km of the Proposed

Designated Site	Site Code	Approximate Distance from Proposed Works (km)
Killarney National Park, Macgillycuddy's Reeks and Caragh River Catchment SAC	000365	Adjacent to Section 2 (Currane River Bridge) of the proposed development
Ballinskelligs Bay and Inny Estuary SAC	000335	Adjacent to Section 2 (Currane River Bridge) of the proposed development
Kenmare River SAC	002158	Approximately 5.7 km south of the proposed development
Valencia Harbour/Portmagee Channel SAC	002262	Approximately 10 km north of the proposed development
Iveragh Penninsula SPA	004154	Approximately 4.7 km west of the proposed development
Deenish Island and Scarrif Island SPA	004175	Approximately 8.5 km southwest of the proposed development

Table 3-3: Brief Description of European sites within Zone of Influence of the Proposed Development

European Site	Qualifying Interest/ Special Conservation Interests	Pathway for Effect	Possibility of Likely Significant Effects
Killarney National Park, Macgillycuddy's Reeks and Caragh River Catchment SAC [000365][17] 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.	• [3110] Oligotrophic waters containing very few minerals of sandy plains (*Littorelletalia uniflorae*) • [3130] Oligotrophic to mesotrophic standing waters with vegetation of the *Littorelletea uniflorae* and/or *Isoeto-Nanojuncetea* • [3260] Water courses of plain to montane levels with the Ranunculion fluitantis and Callitricho-Batrachion vegetation • [4010] Northern Atlantic wet heaths with *Erica tetralix* • [4030] European dry heaths • [4060] Alpine and Boreal heaths	This SAC is located immediately adjacent to a section of the proposed development (Section 2, Currane River bridge). Minor construction works will also be carried out within the SAC site boundary and within the Currane River. Physical connectivity therefore exists. There is potential for the runoff of sediment and/or construction pollution into the SAC if not appropriately managed. There is also potential for the deposition of dust and introduction of Japanese knotweed into the SAC due to the close proximity.	Yes- A source-pathway-receptor link exists between the proposed development site and the SAC. There is potential for likely significant effects on the qualifying interests of the SAC in view of their conservation objectives.

[17] NPWS 2013 Site Synopsis: Killarney National Park, Macgillycuddy's Reeks and Caragh River Catchment SAC [IE000365]. Available at: https://www.npws.ie/sites/default/files/protected-sites/synopsis/SY000365.pdf

European Site	Qualifying Interest/ Special Conservation Interests	Pathway for Effect	Possibility of Likely Significant Effects
	• [5130] *Juniperus communis* formations on heaths or calcareous grasslands • [6130] Calaminarian grasslands of the Violetalia calaminariae • [6410] Molinia meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caeruleae*) • [7130] Blanket bogs (* if active bog) • [7150] Depressions on peat substrates of the Rhynchosporion • [91A0] Old sessile oak woods with Ilex and Blechnum in the British Isles • [91E0] Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion, Alnion incanae, Salicion albae*)* • [91J0] Taxus baccata woods of the British Isles* • [1065] Marsh Fritillary *(Euphydryas aurinia)* • [1095] Sea Lamprey *(Petromyzon marinus)* • [1096] Brook Lamprey *(Lampetra planeri)* • [1099] River Lamprey *(Lampetra fluviatilis)* • [1029] Freshwater Pearl Mussel *(Margaritifera margaritifera)* • [1106] Salmon *(Salmo salar)*	The SAC is designated for a number of freshwater aquatic species including salmon and three lamprey species (sea, river and Brook), as well as for freshwater pearl mussel (FWPM). The section of river at the Currane River bridge, at the seaward entrance to the catchment, it is likely to be an important migration route for anadromous fish species. The movement of salmon upstream is necessary for the life cycle of the FWPM, as FWPM larvae (Glochidia) attach to the gills of migrating salmon before detaching when at suitable habitat. The Currane River may be used by lamprey species and salmon when travelling upstream towards potentially suitable breeding grounds. A degradation of water quality has the potential to negatively impact the aquatic species within the SAC which are sensitive to changes in water quality. The SAC is also designated for Killarney shad which are confined to Lough Leane. There is no hydrological connectivity between the proposed development site and Lough Leane. The SAC is designated for otter. No signs of otter were identified during the field survey. However, considering the suitability of the river for otter and previous recordings of otter along the watercourse (NBDC data[18]) it is likely that otter commute and forage along the watercourse, at least on occasion. Considering the proximity of the construction works to the Currane River there is potential the works will	

[18] https://maps.biodiversityireland.ie/Map

European Site	Qualifying Interest/ Special Conservation Interests	Pathway for Effect	Possibility of Likely Significant Effects
	• [1303] Lesser Horseshoe Bat *(Rhinolophus hipposideros)* • [1024] Kerry Slug *(Geomalacus maculosus)* • [1833] Slender Naiad *(Najas flexilis)* • [1355] Otter *(Lutra lutra)* • [1421] Killarney Fern *(Trichomanes speciosum)* • [5046] Killarney Shad *(Alosa fallax killarnensis)*	result in the disturbance of otter. A degradation of water quality from the construction works also has the potential to result in indirect impact to otter due to impacts on their feeding resources. The SAC is also designated for lesser horseshoe bat. There are no known roosts within the immediate vicinity of the proposed development site (NPWS, 2017). A review of the site's Conservation Objectives Documents (NPWS, 2017) indicates that the closest known roost is located approximately 29km north-east of the proposed development site. The foraging range of lesser horseshoe bat is 2.5km (NPWS, 2018). Considering the distance between the closest roost and the proposed development site there is no potential for the disturbance of known roosts within the SAC. A daytime, preliminary ground-level bat roost assessment survey was undertaken of all suitable structures/features within the proposed development site. No suitable roost habitat for lesser horseshoe bat was identified within the footprint of the works area. The proposed development will not result in a loss of suitable foraging/commuting habitat for the species. There is no potential for impacts. The SAC is also designated for Kerry slug and marsh fritillary. During targeted surveys, no Kerry slug or marsh fritillary were recorded. No suitable habitat for the two protected species was identified within the ZOI of the proposed works. The nearest known record of Kerry slug is located 7km from the proposed	

European Site	Qualifying Interest/ Special Conservation Interests	Pathway for Effect	Possibility of Likely Significant Effects
		development site, while the nearest record of marsh fritillary was recorded over 50km away (NPWS, 2017) There is no potential for impacts to the two species. Slender naiad is known to occur in Loughs Acoose, Caragh, Leane, the Upper Lake and the Long Range (NPWS, 2017). There is no hydrological connectivity between the proposed development site and the above noted lakes. There is no potential for impacts. Pathways for effect therefore exists between the proposed development site and the SAC due to physical connectivity and a potential for a degradation of water quality indirectly impacting the aquatic designated species.	
Ballinskelligs Bay and Inny Estuary SAC [000335][19] This site is located at the western end of the Iveragh Peninsula, Co. Kerry, close to the town of Waterville. It comprises the marine waters of Ballinskelligs Bay, as far out as the five-fathom line, some adjoining terrestrial areas and the estuary of the River Inny upstream to Breahig townland. The site extends from Horse Island at the western end of the bay round to Rineen Point at its	• [1330] Atlantic salt meadows *(Glauco-Puccinellietalia maritimae)* • [1410] Mediterranean salt meadows (*Juncetalia maritimi*) • [1395] Petalwort *(Petalophyllum ralfsii)*	This SAC is located immediately adjacent to a section of the proposed development (Section 2, Currane River bridge). No construction works will be undertaken within the SAC site boundary. There will be no direct impact or loss of habitat within the SAC. The SAC is designated for two Annex I habitat (Atlantic salt meadows and Mediterranean salt meadow) and one Annex II species (petalwort). A review of the site's Conservation Objectives Documents (NPWS, 2014) indicates that the Annex I habitats occur in proximity to Annaghkeenty located approximately 3.9km north-west of the proposed development site. There is no downstream hydrological connectivity between the Annex I habitats and the proposed development. Considering	No potential for likely significant effects Measures intended to avoid or reduce negative effects on this European site have not been relied upon in reaching this conclusion.

[19] NPWS 2013 Site Synopsis: Ballinskelligs Bay and Inny Estuary SAC [IE000335]. Available at: https://www.npws.ie/sites/default/files/protected-sites/synopsis/SY000335.pdf

European Site	Qualifying Interest/ Special Conservation Interests	Pathway for Effect	Possibility of Likely Significant Effects
south-eastern side. Much of the site comprises shallow marine water, Ballinskelligs Bay, but it also supports a wide variety of other habitats, including intertidal mud/sand flats, sandy beaches, shingle, tidal river channels, sea cliffs, wet and dry grassland, freshwater marshes, swamps, cut-away bog, scrub, Bracken and saltmarsh.		the depositional nature of Ballinskelligs Bay, and the location and the natural structure and function of the Annex I habitats, no viable pathway was identified. The Annex II species petalwort is known to occur in one location within the SAC, at West of Inny Ferry which is located approximately 4.6km north-west of the proposed development site. The plant species occurs within dune slack and machair habitat (NPWS, 2019) which occur above the high-water mark. There is no hydrological connectivity between the qualifying interest and the SAC. Considering the distance and lack of connectivity there is no potential for impacts to the Annex II species. No source-pathway-receptor link exists between the proposed development site and the qualifying interests and supporting habitats of the SAC.	
Kenmare River SAC [002158] [20] Kenmare River SAVC in Co. Kerry, is a long, narrow, south-west facing bay. It is a deep, drowned glacial valley and the bedrock is mainly Old Red Sandstone which forms reefs along the middle of the bay throughout its length. Exposure to prevailing winds and swells at the mouth diminishes towards	• [1160] Large shallow inlets and bays • [1170] Reefs • [1220] Perennial vegetation of stony banks • [1230] Vegetated sea cliffs of the Atlantic and Baltic coasts • [1330] Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) • [1410] Mediterranean salt meadows (*Juncetalia maritimi*)	This SAC is located approximately 5.7km south of the proposed development site and thus occurs outside the ZoI of direct habitat impacts and dust effects. Similarly, due to the distance there is no potential for the introduction of invasive plant species within the SAC. The SAC is also located in a separate surface water catchment and thus occurs outside the ZoI of water quality impacts.	No potential for likely significant effects Measures intended to avoid or reduce negative effects on this European site have not been relied upon in reaching this conclusion.

[20] NPWS 2013 Site Synopsis: Kenmare River SAC [IE002158]. Available at: https://www.npws.ie/sites/default/files/protected-sites/synopsis/SY002158.pdf

European Site	Qualifying Interest/ Special Conservation Interests	Pathway for Effect	Possibility of Likely Significant Effects
the head of the bay. Numerous islands and inlets along the length of the bay provide further areas of additional shelter in which a variety of habitats and unusual communities occur.	• [2120] Shifting dunes along the shoreline with *Ammophila arenaria* (white dunes) • [2130] Fixed coastal dunes with herbaceous vegetation (grey dunes)* • [4030] European dry heaths • [5130] Juniperus communis formations on heaths or calcareous grasslands • [6130] Calaminarian grasslands of the Violetalia calaminariae • [8330] Submerged or partially submerged sea caves • [1303] Lesser Horseshoe Bat (*Rhinolophus hipposideros*) • [1014] Narrow-mouthed Whorl Snail (*Vertigo angustior*) • [1355] Otter (*Lutra lutra*) • [1365] Harbour Seal (*Phoca vitulina*)	No source-pathway-receptor link exists between the proposed development site and the SAC.	
Valencia Harbour/Portmagee Channel SAC [002158][21] Valencia Harbour and Portmagee Channel, at the tip of the Iveragh peninsula in Co. Kerry, separate Valencia Island from the mainland. The channel, which is approximately 1 km wide, and Valencia Harbour and Doulus Bay to the east of the	• [1140] Mudflats and sandflats not covered by seawater at low tide • [1160] Large shallow inlets and bays • [1170] Reefs	This SAC is located approximately 10km north-west of the proposed development site, and thus occurs outside the ZoI of direct habitat impacts and dust effects. Similarly, due to the distance there is no potential for the introduction of invasive plant species within the SAC. The SAC also occurs within a separate surface water catchment. There is no hydrological connectivity between the SAC and the proposed development site.	No potential for likely significant effects Measures intended to avoid or reduce negative effects on this European site have not been relied upon in reaching this conclusion.

[21] NPWS 2013 Site Synopsis: Valencia Harbour/Portmagee Channel SAC [IE002262]. Available at: https://www.npws.ie/sites/default/files/protected-sites/synopsis/SY002262.pdf

European Site	Qualifying Interest/ Special Conservation Interests	Pathway for Effect	Possibility of Likely Significant Effects
island, contain important examples of three habitats in particular reefs, large shallow inlets and tidal mudflats.		No source-pathway-receptor link exists between the proposed development site and the SAC.	
Iveragh Penninsula SPA [004154][22] The Iveragh Peninsula SPA is a large site situated on the west coast of Co. Kerry. The site encompasses the high coast and sea cliff sections of the peninsula from just west of Rossbehy in the north, around to the end of the peninsula at Valencia Island and Bolus Head, and as far east as Lamb's Head in the south. The site includes the sea cliffs, the land adjacent to the cliff edge and also areas of sand dunes at Derrynane and Beginish. The high-water mark forms the seaward boundary except at Doulus Head/Killelan Mountain where the adjacent sea area to a distance of 500 m from the cliff base is included. The site is underlain by Devonian sandstones, siltstones and	• [A009] Fulmar (*Fulmarus glacialis*) • [A103] Peregrine (*Falco peregrinus*) • [A188] Kittiwake (*Rissa tridactyla*) • [A199] Guillemot (*Uria aalge*) • [A346] Chough (*Phyrrhocorax Phyrrhocorax)*	This SPA is located approximately 4.7km south-west of the proposed development site and is designated for five special conservation interest (SCIs). Considering the distance between the SPA and the proposed development, there is no potential for the direct disturbance of species within the SPA. In addition, there is no suitable habitat within the proposed development site to support the SCIs. Furthermore, there is no hydrological pathway between the proposed development and this SPA. Thus, there is no potential for impacts. No source-pathway-receptor link exists between the proposed development site and the SPA.	No potential for likely significant effects Measures intended to avoid or reduce negative effects on this European site have not been relied upon in reaching this conclusion.

[22] NPWS 2013 Site Synopsis: Iveragh Peninsula SPA [IE004154]. Available at: https://www.npws.ie/sites/default/files/protected-sites/synopsis/SY004154.pdf

European Site	Qualifying Interest/ Special Conservation Interests	Pathway for Effect	Possibility of Likely Significant Effects
mudstones. A small area of igneous rocks (dolerite and gabbro) occurs at Beginish and on the adjacent shore.			
Deenish Island and Scarrif Island SPA [004175][23] Deenish Island and Scariff Island are small- to medium-sized islands situated between 5 and 7 km west of Lamb's Head off the Co. Kerry coast. Scariff is the larger of the two. It is steep-sided all the way around and rises to a peak of 252 m. The highest cliffs are on the south side. The island vegetation is a mix of maritime grassland, areas dominated by Bracken (*Pteridium aquilinum*) and heathy areas with Ling Heather (*Calluna vulgaris*). Deenish is less rugged than Scariff and rises to 144 m in its southern half; the northern half is lower and flatter. The vegetation is mostly grassland, with some heath occurring on the higher ground. Old fields are now overgrown	• [A009] Fulmar (*Fulmarus glacialis*) • [A013] Manx Shearwater (*Puffinus puffinus*) • [A014] Storm Petrel (*Hydrobates pelagicus*) • [A183] Lesser Black-backed Gull (*Larus fuscus*) • [A194] Arctic Tern (*Sterna paradisaea*)	This SPA is located approximately 8.5km south-west of the proposed development site and is designated for five waterfowl species. Considering the distance between this SPA and the proposed works there is no potential for the direct disturbance of species within the SPA. In addition, there is no suitable habitat within the proposed development site to support the SCIs. Furthermore, there is no hydrological pathway between the proposed development site and this SPA. Thus, there is no potential for impacts. No source-pathway-receptor link exists between the proposed development site and the SPA.	No potential for likely significant effects Measures intended to avoid or reduce negative effects on this European site have not been relied upon in reaching this conclusion.

[23] NPWS 2013 Site Synopsis: Deenish Island and Scariff Island SPA [IE004175]. Available at: https://www.npws.ie/sites/default/files/protected-sites/synopsis/SY004175.pdf

European Site	Qualifying Interest/ Special Conservation Interests	Pathway for Effect	Possibility of Likely Significant Effects
with Bracken and brambles (*Rubus* spp.). The surrounding seas to 500 m around the islands are included within the site.			

4.0 IDENTIFICATION OF LIKELY SIGNIFICANT EFFECTS

4.1 POTENTIAL FOR LIKELY SIGNIFICANT EFFECTS

As shown in Table 3-3above, a source-pathway-receptor link was identified between the proposed development and the Killarney National Park, Macgillycuddy's Reeks and Caragh River Catchment SAC which occurs directly adjacent to a section of the proposed development site (Section 2, Currane River Bridge).

The construction works associated with the proposed development have the potential to give rise to significant indirect effects on five qualifying interests (floating river vegetation, otter, Atlantic salmon, sea lamprey, river lamprey, Brook lamprey and freshwater pearl mussel) of the SAC.

The source-pathway-receptor model identified the potential for the proposed development to result in indirect impacts floating river vegetation via the degradation of water quality. The release of suspended solids can negatively impact *Ranuncullion fluitantis* and *Callitricho-batrachion vegetation* (Ní Bhroin, 2016). Impacts to the vegetation would result in a change of the area and distribution of the habitat.

The source-pathway-receptor model identified the potential for the proposed development to result in indirect impacts to otter which is a qualifying interest of the SAC. The release of construction pollution and/or sediment into the SAC, has the potential to result in indirect impacts on otter due to a degradation of water quality resulting in impacts on their feeding resources. Chanin (2003) notes that '*Otters are not directly affected by water quality and will forage in conditions that seem extremely unpleasant to humans, however, where deterioration in water quality leads to a deterioration in food supply there will clearly be an indirect effect*'.

Due to its close proximity, there is also potential for the disturbance of otter which may occur in proximity to the proposed development site. The construction of the new pedestrian bridge will result in two days of night-time works. Otter are crepuscular species so it is likely that the night works will coincide with the main activity period of otter within the area. Disturbance to otter can result in impacts to the foraging and resting habits.

The source-pathway-receptor model also identified the potential for the upgrade works to result in indirect impact to sea lamprey, river lamprey, brook lamprey, Atlantic salmon and freshwater pearl mussel which are qualifying interests of the SAC.

The release of construction pollution and/or sediment from the works area has the potential to result in a degradation of water quality within the SAC. The reduction in water quality along the Currane River may directly impact these aquatic species as they use the river during their life cycles. A degradation of water quality and the deposition of sediment within a watercourse could also negatively impact suitable spawning habitats (Hendry et al, 2003, Maitland, 2003 & Moorkens, 2000. Any effects to salmon may also affect the freshwater pearl mussel population located upstream. Glochidia, released by mature mussels, are transported to new areas by migrating salmon. Therefore, any impact on the salmon population in the catchment will have an effect on the life cycle of the freshwater pearl mussel population.

The above-mentioned risks have the potential to undermine the conservation objectives of the qualifying interests within the SAC and give rise to likely significant effects.

4.2 POTENTIAL FOR IN-COMBINATION EFFECTS: SCREENING

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. A search of the EIA portal[24] and the Kerry County Council planning portal[25] was therefore undertaken.

4.2.1 Projects

Hogs Head Golf Club (Planning Ref.: 16455)

A&M Hogs Head Golf Club Ltd. are proposing the development of a golf club and carpark at Waterville located directly adjacent to the N70 road within the proposed development site. The proposed club house will consist of a two-story structure built into the existing ground profile. The proposed development was subject to AA (produced by Malchy Walsh and Partners, 2016). The screening for AA report identified five European sites within 15km of the proposed club house; Ballinskelligs Bay and Inny estuary SAC, Killarney National Park, MacGillycuddy's Reek and Caragh River Catchment SAC, Iveragh Peninsula SPA, Kenmare River SAC and Deenish Island and Scariff Island SPA. The screening assessment concluded that the five European sites are not likely to be impacted by the proposed development and there is no potential for likely significant effects on the European sites. There is therefore no potential for the development of the club house to result in in-combination effects with the proposed road improvement works on any European sites.

Waterville Lake Hotel (Planning Ref.: 16787)

A&M Hogs Head Golf Club Ltd. are proposing the redevelopment of the existing Waterville Lake Hotel which will include the demolition of an existing three story 100-bedroom hotel, swimming pool building and ancillary structures. The construction of a smaller 48 room hotel and five commercial cottages is proposed in its place. The proposed new hotel is located adjacent to Lough Currane and approximately 370m east of the N70 road within the proposed development site. The proposed development was subject to AA (the AA Screening report and NIS was prepared by Malchy Walsh and Partners, 2017). The AA Screening report concluded that the proposed development would have likely significant effects on the qualifying interests of the Killarney National Park, Macgillycuddy's Reek and Caragh River Catchment SAC due to habitat alterations, disturbance and water quality impacts. The NIS provided further detail on the potential impacts and prescribes mitigation measures during the construction and operational phases of the development that will eliminate the risk of adverse effects on the integrity of the European site. Considering the implementation of the stringent mitigation measures, there is no potential for any in combination effects with the proposed development under appraisal in this report.

[24] https://housinggovie.maps.arcgis.com/apps/webappviewer
[25] https://kerry.maps.arcgis.com/apps/webappviewer/index.html?id=33565bc13600476c8c4bae1eadb8c22d

Minor Residential Developments Planning Refs.: 21490, 19474, 19814 and 161014)

There are a number of small-scale residential developments / conversions proposed in proximity to the proposed development site. Proposed works associated with the residential developments include extensions, conversions and small-scale demolition. The small residential developments however have no connectivity to any nearby European sites. Considering the small scale and temporary nature of the proposed residential developments, coupled with the lack of connectivity, there is no potential for the in-combination of effects.

4.2.2 Plans

Kerry County Development Plan 2022-2028

The proposed development site is located within the Kerry County administrative area. A review of the Kerry County Development Plan 2022-2028 was undertaken. The Plan includes objectives associated with the protection of European Sites and the environment (KCDP 11-1, KCDP 11-10, KCDP 11-15).

All new plans and projects proposed within the county must adhere to the above-mentioned policies and objectives. Adherence to the Council's policies and objectives will therefore ensure that all plans and projects proposed will not result in significant effects on biodiversity and European sites and includes the requirement that any future proposed plans or projects to be subject to Screening for Appropriate Assessment and/or Appropriate Assessment to examine and assess their effects on European sites, alone and in-combination with other plans and projects.

Cahersiveen, Waterville & Sneem Functional Areas Local Area Plan 2015-2019[26]

A review of the Local Area Plan (LAP) for the Functional Areas of Cahersiveen, Waterville and Sneem was undertaken to inform the in-combination assessment. The LAP similarly includes objectives for the protection of the natural environment the Natura 2000 network. A Habitat Directive Assessment of the Local Area Plan was prepared for the Cahersiveen, Waterville and Sneem Functional Areas in September 2012. The Habitat Directive screening report assessed the potential of the LAP to result in significant effects on Natura 2000 sites. The screening assessment concluded that the LAP would not result significant effects on Natura 2000 sites.

5.0 SCREENING FOR APPROPRIATE ASSESSMENT CONCLUSION

In view of best scientific knowledge and in the absence of mitigation measures, potential likely significant effects from the proposed development cannot be ruled out for the Killarney National Park, Macgillycuddy's Reeks and Caragh River Catchment SAC.

The screening assessment also determined that significant effects on other European sites could be ruled out with scientific certainty.

As part of this it is noted that there is no source-pathway-receptor link between the proposed development site and the qualifying interests and supporting habitats of the Ballinskelligs Bay and Inny Estuary SAC.

[26] Cahersiveen, Waterville and Sneem Functional Areas Local Area Plan 2013-2019. Volume 1 Written Statement and Maps. Kerry County Council.
http://docstore.kerrycoco.ie/KCCWebsite/planning/lap/caherciveen/caherciveen.pdf

It is also noted that measures intended to avoid or reduce negative effects on the Ballinskelligs Bay and Inny Estuary SAC have not been relied upon in reaching this conclusion.

In the Screening for Appropriate Assessment, this report s has concluded that a Stage 2 Natura Impact statement (NIS) be prepared for submission to the competent authority undertaking an assessment of potential adverse effects of the proposed development either alone or in-combination with other plans and projects on the integrity of the Killarney National Park, Macgillycuddy's Reeks and Caragh River Catchment SAC.

References

Chanin, P (2003). Monitoring the Otter Lutra lutra. Conserving Natura 2000 Rivers Monitoring Series No. 10, English Nature, Peterborough.

CIEEM 2018. Guidelines for Ecological Impact Assessment in the UK and Ireland – Terrestrial, Freshwater, Coastal and Marine (2018).

Collins, J. (2023) Bat Surveys for Professional Ecologists: Good Practice Guidelines (4th edn). The Bat Conservation Trust, London. ISBN-13 978-1-872745-96-1.

Cooper, L. M. (2004). Guidelines for Cumulative Effects Assessment in SEA of plans. EPMG Occasional Paper 04/LMC/CEA, Imperial College London.

County Bird Survey (2012) CBS Manual, Guidelines for Countryside Bird Survey Participants.

Cutts, N., Hemingway, K., Spencer, J., (2013). Waterbird Disturbance Mitigation Toolkit Informing Estuarine Planning and Construction Projects.

European Commission (2013). Interpretation Manual of European Habitats. Eur 28. April 2013.

Fossitt, J. A. (2000). A guide to habitats in Ireland. Heritage Council/Chomhairle Oidhreachta.

OPW (2012), Arterial Drainage Maintenance categories, Source » Pathway » Receptor Chains for Appropriate Assessment. OPW, Galway.

Department of the Environment, Heritage, and Local Government (DEHLG) (2010). Appropriate Assessment of Plans and Projects in Ireland, Guidance for Planning Authorities.

Hendry K & Cragg-Hine D (2003). Ecology of the Atlantic Salmon. Conserving Natura 2000 Rivers Ecology Series No. 7. English Nature, Peterborough.

Holman, C., Barrowcliffe, R., Birkenshaw, D., Dalton, H., Gray, G., Harker, G & Vining, L. (2014). IAQM Guidance on the Assessment of Dust from Demolition and Construction. Institute of Air Quality Management, London.

Inland Fisheries Ireland (2018) Inland Fisheries Ireland Summary Fish Counter Report. IFI/2019/1-4462.

Inland Fisheries Ireland (2020). IFI Consolidated Fish Counter Summary Report. IFI/2021/1/-4540.

Maitland PS (2003). *Ecology of the River, Brook and Sea Lamprey*. Conserving Natura 2000 Rivers Ecology Series No. 5. English Nature, Peterborough.

Malachy Walsh and Partners (2016). Screening for Appropriate Assessment. Clubhouse Development at Hogs Head Golf Club, Baslickane, Waterville, Co. Kerry. (Unpublished Report).

Malchy Walsh and Partners (2017). Natura Impact Statement, Hogs Head Lodge and Cottages Development. (Unpublished Report).

Marnell, F., Kelleher, C. & Mullen, E. (2022) Bat mitigation guidelines for Ireland v2. Irish Wildlife Manuals, No. 134. National Parks and Wildlife Service, Department of Housing, Local Government and Heritage, Ireland

Moorkens, E. (2000). Conservation Management of the Freshwater Pearl Mussel *Margaritifera margaritifera*. Part 2: Water Quality Requirements. Irish Wildlife Manuals, No. 9.

National Roads Authority (NRA) (2006) Guidelines for the treatment of otters prior to the construction of National Road Schemes.

Ní Bhroin (2016). Ecological Impact Assessment (EcIA) of the effects of Statutory Arterial Drainage Maintenance Activities on Water Courses of Plain to Montane levels with Aquatic vegetation (Floating River Vegetation). OPW.

NPWS, 2013. Site Synopsis: Killarney National Park, Macgillycuddy's Reeks and Caragh River Catchment SAC. (https://www.npws.ie/sites/default/files/protected-sites/synopsis/SY000365.pdf)

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 (2018) Conservation Objectives supporting document -lesser horseshoe bat (*Rhinolophus hipposideros*). Version 1.

NPWS (2019). The Status of EU Protected Habitats and Species in Ireland. Volume 1: Summary Overview. Unpublished NPWS Report.

National Roads Authority (NRA) (2008). Ecological Surveying Techniques for Protected Flora and Fauna during the Planning of National Road Schemes.

National Roads Authority (NRA) (2014). Good Practice Guidance for the Treatment of Noise during the Planning of National Road Schemes.

Smith, G.F., O'Donoghue, P., O'Hora, K., Delaney, E. (2011). Best Practice Guidance for Habitat Survey and Mapping. The Heritage Council, Kilkenny.

Williams, L (2017) Waterville N70 Road Improvement Scheme Aquatic Ecological Impact Assessment. (Unpublished Report).

(Blank Page)

www.tobin.ie

TOBIN Consulting Engineers

@tobinengineers

Galway
Fairgreen House,
Fairgreen Road,
Galway,
H91 AXK8,
Ireland.
Tel: +353 (0)91 565 211

Dublin
Block 10-4,
Blanchardstown Corporate Park,
Dublin 15,
D15 X98N,
Ireland.
Tel: +353 (0)1 803 0406

Castlebar
Market Square,
Castlebar,
Mayo,
F23 Y427,
Ireland.
Tel: +353 (0)94 902 1401

London
17 Bowling Green Lane
Clerkenwell
London,
EC1R 0QB,
United Kingdom.
Tel: (+44) (0)203 915 6301

Appendix 4 – Invasive Species Management Plan

(Blank Page)

Kerry County Council

N70 Waterville to Ballybrack Road Improvement Scheme

Invasive Species Management Plan

December 2025

www.tobin.ie

(Blank Page)

Contents

Table of Figures

1.0 INTRODUCTION

This Invasive Species Management Plan (ISMP) was prepared by TOBIN on behalf of Kerry County Council for the N70 Waterville to Ballybrack Road Improvement Scheme, located, in the townlands of Waterville, Ballybrack and Eightercua. The scheme proposes road improvement works along a section of road (approximately 1.37km in length) along the N70, commencing at the southern end of the promenade in Waterville Town and extending south towards Eightercua.

The proposed development site was searched for evidence of any invasive plant species, including invasive plant species listed in Part 1 of the Third Schedule of S.I No. 477/2011 - European Communities (Birds and Natural Habitats) Regulations 2011. Species protected under Flora (Protection) Order, 2015 (S.I. No. 356/2015) or listed under the Irish Red Data List of Irish Plants were also searched for.

The objectives of this Invasive Species Management Plan are:

- Objective 1: To provide a detailed account of the locations and abundance of invasive alien plant species (IAPS) found within the survey area.
- Objective 2: To provide information on how to control/ completely eradicate the invasive species within the survey area.

1.1 STATEMENT OF COMPETENCE

TOBIN is a multi-disciplinary consultancy employing over 180 people. TOBIN provides environmental and engineering consultancy services nationwide, to both public and private clients. This Dust Management Plan has been prepared by members of the TOBIN Roads and Ecology teams.

John O'Flaherty is a Chartered Engineer with over 26 years' post graduate experience in Civil Engineering. He has led multi-disciplinary teams in the delivery of Road Projects for over 18 years. In that time, he has delivered multiple National and Non-National Road Projects from Concept through to Handover.

Áine Sands (B.Sc.) is a qualified Senior Ecologist with seven years post-graduate experience in ecology and environmental consultancy. She has been involved in large public and private infrastructure projects where she has carried out numerous Screenings for Appropriate Assessments, Natura Impact Statements and Ecological Impact Assessments for the proposed developments. Áine has a strong understanding of National and European legislation associated with biodiversity and is cognisant of relevant rulings by the Court of Justice of the European Union (CJEU) associated with Appropriate Assessment. Áine also has experience with undertaking ecology surveys for protected habitats and species.

Brendan O'Connor (B.Sc.) is a qualified Ecologist with over five years of post-graduate experience in ecology. Brendan's current role is as an Executive Ecologist in the Environmental Assessment Unit of Kerry County Council. Brendan has extensive experience in the production of reports to inform AA screenings and Natura Impact Statements for various developments including quarries, small to large-scale housing and mixed-use developments and infrastructure projects. Brendan also has experience with undertaking ecology surveys for protected habitats and species.

1.2 LEGISLATIVE BACKGROUND

The definition of invasive species as prescribed by the Convention on Biological Diversity (CBD) is; *"species whose introduction and/or spread outside their natural past or present distribution threatens biological diversity."* Invasive species are found in all taxonomic groups including animals, plants, fungi, and microorganisms and can affect both terrestrial and aquatic ecosystems around the world. Invasive species can be classified as High Impact Species or Medium Impact Species.

The control of IAPS 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, otherwise than under and in accordance with a license granted in that behalf by the Minister shall be guilty of an offence'*. The European Communities (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 (*Fallopia japonica*), as follows*: 'any person who plants, disperses, allows or causes to disperse, spreads or otherwise causes to grow shall be guilty of an offence'*.

The key aim of the invasive species survey was to identify any potential species of High or Medium Impact including those listed on the Third Schedule, Part 1, of the European Communities (Birds and Natural Habitats) Regulations 2011, S.I. No. 477/2011 (commonly referred to as the Birds and Habitats Regulations), which may occur within the survey area.

Articles 49 and 50 of the Habitat Regulations details the legal requirements for the control of invasive alien species. Under Article 49 and 50 of these regulations, it is an offence to:

- Plant, disperse, allow, or cause to disperse, or grow any plant listed in Part 1 of the Third Schedule (i.e., High Impact Species);
- Possess the plant or any component of the plant for sale, reproduction, propagation, transportation, distribution, introduction or release any plant listed in Part 1 of the Third Schedule;
- Import or transport any plant listed in Part 1 of the Third Schedule; and/or
- Possess any vector material (e.g., soil, plant material) for the purposes of breeding, sale, distribution, introduction, or release as listed in Part 3 of the Third Schedule.

Note, licenses may be granted for certain activities associated with invasive species.

High Impact Species

These include species designated as high-risk species recorded in Ireland and those listed on the Third Schedule, Part 1 of the Birds, and Habitats Regulations (2011).

Medium Impact Species

Medium impact species include those that are amber listed by Invasive Species Ireland and are identified as those species that, under the right ecological conditions, may have an impact on the conservation goals of a site or impact on a water body achieving good/high ecological status under the Water Framework Directive. Additionally, medium impact species include those that are assessed as having a risk score of between 14-17 in a risk prioritization study, undertaken for invasive and non-native species on the Island of Ireland.

1.3 METHODOLOGY

This plan adopts the most relevant and current guidance in relation to the treatment and management of invasive plant species. The following guidance was referred to in preparation of this plan.

- Transport Infrastructure Ireland (TII) (2020). The Management of Invasive Alien Plant Species on National Roads – Technical Guidance. GE-ENV-01105.
- The Management of Invasive Alien Plant Species on National Roads - Standard. GE- ENV-01104
- Circular Letter National Parks and Wildlife Services (NPWS) 2/08 Use of Herbicide Spray on Vegetated Road Verges (National Parks and Wildlife Service 2008);
- Kerry County Council (2009) Information and Guidance Document on Japanese knotweed Asset Strategy and Sustainability and Environmental Agency (2013) Knotweed Code of Practice-Managing Japanese Knotweed on Development sites 2006-2013.

2.0 FIELD SURVEY

Multi-disciplinary ecological surveys of the proposed development site were undertaken by qualified and experienced Kerry County Council Ecologist on the 11th of September 2024. These ecological surveys supplemented the surveys undertaken by TOBIN ecologists on the 9th of June 2021 and on the 24th-26th of January 2022. The data collected was robust and allowed TOBIN to draw accurate, definitive and coherent conclusions on the possible impacts of the proposed development.

2.1 SURVEY METHODS

The survey was undertaken to identify and verify the presence of non-native species of High and Medium Impact, including those listed in the Third Schedule of S.I. No. 477 of 2011, EC (Birds and Natural Habitats) Regulations 2011, and establish the distribution of these species within the survey area.

2.2 SURVEY RESULTS

Several invasive plant species, including Japanese knotweed (Fallopia japonica) and Giant rhubarb (Gunnera tinctoria), listed in the Third Schedule of the SI 477/2011, were recorded in several locations within the scrub and woodland habitat adjacent to the N70 road. In addition to this several other invasive species were identified within the proposed development site, these included Montbretia (Crocosmia x crocosmiiflora), Buddleia (Buddleja davidii) and Himalayan honeysuckle (Leyesteria formosa).

A large patch of Japanese knotweed (JK2) was recorded at the southern section of the proposed development site, on the eastern boundary of the road (coordinates: 51.815471, -10.161984). The infestation included over 80 stands of Japanese knotweed ranging between 2-3m in height. The area of Japanese knotweed is located within the works area and will be directly disturbed by the proposed construction works.

Figure 2.0-1: Location of Japanese knotweed

A second large infestation (JK1) was recorded further north along the road (coordinates: 51.816227, -10.163250), with over 200 stands 4m in height present. Similarly, the patch of Japanese knotweed is located within the proposed development site and will be directly disturbed.

A third infestation of Japanese knotweed (JK3) was recorded along the eastern bank of the Finglas River (Waterville) (coordinates: 51.818727, -10.170685). The infestation is not located within the proposed development site boundary and will not be disturbed by the proposed works.

Giant rhubarb was seen growing in scrub on the southern side of the N70 (coordinates: 51.8183795, -10.166156).

It was noted in the September 2024 surveys that a treatment program for the elimination of the Japanese Knotweed had begun on the N70, and this included the proposed development site.

Figure 2.0-2: Japanese knotweed along the N70

Figure 2.0-3 Giant Rhubarb adjacent to N70

3.0 BACKGROUND TO MANAGEMENT OF JAPANESE KNOTWEED

3.1 DESCRIPTION

Native to Japan, Taiwan, and Northern China, Japanese knotweed was introduced to the Kew Gardens (UK) in 1825 and to Ireland later in the 19th Century. It was introduced into large demesne estates as an ornamental garden plant due to its spectacular foliage and attractive white flowers. It has since spread beyond the confines of cultivated gardens where it has now spread throughout habitats in Ireland.

Japanese knotweed is a perennial plant. Only female Japanese knotweed plants exist in Ireland, and while they can produce seeds, they are rarely actually viable. Instead, the plant spreads by way of rhizome or underground system. Cut stems of growing plants can also produce new shoots and rhizomes when buried in soil or immersed in water. A fingernail sized piece of any of the parts of the plant can produce a new plant. Therefore, any of this material must be treated as a biohazard on site. It is only when cut stems are allowed to dry out thoroughly that no further regeneration will occur in this way. However, rhizomes or underground stem material can remain dormant for up to 20 years.

This invasive species has an ability to grow through the edge of asphalt, walls, floors, foundations, and footpaths. The rhizomes can form an extensive underground network extending (up to 7m) from the above ground plant material and going down deep into the soil (depending on ground conditions). The rhizomes are in the top 0.25m of the soil.

This highly invasive species is a cause for concern as it grows in thick monospecific stands, outcompeting native plants for space, light, and nutrients. This results in a change in plant community structure and habitat and in turn causes adverse effects on local biodiversity.

3.2 IDENTIFICATION

This section of the report provides a general background on the characteristics of Japanese knotweed.

There are four species of the knotweed family found in Ireland. The most common of these is Japanese knotweed. The remaining three species are; giant knotweed (*Fallopia sachalinensis*), a hybrid knotweed plant known as bohemian knotweed (*Fallopia bohemica*) which is a cross breed of Japanese knotweed and giant knotweed, and Himalayan knotweed (*Persicaria wallichii*), a hybrid between Japanese knotweed and Himalayan balsam.

Japanese knotweed is a robust, herbaceous perennial plant with hollow, bamboo-like stems. It forms yellow cream flowers in late June or August.

3.2.1 Distinctive Characteristics

- It is rhizomatous (produces underground stems) with distinctive hollow, bamboo-like stems that can grow up to 3m in height.
- The mature canes are hollow and have a characteristic pattern of purple speckles.
- During the winter, the leaves die back and reveal orange/brown woody stems.
- The underground rhizomes are thick, woody and when broken reveal a bright orange coloured centre.
- The rhizomes can extend laterally for up to 7m away from the parent plant. Small fragments of rhizomes can re-sprout, and the principal means of spread is through the deliberate or accidental movement of rhizome fragments or cut stems.

3.2.2 Aerial Parts

During the summer, Japanese knotweed has pointed, heart shaped leaves, approximately the size of a human hand which are staggered on the stem. In late summer or early autumn, small clusters of white flowers will appear. The stems, which are hollow and bamboo-like, are green with red spots and have a distinctive zigzag appearance.

During late autumn and the beginning of winter the knotweed canes die off and the weed becomes dormant. The leaves turn from green to yellow to brown and then fall off. The canes are hollow, dark brown and brittle.

3.2.3 Identification of Rhizomes

Japanese knotweed rhizomes are the underground part of the plant. A rhizome is a modified plant stem that sends out roots and shoots from its nodes. The outside of the Japanese knotweed rhizome is dark brown while the inside is bright orange/yellow in colour. As mentioned above the Japanese knotweed rhizome system can spread up to 3m in depth and 7m laterally from the parent plant in certain circumstances, and particularly where the plant is well established it may extend further than this. The rhizomes are responsible for spreading the plant by vegetative means.

The rhizomes can extend laterally for up to 7m away from the parent plant. Small fragments of rhizomes can re-sprout, and the principal means of spread is through the deliberate or accidental movement of rhizome fragments or cut stems.

3.3 CHOOSING AN APPROPRIATE TREATMENT METHOD

Note: all the proposed management options listed below involve the use of herbicides. It is important when using herbicides that the manufacturer's instructions are followed and that there is compliance with relevant legislation. The application of herbicide can only be applied by a person with appropriate training and who has received an appropriate certificate as per legislation.

3.3.1 Chemical Treatment

This option involves the application of a herbicide to the Japanese knotweed stand without any excavation or removal of the plant material. The preferred types of herbicides to be used in the treatment of Japanese knotweed are Glyphosate and 2,4-D Amine. Generally, if herbicide is applied as the treatment option, it will need to be reapplied for up to five years after the first application to ensure the plant control measures have been effective or monitored for a minimum of 2 years during which no regrowth is recorded.

The most effective time to apply Glyphosphate is from July to September (or before cold weather causes leaves to discolour and fall). Most herbicides are not effective during the winter dormant stage because they require living foliage to take up the active ingredient. It is essential that a competent and qualified person carries out the herbicide treatment in accordance with the Kerry County Council Biocide Strategy and Policy. Reapplication rates will depend on site specific considerations including the extent of the infestation, its location, and the time of year treatment commences.

3.3.2 Foliar Application

This type of treatment is usually applied with a sprayer such as a knapsack sprayer. It is important to use a treatment dye to identify clearly all areas treated. It is an efficient way to treat large monocultures of invasive plants, or to spot-treat individual plants that are difficult to remove mechanically such as Japanese knotweed.

Depending on weather and temperatures in the days following the initial treatment, and to ensure optimal uptake of herbicide into the rhizome system, a second similar treatment will be required usually within ten days, before the internal vascular system is no longer capable of translocating the herbicide to the root system. While the upper surface of the leaves will be easier to treat, it is also important to treat the leaf under surface as Japanese knotweed possesses many stomata openings on the leaf under surface. Dead stems should be cut, removed, and burned on site in accordance with the Waste Management Acts 1996 as amended and the Waste Management (Prohibition of Waste disposal by burning) Regulations 2009 (SI 286).

For deep rooted species, such as Japanese knotweed, regrowth will occur in subsequent years, albeit much less vigorously, which will require follow up treatment at the appropriate time of year. Spot treatment will be required each year until no regrowth is observed.

3.3.3 Stem Injection

The stem injection method is sometimes used for Japanese knotweed control. This treatment requires a higher concentration of the active ingredient than is used in foliar applications. It involves the use of a specialist herbicide injection tool whereby the injection tool injects the herbicide directly into each of the canes approximately 20-30cm from the base of each cane (between the 1st and 2nd nodule). Subsequently approximately 10ml of herbicide mix is injected into each cane at a ratio of 5:1 using a specialist stem injection tool. The application of glyphosate- based products are most effective when applied in the early Autumn (mid to late September). Regrowth will occur in subsequent years, albeit much less vigorously, which will require follow- up treatment at the appropriate time of year. Spot treatment will be required each year until no regrowth is observed.

3.3.4 Cutting and Injecting

As the name suggests this management approach requires the cutting of a plant that has matured (in mid to late September) to approximately 200mm above ground and ideally 40mm above the node. The cut material must be left on top of plastic sheeting until dried out and subsequently monitored for any sign of regrowth (this is not recommended for a riverbank habitat where there is the possibility of flooding occurring). Once dried out, the material should be burned on site in accordance with the Waste Management Acts 1996 as amended and the Waste Management (Prohibition of Waste disposal by burning) Regulations 2009 (SI 286). Herbicide is then injected into the remaining hollow stems; subsequent spot treatment of herbicide may be required for up to five years after the initial application. This method of treatment can be very labour intensive particularly if there is a large extent of infestation.

Studies carried out in 2004 for the cut and inject method stated “Initial monitoring has shown a success rate of between a 60% to 95% kill of Japanese knotweed in the treated areas. Although the cut and inject method did not match the kill of the more commonly used method of foliar spraying it did allow very selective application” [7].

3.3.5 Combined Treatments

Wherever possible, Japanese knotweed should be treated in its original location. Excavating Japanese knotweed should only be considered as a last resort unless this is part of an on-site treatment method.

For all forms of treatment or management involving excavation, the Environmental Agency (EA) Guidelines[8] advise that the extent of the rhizome network should be identified prior to excavation. Where it is known that recently contaminated soil has been introduced to the site, the rhizome system may not be deeper than 3m. However, where you are dealing with long established infestations of Japanese knotweed the extent of the rhizome system can be deeper than this. These guidelines also advice on applying a non-persistent herbicide to the proposed excavation area approximately two weeks before the planned excavation takes place.

The above chemical treatment methods would not be suitable methods at the proposed development site due to proposed program of works.

3.3.2.1 Excavation and Herbicide Treatment

This option employs both physical and chemical methods of treatment. This method is employed in situations where treatment of the Japanese knotweed is required to be completed in a shorter timeframe. The EA guidance suggest that by digging up the rhizomes and recultivating it stimulates plant growth and will result in more successful herbicide application and management.

In summary this management method requires cutting and killing of the surface plant. The cut material must be left on top of plastic sheeting until dried out and subsequently monitored for any sign of regrowth (this is not recommended for a riverbank habitat where there is the possibility of flooding occurring). They should not be placed in a green waste recycling bin. Once dried out, the material should be burned on site in accordance with the Waste Management Acts 1996 as amended and the Waste Management (Prohibition of Waste disposal by burning) Regulations 2009 (SI 286). The surface of the affected area should be raked with tines to remove crowns and surface material, and to break up the rhizomes, bringing them to the surface, which will stimulate leaf production. This will make the plant more vulnerable to herbicide treatment. The more rhizomes that are brought to the surface, the more growth will occur and allowing for a more successful treatment. An excavator can be used to scrape the surface crowns and rhizomes into a pile and then cultivate the ground to stimulate rhizomes to produce higher density of stems for treatment. Reapplication of herbicide may be required for up to five years after initially application, subject to the site-specific management plan.

3.3.2.2 Excavation and Burial

Excavated material containing Japanese knotweed can also be buried on site. This will require burying the material at a depth of at least 5m. The contaminated material must be covered with a root barrier membrane before being backfilled with topsoil or other suitable fill material. The membrane must stay intact for at least 50 years. A manufacturer's guarantee is required.

Accurately map and record the location of the burial site to prevent any future accidental disturbance. Inform future owners of its position. Following the provisions of the Waste Management Act 1996, as amended, a license or permit may be required for the burial of excavated material.

If soil containing Japanese knotweed is stockpiled, the material must be stored in a manner that will not harm health or the environment. The stockpile should be on an area of the site that will remain undisturbed. The area should be clearly fenced and signed and should be regularly treated with herbicide to prevent any regrowth or reinfestation. As a precaution, the stockpiled material should be laid on a root barrier membrane and covered to avoid contaminating the site further.

This option is not feasible within the proposed development site due to the lack of sufficient space for burial.

3.3.2.3 Excavation and Root Barrier Cell Method

Under the Waste Management Act 1996, as amended, a license or permit may be required for the burial of excavated material. If soil containing Japanese knotweed is stockpiled, the material must be stored in a manner that will not harm health or the environment. The stockpile should be on an area of the site that will remain undisturbed. The area should be clearly fenced and signed and should be regularly treated with herbicide to prevent any regrowth or reinfestation. As a precaution, the stockpiled material should be laid on a root barrier membrane and covered to avoid contaminating the site further.

This option is not feasible within the proposed development site due to the lack of sufficient space for burial.

3.3.2.4 Excavation and Bund Method

Where there is not sufficient depth on a site for deep burial the EA Guidelines[8] set out another option whereby such excavated material is placed in a structured bund. The bund will comprise a raised area above ground level or a shallow excavation, no more than 0.5m deep, and lined with a root barrier membrane. The membrane must stay intact for at least 50 years and a manufacturer's guarantee is required. This method of treatment can also be used where the Japanese knotweed material needs to be moved from a location and there is another ideal area of the site available to contain it. Following the provisions of the Waste Management Act 1996, as amended, a license or permit may be required for the burial of excavated material.

The aim of this method is to concentrate the rhizome material into the upper surface of the bund, where it will grow and be controlled by herbicide. If the rhizome is buried deep, it will become dormant when inside the bund and regrow when the apparently clean soil is used for landscaping on the site. The bund location needs to be clearly signed and protected from potential accidental damage.

Reapplication of herbicide may be required for up to five years after the initial application, subject to the site-specific management plan.

This option is not feasible within the proposed development site due to the lack of sufficient space to create a bund.

3.3.2.5 *Excavation and Removal from Site*

This option is generally considered to be the least favourable option because of the prohibitive costs involved and risks with spreading the IAPS further.

Where the above treatment options are not possible (site is too small to contain excavated material, too shallow for burial, or where there is lack of space) removal of excavated material may be the only option. Where there are small amounts of Japanese knotweed material to be removed it is possible to double bag the material and send to a fully licensed waste facility for disposal (i.e., landfill). Where the amount of material is larger in volume it will be necessary to haul from site to a suitably licensed waste facility.

It should also be noted that in the process of excavating the Japanese knotweed if it has been treated with a persistent herbicide, the excavated material will need to be classified as hazardous waste and therefore will need to be disposed of to a hazardous waste facility.

Furthermore, if Japanese knotweed contaminated material is removed off site it will require a license from the NPWS in advance of any removal, in accordance with the European Communities (Birds and Natural Habitats) Regulations 2011 (SI 477).

This is the preferred treatment option for the Japanese knotweed within the proposed development site due to program of works and lack space.

A summary of the above treatment methods is outlined in Table 3-1 below.

Table 3-1 Summary of Management Options for Japanese Knotweed

Treatment	Description	When	Follow up Treatment	Comment
Chemical Treatment-General	The application of a herbicide to the Japanese knotweed plant without the removal of the plant.	Glyphosate: May to October (later in the season is preferable)2,4-D Amine: May to October (earlier in the season is preferable).	Up to five years after the first application or monitored for a minimum of 2 years during which no regrowth is recorded.	The two preferred herbicides to use are Glyphosate and 2,4-D Amine.
Chemical Treatment Foliar Application	Herbicide is applied directly on plant with a sprayer using a treatment dye	Refer to relevant instructions for specific herbicide used	A second similar treatment will be required usually within ten days before the internal vascular system is no longer capable of translocating the herbicide to the root system. Regrowth will occur in subsequent years, all be it much less vigorously, which will require follow up treatment at the appropriate time of year. Spot treatment will be required each year until no regrowth is observed.	• Most desirable method of treatment. • Most cost-effective method of treatment. • May not be possible if development of the site is a priority. • Used to treat large monocultures of invasive plants, or to spot-treat individual plants that are difficult to remove mechanically such as Japanese knotweed. • Dead stems should be cut, removed, and burned on site in accordance with relevant waste legislation.
Chemical Treatment-Stem Injection	Use of specialist herbicide injection tool whereby the injection tool injects the herbicide directly into	Glyphosphate based products are most effective when	Spot Treatment will be required each year until no regrowth is observed	• Labour intensive • Suited to smaller areas of infestation.

Treatment	Description	When	Follow up Treatment	Comment
	each of the canes approximately 20-30cms from the base of each cane. Subsequently approximately 10 mls of herbicide mix is injected into each cane.	applied in the early Autumn (mid to late Sept)		• Requires a higher concentration of the active ingredient than is used in foliar applications.
Chemical Treatment- Cutting and injecting	Cut stems down, inject individual stems with herbicide	Mid to late September	Herbicide application may be required for up to 5 years after initial application	• Labour intensive • Suited to smaller areas of infestation. • Limited to time of year when this method can be employed. • Cut stems should be stored on plastic sheeting until dried out and no signs of regrowth, then burned in accordance with relevant waste legislation. • This method is not suitable for riverside sites which may be liable to flooding.
Combination Treatments	All forms of such treatment will require excavation and chemical treatment	Refer to relevant treatment type	Refer to relevant treatment type	• The extent of the rhizome network should be identified prior to excavation. • A non-persistent herbicide should be applied to the proposed excavation area approximately two weeks before the planned excavation takes place.
Excavation and Herbicide Treatment	Excavate, promote growth of rhizomes to increase success of herbicide application. The	Excavation can occur at any stage but to optimize herbicide treatment,	Herbicide application may be required for up to 5 years after initial application	• May be required where faster treatment is needed. • Cut stems should be stored on plastic sheeting until dried out and

Treatment	Description	When	Follow up Treatment	Comment
	surface of the affected area should be raked with tines to remove crowns and surface material, and to break up the rhizomes, bringing them to the surface, which will stimulate leaf production. This will make the plant more vulnerable to herbicide treatment.	application must occur during the growing season(May-October).		no signs of regrowth, then burned in accordance with relevant waste legislation. • Suited to a site where infested area is not required to be developed immediately. • This method is not suitable for riverside sites which may be liable to flooding.
Excavation and Burial	Excavate, allow plant material to die off and bury at 5metre depth with root barrier membrane	Following excavation	Monitor site of excavation and burial regularly	• Requires space to store excavated material before burial. • Requires space for deep burial. • Costly to bury at this depth with a root barrier membrane. • The membrane must stay intact for at least 50 years. • A manufacturer's guarantee is required. • If excavated material needs to be stockpiled the material must be stored in a manner that will not harm health or the environment e.g., store on root barrier membrane. • May require a waste license or permit for burial.
Excavation and Root Barrier Cell Method	Excavated material containing Japanese knotweed can also be buried on site within a	Following excavation	Monitor site of excavation and burial regularly	• Requires space to store excavated material before burial. • Requires space for burial.

Treatment	Description	When	Follow up Treatment	Comment
	root barrier membrane cell. This will require burying the material at a depth of at least 2m.			• Costly to bury at this depth within a root barrier membrane cell. • The membrane must stay intact for at least 50 years. • A manufacturer's guarantee is required. • If excavated material needs to be stockpiled the material must be stored in a manner that will not harm health or the environment e.g., store on root barrier membrane. • May require a waste license or permit for burial.
Excavation and Bund Method	Excavated material is placed in a structured bund (shallow lined area lined with a root barrier membrane) of no more than 0.5 metre depth which can be raised above ground level or placed within a shallow excavation. The aim of this method is to concentrate the rhizome material into the upper surface of the bund, where it will grow and be controlled by herbicide.	Following excavation	Apply suitable herbicide	• Used where the knotweed material needs to be moved from a location if there is another ideal area of the site available to contain it. • May require a waste license or permit for burial.
Excavate and Removal Off-Site	Excavate, remove off site to a fully licensed waste facility	Following excavation	Monitor site of excavation regularly. Inform operator of destination waste	• Least desirable method of treatment.

Treatment	Description	When	Follow up Treatment	Comment
			facility of content of waste beforehand	• Costly to remove material from site and landfill. • Potential for higher costs if material is deemed hazardous. • Will require a license from the NPWS in advance of any removal.

Note: Before all excavations, treat affected area with a non-persistent herbicide, if during the growing season.

3.4 TRANSPORTING CONTAMINATED MATERIAL

This is only to be conducted if all other options are not viable.

- A loading area, a clean-down area must be set up before any trucks arrive on-site or any work takes place within 7m of the knotweed.
- Stockpile areas shall be chosen to minimise the movement of contaminated soil. Any stockpiles must be clearly marked and isolated.
- A license from the NPWS must be obtained for the transportation of contaminated material.
- Additional to this, if the material has been treated through chemical means it may need to be classified as hazardous waste.
- Vehicles used to transport materials must be lined and covered and shall be decontaminated before they leave the work zone.
- Do not fill the truck to the very top (min 20cm) and seal securely with a suitable membrane for transportation to ensure no material can escape.
- Biosecurity measures shall be implemented for de-contamination.

3.5 PREVENT FURTHER SPREAD AND INTRODUCTION OF INVASIVE SPECIES

- On completion of site decontamination, biosecurity measures shall be removed under the supervision of a qualified ecologist.
- No material will be removed off-site without prior consultation and consent from the qualified ecologist. A management plan will be required to transport and dispose of materials off-site.

3.6 ASSESSMENT OF TREATMENT OPTIONS

Both areas of infestation as identified in Section 2.2 have been the subject of the TII routine maintenance of invasive species for the past number of years. This, however, cannot inform the proposed treatment option as there is still clear evidence of growth recorded by the TII survey in September 2024.

There are a few constraints to consider in the assessment of options:

- There is no area within the site to provide for burial.
- The area of both the infestations within the boundary of the site is quite small.
- The development is required to be delivered in the short term.

Given these constraints, the only viable option for treatment is to Excavate and Remove off-site to a fully licensed waste facility.

Professional services will be used to manage this process. Disposal will be carefully coordinated under the supervision of an ecologist and landfill engineer to ensure the fullest protection possible for the environment and building readiness of the site. Full chain of custody and safe disposal certificates will be provided.

A biosecurity plan and license will be required in advance of disturbing the infected area. Strict and verified biosecurity and control measures will be put in place to reduce risks associated with excavation and transport of the materials.

4.0 MANAGEMENT PLAN AND MONITORING

4.1.1 Seed Bank

Although seeds from this invasive species are rarely viable, a fragment of this plant, the size of a fingernail, could reproduce a plant. Therefore, it is imperative that those involved in the treatment process are aware of the threat of plant fragments being dispersed, more so than the spread of seeds.

4.1.2 Timing

As previously mentioned in Section 3.6, the excavate and remove method can occur at any stage of the year, but the chemical treatments must be carried out in early autumn (mid to late September).

4.1.3 Legislative Framework

Invasive species material can only be removed off-site by a licensed waste haulier and brought to a licensed waste facility. Under Statutory Instrument 477/2011 it is an offence to transport Invasive Species (as listed in the Third Schedule), their propagules or a vector material without first obtaining a license from NPWS.

4.1.4 License from National Parks and Wildlife Service

A NPWS transport license must be obtained and submitted to the receiving waste facility before excavation works commence.

A license application must include:

- As much information as possible on the removal, transportation and treatment of the species in question;
- A detailed description of the biosecurity measures that will be in place;
- A copy of the Japanese Knotweed Management plan; and
- Details of the timeframe for carrying out the work.

4.1.5 Waste Acceptance Criteria Analysis

Excavated material will require a Waste Acceptance Criteria analysis to be conducted in advance of transport. The soil can only be transported to a licensed waste facility that has been notified in advance of the nature of the waste and has agreed to accept the waste material.

Biosecurity measures shall be put in place on site, appropriate to containing and safely removing all vegetative material and contaminated soil. Monitoring and treatment shall be ongoing until all ground works are complete.

4.1.6 Biosecurity Protocols

The following biosecurity protocols should be applied onsite by all site personnel. The protocols include the following:

- All site personnel shall be trained via a 'Toolbox Talk,' which will show the identification of Japanese knotweed;
- Exclusions zones must be clearly marked or fenced off to prevent accidental incursions;
- All works within 7m of Japanese knotweed must be supervised by an Ecological or Invasive Species Clerk of Works;
- A designated clean down area(s) should be created adjacent to the exclusion zone;
- All equipment, PPE, and machinery to entering and leaving the site must be thoroughly cleaned down within the designated clean down area;
- All footwear should be thoroughly cleaned using brushes and soapy water;
- All personnel are always to be mindful of the threat posed by the spread of Japanese knotweed and to take all precautions to ensure that their actions do not result in the accidental movement of contaminated material.

4.2 RESURVEYING

As previously mentioned, although seeds from this plant are rarely viable, a very small fragment of Japanese knotweed can in fact cause the further spread of this invasive species. Therefore, annual monitoring of the area after the initial treatment will be required to detect and treat any regrowth, in the bid to achieve full eradication of the plant population.

5.0 RECOMMENDATIONS

Japanese knotweed is a high-risk invasive species and should be treated in accordance with this ISMP. The preferred treatment option is detailed in Section 3.6. Annual monitoring of the area and follow-up treatments should be conducted under the supervision of a qualified ecologist.

5.1 Management of Other Invasive Species

Two further species of invasive plants were identified on the site. Giant Rhubarb was identified in the verge adjacent to the Hogs Head Golf Course on the southern end of the site and Himalayan Honeysuckle where a setback of the road boundary is in place nearby.

Figure 5.1-1 Location Map

5.1.1 Giant Rhubarb

Giant Rhubarb has unmistakable massive rhubarb-like leaves (up to 100 cm in diameter and 200 cm in height) which emerge from a perennial rhizomatous rootstock on stout stalks. It is found throughout the country but generally grows best close to water or in wetter areas along the southern and western coast.

A single stand of Giant Rhubarb was recorded close to the stand of Japanese Knotweed noted above. The application of glyphosate late in the growing season (late August to early September) by direct application to cuts made on the stems or on leaf stalks following cutting back of leaves is likely to be most effective. Subsequent treatments and site visits will be required.

Using the recommended concentration, thoroughly spray the leaves on both sides if possible. If the plants are close to waterways or are not possible to spray due to the size of the plants, the leaves can be cut at the base and herbicide applied directly to the stumps. Herbicide should be applied immediately after cutting, with a brush or sponge. It is possible that herbicide will need to be reapplied to larger plants.

Figure 5.1-2 Giant Rhubarb

5.1.2 Himalayan Honeysuckle

Himalayan Honeysuckle is another Invasive species, listed under the European Communities (Birds and Natural Habitats) Regulations 2011 present on the site.

Herbicide treatment (such as our Green MattersTM foam treatment) - is the most effective method, particularly when applied in late summer/early autumn when the plant is storing energy in its roots. If near watercourses, use only aquatic-approved herbicides to prevent contamination and consider stem injection technique for a more precise application. Maintain a buffer zone (at least 10 metres) and avoid herbicide run-off.

5.1.3 Treatment Management

Management plans and monitoring as described for the treatment of Japanese Knotweed should be extended to cover the treatment of Giant Rhubarb and Himalayan Honeysuckle. Professional services will be used to manage this process. Disposal will be carefully coordinated under the supervision of an ecologist and landfill engineer to ensure the fullest protection possible for the environment and building readiness of the site. Full chain of custody and safe disposal certificates will be provided.

A biosecurity plan and license will be required in advance of disturbing the infected area. Strict and verified biosecurity and control measures will be put in place to reduce risks associated with excavation and transport of the materials.

(Blank Page)

www. tobin.ie

TOBIN Consulting Engineers

@tobinengineers

Galway
Fairgreen House,
Fairgreen Road,
Galway,
H91 AXK8,
Ireland.
Tel: +353 (0)91 565 211

Dublin
Block 10-4,
Blanchardstown Corporate Park, Dublin 15,
D15 X98N,
Ireland.
Tel: +353 (0)1 803 0406

Castlebar
Market Square,
Castlebar,
Mayo,
F23 Y427,
Ireland.
Tel: +353 (0)94 902 1401

Limerick
Ducart Suite
Castletroy Commercial Campus
Limerick
V94 Y6FD
Ireland
Tel: +353 (0)61 574 413