Panther Environmental Solutions Ltd
Units 3 & 4, Innovation Centre
Institute of Technology
Green Road, Carlow
Ireland
R93 W248

Telephone: 059-9134222
Email: info@pantherwms.com
Website: www.pantherwms.com

ENVIRONMENTAL IMPACT ASSESSMENT REPORT

BIODIVERSITY CHAPTER

KEREEN QUARRIES LTD,
KEREEN,
AGLISH,
CO. WATERFORD

2021

REPORT NO:	PES_EIAR_ 21242	**AUTHOR:**	Ross Donnelly-Swift, PhD.
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1.1 INTRODUCTION

This section outlines the biodiversity and water quality currently present in the area of the proposed development and assesses the impact of the proposal on the habitats, species and watercourses identified. This section should be read in conjunction with the site layout plans for the proposed development and project description sections of the EIAR. Mitigation measures have been proposed where required.

The ecological assessment involved a desktop review and the undertaking of a field assessment of the site to identify habitats and species of flora and fauna present in order to determine the ecological diversity of this area.

The objectives of the ecological assessment were as follows:

- To undertake a comprehensive desktop review to identify European sites (Natura 2000 sites) within the vicinity of the proposed development and to determine previously recorded fauna for the area;
- Other protected sites of national importance were identified within the vicinity of the proposed development
- To undertake field assessments of the proposed development site and surroundings;
- To evaluate the biodiversity value of the proposed development and surroundings;
- To determine and assess the potential impacts of the proposed development on biodiversity;
- To propose mitigation measures for both the construction and operational phases of the development to reduce potential impacts upon biodiversity.

1.2 LEGISLATIVE FRAMEWORK AND PLANNING POLICY

1.2.1 LEGISLATIVE CONTEXT

The main legislation pertaining to biodiversity and nature conservation in Ireland is outlined below.

The Wildlife Act, 1976 and Wildlife (Amendment) Act, 2000

The Wildlife Act is the primary piece of Irish legislation providing for the protection and conservation of wildlife and provides for the control of specific activities which could adversely affect wildlife, for example the regulation of hunting and wildlife trading. Under the Wildlife Act, all bird species, 22 other fauna species and 86 flora species in Ireland are afforded protected status. The Wildlife Act, 1976 allows for the designation of specific areas of ecological value such as Statutory Nature Reserves and Refuges for Fauna. The Wildlife (Amendment) Act, 2000 provides for greater protection and conservation of wildlife and also provides for the designation and statutory protection of Natural Heritage Areas (NHA).

The Flora (Protection) Order, 2015 (S.I. 356 of 2015)

This order provides statutory protection to flora listed in Section 21 of the Wildlife Act, 1976 and Wildlife (Amendment) Act, 2000. Under the Order, it is illegal to wilfully cut, uproot or damage the listed species or interfere in any way with their habitats.

The Local Government (Water Pollution) Act, 1977, as Amended

This Act provides for the control of water pollution, by prohibiting the discharge of un-licenced polluting matter into waters.

European Communities (Birds and Natural Habitats) Regulations, 2011 (S.I. 477 of 2011)

These regulations transpose the European Council Directive 92/43/EEC on the Conservation of Natural Habitats and Wild Fauna and Flora (known as the "Habitats Directive") and the European Council Directive 2009/147/EC on the Conservation of Wild Birds (known as the "Birds Directive") into Irish Law. The regulations provide for the designation and protection of Natura 2000 sites comprising of Special Areas of Conservation (SAC) and Special Protection Areas (SPA). The regulations safeguard the SAC and SPA sites from developments with the potential to significantly impact upon them. The EC (Birds and Natural Habitats) Regulations also address invasive species, making it an offence without a licence to plant, allow to disperse, escape or spread, to reproduce or propagate, to transport, to sell or advertise invasive species specified in the regulations.

European Communities Environmental Objectives (Surface Waters) Regulations, 2009 (S.I. 272 of 2009)

The regulations give statutory effect to Directive 2008/105/EC and provide legal status to quality objectives for all surface waters and environmental quality standards for pollutants. The regulations allow for the classification of surface waters by the Environmental Protection Agency (EPA) in accordance with the ecological objectives approach of the Water Framework Directive. The regulations also provide for the establishment of inventories of priority substances by the EPA and the preparation of pollution reduction plans.

Water Framework Directive (2000/60/EC)

The Water Framework Directive (WFD) aims to improve the water environment (including groundwater, rivers, lakes, estuaries and coastal waters) of E.U. Member States. The aim of the WFD is for Member States to achieve and maintain "good status" in all water bodies.

The Fisheries (Consolidation) Act, 1959, as Amended

The Act prohibits the entry of polluting substances into waters, which have the potential to adversely impact upon fish, prohibits the obstruction of passage of certain fish species and provides legal protection to the spawn/fry of eels, salmon and trout, in addition to their spawning or nursey grounds.

Fisheries (Amendment) Act, 1999

This Act outlines the responsibilities of the Regional Fisheries Board to ensure the protection and conservation of fish and their habitats within its area of jurisdiction.

European Communities (Quality of Salmonid Waters) Regulations, 1988 (S.I. 293 of 1988)

These regulations give statutory effect to Directive 78/659/EEC. The regulations designate salmonid waters, specify the quality standards for designated salmonid waters and outline the monitoring requirements.

Planning and Development Regulations, 2001 to 2018

These regulations transpose the requirements of Directive 2014/52/EU (and previous Directive 2011/52/EU) on the assessment of the effects of certain projects on the environment into planning law. Under these regulations, development plans must include mandatory objectives for the conservation of natural heritage and for the conservation of European sites.

PLANNING POLICIES

National Policies

A number of documents have been published in relation to the Government's commitment to sustainable development, including the *National Spatial Strategy 2002-2020* and the *Sustainable Development: A Strategy for Ireland 1997*.

Regional Policies

The Regional Planning Guidelines for the Southeast Region 2010-2022, which includes the counties of Carlow, Kilkenny, Waterford, Wexford and South Tipperary, outlines the long-term spatial planning strategy for the area. A number of policies relate to biodiversity and are relevant to the proposed development, as per Table 8.1 below.

Table 1.1: Regional Policies Relevant to Biodiversity and the Proposed Development

POLICY REFERENCE	POLICY
PPO 8.1	Planning Authorities should develop policies that identify clearly: - Environmental and Heritage resources that are to be maintained, conserved and enhanced and integrated into any development proposals involving the sites as discussed in the RPG for the area; - Proposals for environmental enhancement in towns and villages and in rural areas; - The means by which potential impacts on environmental resources are to be avoided or mitigated.
PPO 8.2	Planning Authorities should ensure that all development plans take a holistic and integrated approach to heritage and protect all relevant aspects of national heritage, including archaeological, built, cultural, natural and linguistic heritage.
PPO 8.5	Planning Authorities should devise strategies for managing development and other activities in order to achieve the objectives of the South East and South west

POLICY REFERENCE	POLICY
	River Basin Management Plans and associated Programme of Measures. Local authorities should ensure that common approaches are taken to the protection of surface, ground, coastal and estuarine water bodies. These approaches should, *inter alia,* ensure that: - The impact of developments on water bodies outside as well as inside the jurisdiction of the individual authorities is considered when decisions on discharges and water extraction are being made; - Developments do not interfere with the attainment of the standards required by the Water Framework Directive; - Joint actions are taken to positively address the attainment of the standards required by the Water Framework Directive.
PPO 8.6	Planning Authorities should provide for the following biodiversity objectives through County and City Development Plans and Local Area Plans: - Protect natural heritage sites designated or proposed for designation in National and European legislation, and in other relevant International Conventions, Agreements and Processes; - Ensure that development does not have a significant adverse impact, incapable of satisfactory mitigation, on plant, animal and bird species and habitats protected by law and that developments affecting Natura 2000 sites are assessed in compliance with Article 6 of the Habitats Directive; - Maintenance and restoration of water quality in areas listed on the Register of Protected Areas under the water Framework Directive including Freshwater Pearl Mussel Catchments; - Protection of Fisheries and Shellfisheries; - Identify and protect sites of local biodiversity interest that act as ecological corridors linking sites of conservation importance.
PPO 8.7	It is an objective of the Regional Authority to encourage and support a co-ordinated approach for protection and enhancement of the region's flood plains, wetlands and watercourses for their biodiversity and flood protection values.
PPO 8.9	Planning Authorities should ensure that River Management Policies should be an integral part of Development Plans and cover all waterways considered as a natural resource requiring protection and sustainable development. The following mechanisms for protection of the aquatic environment could be considered for inclusion in development plans: - River Corridor Management Areas which provide for the protection and sustainable development of the aquatic environment (particularly within towns and cities); - The identification and creation of linear parks along waterways incorporating preservation of the Riparian Zone along waterways and subject to compliance with Articles 6 and 10 of the EU Habitats Directive.
PPO 8.10	Local authorities should, where possible, promote awareness of invasive species in collaboration with other relevant agencies and take appropriate measures for their management and control.
EP 5	Conserve and enhance the nature conservation resources of the waterways throughout the Midland Region, including the Shannon and Lough Ree.
EP 12	Promote the protection, conservation and enhancement of the region's biodiversity and natural and geological heritage. This includes wildlife (flora and fauna), Species protected under the Wildlife Acts and listed for strict protection on Annex IV of the

POLICY REFERENCE	POLICY
	Habitats Directive; and Wildlife corridors and stepping stones as envisaged under Article 10 of the Habitats Directive, habitats, sites with no statutory protection, proposed National Heritage Areas, landscapes and/or landscape features of importance to wildlife or which play a key role in the conservation and management of natural resources such as water.
EP 13	Facilitate the protection of sites designated in National and European legislation, and in other relevant International Conventions, Agreements and Processes. This includes sites designated or proposed to be designated as: Ramsar sites, Special Areas of Conservation, Special Protection Areas, National Heritage Areas, nature reserves, and refuges for flora or fauna.

Local Policies

Waterford County Development Plan 2011 – 2017 outlines thirteen waste management objectives for the county, with the relevant objectives to the proposed development outlined in the table below. Note this plan will have its lifetime extended, as per Section 11A of the Planning & Development Act 2000 and will remain in effect until a new City and County Development Plan will be prepared. The Draft Waterford City and County Development Plan 2022 – 2028 outlines biodiversity measures.

Table 1.2: Summary of Local Policies Relevant to Biodiversity and the Proposed Development

POLICY REFERENCE	AREA
B1	Protect, conserve and enhance the diversity of habitats, species and areas of national or international importance, including aquatic habitats and species and promote the sustainable management of habitat networks.
W2	Achieve and maintain required water quality standards in the Southeast and Southwest River Basin Management Plans and associated Programme of Measures and reduce discharges of pollutants or contamination to waters.
P1	Facilitate a good standard of health for County Waterford's population through ensuring high quality residential, recreational and working environments and minimising water pollution
L1	Protect and conserve the quality, character and distinctiveness of landscapes including uplands, waterway corridors, demesnes and coastal areas and minimise negative visual impacts

Waterford County Development Plan 2011 – 2017 Biodiversity aim;

"*There are a number of diverse habitats found in County Waterford. Some habitats are of national importance and are recognized through designation as Natural Heritage Areas or Proposed Natural Heritage Areas (pNHAs). Other habitats are of European Importance and are designated Special Areas of Conservation (SACs) for their habitat or plant/animal species value or Special Protection Areas (SPAs) for birdlife. In addition to legally designated sites there are many other important sites for wildlife such as wetlands, peat lands, woodlands, and hedgerows. A number of wetland species protected under European legislation occur in Waterford rivers. These include Freshwater Pearl Mussel and White-Clawed Crayfish. Freshwater Pearl Mussel require extremely high-water quality to reproduce and occur in three catchments in the county (Blackwater, Clodagh and Licky). The species is a key indicator of water quality but populations of the species are in serious decline. Key issues for conservation*

of Biodiversity in the county are; maintenance of good water quality for water dependant habitats and species including Freshwater Pearl Mussel, protection of coastal habitats and wetlands and control of invasive species."

Biodiversity Plans

Ireland's third National Biodiversity Plan 2017–2021, identifies actions towards understanding and protecting biodiversity with a vision that, "*biodiversity and ecosystems in Ireland are conserved and restored, delivering benefits essential for all sectors of society and that Ireland contributes to efforts to halt the loss of biodiversity and the degradation of ecosystems in the EU and globally*". A number of Local Biodiversity Action Plans have been prepared, and it is noted that the Kilkenny County Development Plan (CDP) includes a policy to carry out a Biodiversity Plan during the lifetime of the CDP.

All-Ireland Pollinator Plan

In 2015, Ireland joined a number of other European countries in developing a strategy to address pollinator decline and protect pollination services. 68 governmental and non-governmental organisations agreed a shared plan, the "All-Ireland Pollinator Plan", which identifies 81 actions to make Ireland pollinator friendly. The plan provides recommendations for six different sectors, including farmers, county councils, communities, businesses, homeowners and schools.

1.3 METHODOLOGY

RELEVANT GUIDELINES

The following guidance documents have been consulted for this assessment, with a full list of consulted documentation and guidelines included within Section 8.11:

- *Guidelines for Ecological Impact Assessment in the UK and Ireland* (CIEEM, 2018);
- *Guidelines on Information to be contained in Environmental Impact Statements* (EPA, 2002).
- *Guidelines on the information to be contained in Environmental Impact Assessment Reports* (EPA, 2017);
- *Guidelines for Assessment of Ecological Impacts of National Road Schemes* (NRA, 2009);
- *A Guide to Habitats in Ireland* (Fossitt, 2000);
- *Best Practice Guidance for Habitat Survey and Mapping* (Smith *et al*., 2011);
- *Ecological Surveying Techniques for Protected Flora and Fauna during the Planning of National Road Schemes* (NRA, 2009);
- *Expedition Field Techniques: Bird Surveys* (Bibby *et al.*, 2000);
- *Bird census and survey techniques* (Gregory *et al.*, 2004);
- *Bat Surveys for Professional Ecologists: Good Practice Guidelines* (3rd edn.) (Collins 2016);

- *Bat Mitigation Guidelines for Ireland* (Kelleher and Marnell, 2006);
- *Bats and artificial lighting in the UK* (Bat Conservation Trust, 2018);
- *Bats & Lighting: Guidance Notes for Planners, Engineers, Architects and Developers* (Bat Conservation Ireland, 2010).

STUDY AREA / ZONE OF INFLUENCE

Following guidance set out by the Chartered Institute of Ecology and Environmental Management (CIEEM, 2018) and the National Roads Authority (2009), a Zone of Influence should be determined, which identifies the area in which the development could potentially impact upon ecological receptors and aquatic environments. The zone of influence takes into consideration the assigned ecological value of the receptors, which ranges from international, national, county to local, and potential pathways for impacts to occur. The zone of influence also takes into consideration the watercourses surrounding the proposed development.

Taking into consideration best practice guidance and the nature of the development, the study area for the assessment ranges from the site boundary for habitats, to buffers of 100m for specific species. However, it should be noted that these buffers were extended where required.

DESKTOP RESEARCH

Desktop research comprised of gathering information on designated sites within 15km of the proposed development, reviewing mapping sites to provisionally identify any potential ecologically important features prior to the site assessment and reviewing online resources to determine what notable species, including protected, rare or invasive, had previously been recorded for the proposed development area and environs. The desktop review also comprised gathering information pertaining to the River Finisk and its tributaries and catchments, reviewing mapping sites and determining if notable aquatic species, including protected, rare or invasive, had previously been recorded for the watercourses in the vicinity of the proposed developmentThe following online resources were consulted as part of this process:

- National Parks and Wildlife Service (NPWS) website: mapping of designated sites and information on designated sites within the vicinity of the development;
- NPWS Wildlife Manuals for certain habitats and species;
- National Biodiversity Data Centre (NBDC) website: data on notable species (protected, rare or invasive) within the 10km square (X19) in which the proposed development is located;
- NPWS reports on "*The Status of Protected EU Habitats and Species in Ireland*";
- NPWS Ireland Red Lists for species;
- Botanical Society of Britain and Ireland website: flora distribution maps;
- Data on the status of bird species from "*Birds of Conservation Concern in Ireland 2021-2026*", (Gilbert, Stanbury and Lewis, 2021);
- Various mapping websites, including EPA Envision, Google Maps, Myplan and OSI;
- Protected Mammals Survey by Wildlife Surveys Ireland.

In addition to the above, the NPWS was contacted in relation to records for sensitive, rare, threatened and protected species within 10km of the development location. Results were returned on the 26th of October 2021.

Water quality data from the EPA was reviewed for the assessment of biological and environmental data collected on waterbodies in Ireland (Water Quality in Ireland 2013-2018 (2019)). The assessment of the aquatic environment took into consideration:

- To undertake a comprehensive desktop review of the aquatic habitats and species, in particular the River Finisk, within the vicinity of the proposed development;
- To undertake a field assessment of the proposed development site and surroundings in the context of aquatic ecology;
- To determine and assess the potential impacts of the proposed development on aquatic habitats, flora and fauna;
- To propose mitigation measures for the operational phases of the development to reduce potential impacts upon aquatic flora and fauna.

FIELD SURVEYS METHODOLOGY

Site assessments were undertaken on the 27th August 2021 to examine the ecological context of the proposed development, as outlined in Table 1.3 below. The survey had due consideration for the relevant best practice guidelines as referenced in Section 1.3.

Table 1.3: Ecological Surveys Informing the EIAR

SURVEY	STUDY AREA	SURVEY DATES
Habitat Survey	100m	27th August 2021
Fauna Survey	100m	27th August 2021
Bird Survey (General)	50m	27th August 2021

Habitats and Flora Survey

These assessments involved determining the habitats and flora present within the proposed development. The habitat survey was undertaken in accordance with the standard methodology outlined in Fossitt's "*A Guide to Habitats in Ireland*", (Fossitt, 2000), a hierarchical classification scheme based upon the characteristics of vegetation present. The Fossitt system also indicates when there are potential links with Annex I habitats of the E.U. Habitats Directive (92/43/EEC). Cognisance was also taken of the Heritage Council guidelines, "*Best Practice Guidance for Habitat Survey and Mapping*", (Smith *et al.,* 2011). The relative abundances of flora was determined using the DAFOR Scale, an acronym for the abundance levels – Dominant, Abundant, Frequent, Occasional and Rare.

During site walkovers, any notable flora species were recorded, with an emphasis on statutorily protected or rare species, species of conservation significance and invasive species.

Fauna Survey

Fauna surveys were undertaken during bright and dry weather conditions. Direct observation methods were used for the survey of fauna, however, these methods may not be suitable for shy and nocturnal species. Therefore, indirect methods were also employed, focusing on evidence of fauna including tracks, burrows/setts/nests, droppings, food items and hair. The habitats on site were assessed for signs of usage by fauna, and the potential to support protected or red-listed species.

Bat Survey

Areas within the proposed development site with the potential to support bat roosts and / or foraging / commuting routes, and which have the potential to be impacted upon by the proposed development were the main focus of the surveys outlined below.

Assessment of Bat Roost Potential

A daytime assessment of individual trees and hedgerows within the proposed development site potentially affected by the proposed development was undertaken on the 27th August 2021.

The assessment comprised of an external inspection of trees to identify potential roost features (PRFs) and evidence of bat activity, using close focusing binoculars. The criteria used to categorise the PRFs or suitability of trees and buildings as a potential roost are summarised in the table below, based upon the guidelines by Collins (2016) and Hundt (2012).

Table 1.4: Bat Roost Potential Categories

CATEGORY	DESCRIPTION
High Trees / buildings that are suitable for use by large numbers of bats on a regular basis	Features include holes, cracks or crevices that extend or appear to extend back to cavities suitable for bats. In buildings, examples include eaves, barge boards, gable ends and corners of adjoining beams, ridge and hanging tiles, behind roofing felt or within cavity walls. In trees, examples include hollows and cavities, rot holes, cracks/splits and flaking or raised bark which could provide roosting opportunities. Any ivy cover is sufficiently well-established and matted so as to create potential crevices beneath. **Further survey work would be required to determine whether or not bats are present, and if so, the species present. Appropriate mitigation and potential licencing requirements may then be determined.**
Moderate Moderate potential is assigned to trees / structures with potential to support bat roosts but supports fewer features than a high potential building /	From the ground, building / tree appears to have features (e.g. holes, cavities, cracks or dense ivy cover) that may extend back into a cavity. However, owing to the characteristics of the feature, they are deemed to be sub-optimal for roosting bats. **Further survey work would be required to determine whether or not bats are present, and if so, the species present.**

CATEGORY	DESCRIPTION
tree and is unlikely to support a roost of high conservation value.	**Appropriate mitigation and potential licencing requirements may then be determined.**
Low Low potential is assigned to structures and trees with features that could support individual bats opportunistically.	If no features are visible, but owing to the size, age and/or structure, hidden features, sub-optimal for roosting bats, may occur that only an elevated inspection may reveal. In respect of ivy cover, this is not dense (i.e. providing PRF in itself) but may mask presence of PRF features. **Further survey work may be required for buildings only or works may proceed using reasonable precautions (e.g. controlled working methods, under license or supervision of a bat worker).**

Bird Survey

General bird usage of the development site was assessed on the 27th August 2021. While walking the development site, stops were undertaken on a regular basis during which time the area was scanned as far as the terrain or weather conditions allowed. Birds were identified by visual sightings and auditory identification of songs and calls. Birds flying overhead were also included as part of the survey.

Surveys Scoped Out

The following ecological features were scoped out:

Invertebrate (aquatic) / Fish surveys: The Clashnadarriv Stream is located along the site boundary with with the R671 road. Aadditional settlement ponds are within the quarry. The settlement ponds do not contain any aquatic habitats of note but would be suitable habitat for macroinvertebrates and amphibians such as Common Frog (*Rana temporaria*). The Clashnadarriv Stream flows into the River Finish approximately 1.96km from the culvert at the site access point. The Clashnadarriv Stream was observed for aquatic fauna however a detailed baseline aquatic survey was not done of this watercourse. No construction works will take place within or adjacent an aquatic habitat. It is considered that the assessment of the potential impacts of the development upon water quality (discussed further in this section) would be sufficient in assessing the potential impact of the development upon aquatic habitats and species.

Reptile surveys: Areas of the study area may provide suitable basking and refuge habitat for protected viviparous lizard (*Zootoca vivipara).* The numbers of viviparous lizard, if present at the site, are likely to be low and unlikely to be picked up in survey.

Survey Limitations

Every effort has been made to provide an accurate assessment of the situation pertaining to the site. However, an ecological survey can only assess a site at a particular time and is limited by

various factors such as the season, timing of the survey, climatic conditions and species behaviour. Ecological surveys are therefore snapshots in time and should not be regarded as a complete study. Direct observations or evidence of protected species is not always recorded during ecological surveys. However, this does not indicate that the species is absent from the site.

To ensure any limitations encountered did not significantly impact upon the findings of the ecological assessments, the ecological surveys undertaken also assessed the potential of the habitats to support protected species, and cognisance has been taken of available online baseline data (e.g. flora and fauna records from the NBDC, consultation with NPWS regarding protected / threatened species, previous surveys undertaken by Wildlife Surveys) and a precautionary approach taken.

ECOLOGICAL VALUATION CRITERIA

The ecological value of the habitats and species identified at the development site have been assessed following the criteria outlined in the 2009 NRA guidelines and is consistent with the *Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater and Coastal* (CIEEM, 2018).

1.4 CONSULTATION

Consultation has been undertaken with the following statutory bodies and competent authorities with regards biodiversity:

- National Parks and Wildlife Service (NPWS);

1.5 DESCRIPTION OF EXISTING ENVIRONMENT

1.5.1 DESIGNATED SITES

The proposed development does not directly impinge on any designated site. In total, there are six designated sites Natura 2000 sites located within 15km of the proposed development: Two Special Area of Conservation (SAC) sites and four Special Protection Area (SPA), site. There are no Natural Heritage Area (NHA) within 15km of the development site

There are also three proposed Natural Heritage Area (pNHA) sites within approximately 15km of the development site.

There are two RAMSAR sites within 15km of the development site: Dungarvan Harbour (16) and Blackwater Estuary (28).

Map detailing these designated sites in relation to the proposed development are included in Appendix A.

The following tables detail the SAC, SPA and pNHA sites located within 15km of the proposed development.

Table 1.5: SAC/SPA Sites within 15km of the Proposed Development

SITE NAME	SITE CODE	APPROX. DISTANCE TO DEVELOPMENT	QUALIFYING INTERESTS
Blackwater River (Cork/Waterford) SAC	002170	1.39km N	[1130] Estuaries [1140] Tidal Mudflats and Sandflats [1220] Perennial vegetation of stony banks [1310] *Salicornia* Mud [1330] Atlantic Salt Meadows (*Glauco- Puccinellietalia maritimae*) [1410] Mediterranean salt meadows (*Juncetalia maritimi*) [3260] Floating River Vegetation [91A0] Old Oak Woodlands [91E0] Alluvial Forests*(**Denotes a priority habitat*) [1029] Freshwater Pearl Mussel (*Margaritifera margaritifera*) [1092] White-clawed Crayfish (*Austropotamobius pallipes*) [1095] Sea Lamprey (*Petromyzon marinus*) [1096] Brook Lamprey (*Lampetra planeri*) [1099] River Lamprey (*Lampetra fluviatilis*) [1103] Twaite Shad (*Alosa fallax*) [1106] Atlantic Salmon (*Salmo salar*) [1355] Otter (*Lutra lutra*) [1421] Killarney Fern (*Trichomanes speciosum*)
Dungarvan Harbour SPA	004032	9.86km SE	[A005] Great Crested Grebe (*Podiceps cristatus*) [A046] Light-bellied Brent Goose (*Branta bernicla hrota*) [A048] Shelduck (*Tadorna tadorna*) [A069] Red-breasted Merganser (*Mergus serrator*) [A130] Oystercatcher (*Haematopus ostralegus*) [A140] Golden Plover (*Pluvialis apricaria*) [A141] Grey Plover (*Pluvialis squatarola*) [A142] Lapwing (*Vanellus vanellus*) [A143] Knot (*Calidris canutus*)

SITE NAME	SITE CODE	APPROX. DISTANCE TO DEVELOPMENT	QUALIFYING INTERESTS
			[A149] Dunlin (*Calidris alpine*) [A156] Black-tailed Godwit (*Limosa limosa*) [A157] Bar-tailed Godwit (*Limosa lapponica*) [A160] Curlew (*Numenius arquata*) [A162] Redshank (*Tringa tetanus*) [A169] Turnstone (*Arenaria interpres*) [A999] Wetland and Waterbirds
Blackwater Estuary SPA	004028	9.38km SW	[A050] Wigeon (*Anas penelope*) [A140] Golden Plover (*Pluvialis apricaria*) [A142] Lapwing (*Vanellus vanellus*) [A149] Dunlin (*Calidris alpine*) [A156] Black-tailed Godwit (*Limosa limosa*) [A157] Bar-tailed Godwit (*Limosa lapponica*) [A160] Curlew (*Numenius arquata*) [A162] Redshank (*Tringa tetanus*) [A999] Wetland and Waterbirds
Blackwater Callows SPA	004094	11.44km NW	[A038] Whooper Swan (*Cygnus cygnus*) [A050] Wigeon (*Anas penelope*) [A052] Teal (*Anas crecca*) [A157] Bar-tailed Godwit (*Limosa lapponica*) [A999] Wetland and Waterbirds

SITE NAME	SITE CODE	APPROX. DISTANCE TO DEVELOPMENT	QUALIFYING INTERESTS
Helvick Head to Ballyquin SPA	004192	14.73km SE	[A017] Cormorant (*Phalacrocorax carbo*) [A103] Peregrine (*Falco peregrinus*) [A184] Herring Gull (*Larus arg*entatus) [A188] Kittiwake (*Rissa tridactyla*) [A346] Chough (*Pyrrhocorax pyrrhocorax*)
Glendine Wood SAC	002324	14.26km NE	[1421] Killarney Fern (*Trichomanes speciosum*)

Table 1.6: pNHA Sites within 15km of the Proposed Development

SITE NAME	SITE CODE	DISTANCE TO PROPOSED DEVELOPMENT
Blackwater River And Estuary pNHA	000072	4.24km W
Dungarvan Harbour pNHA	000663	10.19km E
Ballyeelinan Wood pNHA	001692	13.74km SE

The Dungarvan Harbour SPA (Site Code: 004032), Glendine Wood SAC (Site Code: 002324), are not hydrologically connected to the site therefore have been screened out.

Blackwater Callows SPA (Site Code: 004094) and Helvick Head to Ballyquin SPA (Site Code: 004192) are hydrologically connected however the Blackwater Callows SPA is located upstream and therefore there is no source pathway to this SPA.

The Helvick Head to Ballyquin SPA is a considerable hydrological distance and there is a considerable dilution effect of the Celtic Sea. [A103] Peregrine (*Falco peregrinus*) could find suitable nesting habitat at this site and are known to generally use quarries. The site is an active quarry and any potential nesting birds would be accustomed to quarrying activities in general at the site. Given the potential for this species a precautionary approach would be taken to include the Helvick Head to Ballyquin SPA for further review. Peregrine (*Falco peregrinus*) nesting data is classified as confidential and is not published publicly. As such no information pertaining to potential nesting and/or roosting areas will be discussed within this report. As quarries in general are known to be utilized by Peregrine (*Falco peregrinus*) this species will be reviewed for a potential link to the Helvick Head to Ballyquin SPA.

Blackwater Estuary SPA (Site Code: 004028) is hydrologically connected to the site via the Finisk and Clashnadarriv. The hydrological distance is approximately 16.23km. The proposed site would offer suitable habitat for wetland birds associated with this SPA. Given the location of the proposed site and the types of habitats found within this SPA has been screened out.

For this assessment, the site considered to be within the potential zone of influence of the proposed development is the Blackwater River (Cork/Waterford) SAC (Site Code: 002170) due to distance and hydrological connection. In addition, Helvick Head to Ballyquin SPA for potential link with qualifying species.

Blackwater River (Cork/Waterford) SAC (Site Code: 002170)

The conservation objectives for the SAC site are to maintain or restore the favourable conservation condition of the qualifying interests. An excerpt from the Natura 2000 Data Form for the Blackwater River SAC is included below, while further details are available within the site's site synopsis (NPWS, 2016).

"The River Blackwater is one of the largest rivers in Ireland, draining a major part of Co. Cork and parts of Cos. Kerry, Limerick, Tipperary and Waterford. The site consists of most of the freshwater stretches of the system as well as the estuarine component at Youghal. Tidal influence extends almost to Cappoquin. The Blackwater rises in the east Kerry uplands where Namurian grits and shales build the low heather-covered plateaux. In the lowlands in the Mallow district, it passes over limestone and later cuts through ridges of Old Red Sandstone to the south of Cappoquin. Main tributaries include the Rivers Lickey, Bride, Allow and Awbeg. A wide range of habitats associated with the rivers are included within the site, including substantial areas of woodland (deciduous, mixed), scrub, wet grassland, swamp and marsh vegetation, bog, salt marshes and intertidal sand and mud flats. Areas of improved grassland, arable land and coniferous plantations are included in the site for water quality reasons.

The site supports important examples of a range of Annex I habitats, notably estuaries, intertidal mudflats and sandflats, perennial vegetation of stony banks, salt meadows, floating river vegetation, alluvial forests, and oak woodlands. Most of these are of good quality and extensive in area.

The Blackwater system is an important salmonid fishery and is of high conservation value for Atlantic Salmon (*Salmo salar*). The site also supports important populations of Brook Lamprey (*Lampetra planeri*), River Lamprey (*L. fluviatilis*), Sea Lamprey (*Petromyzon marinus*) and Twaite Shad (*Alosa fallax fallax*). Substantial populations of Freshwater Pearl Mussel (*Margaritifera margaritifera*) occur, while White-clawed Crayfish (*Austropotamobius pallipes*) is found in the Awbeg River. Otter (*Lutra lutra*) is widespread throughout the site and has been subject to detailed surveys. Killarney Fern (*Trichomanes speciosum*) occurs at one location. Annex I bird species present in the site include breeding Little Egret (*Egretta garzetta*), Kingfisher (*Alcedo atthis*) and Peregrine Falcon (*Falco peregrinus*) and wintering Whooper Swan (*Cygnus cygnus*) and Golden Plover (*Pluvialis apricaria*). A good diversity of other winter waterfowl species also occurs."

The main site vulnerabilities, including any key pressures or trends within and around the Blackwater River (Cork/Waterford) SAC that have been identified as impacting upon the site, may be summarised as:

- Agriculture: fertilisation, mowing/cutting of grassland and grazing
- Urbanisation, residential and commercial development
- Human induced changes in hydraulic condition
- Sylviculture, forestry
- Leisure fishing
- Invasive non-native species

The Blackwater River (Cork/Waterford) SAC (Site Code: 002170), is located approximately 1.39km north of the proposed development site, as shown in Figure 1.1 below.

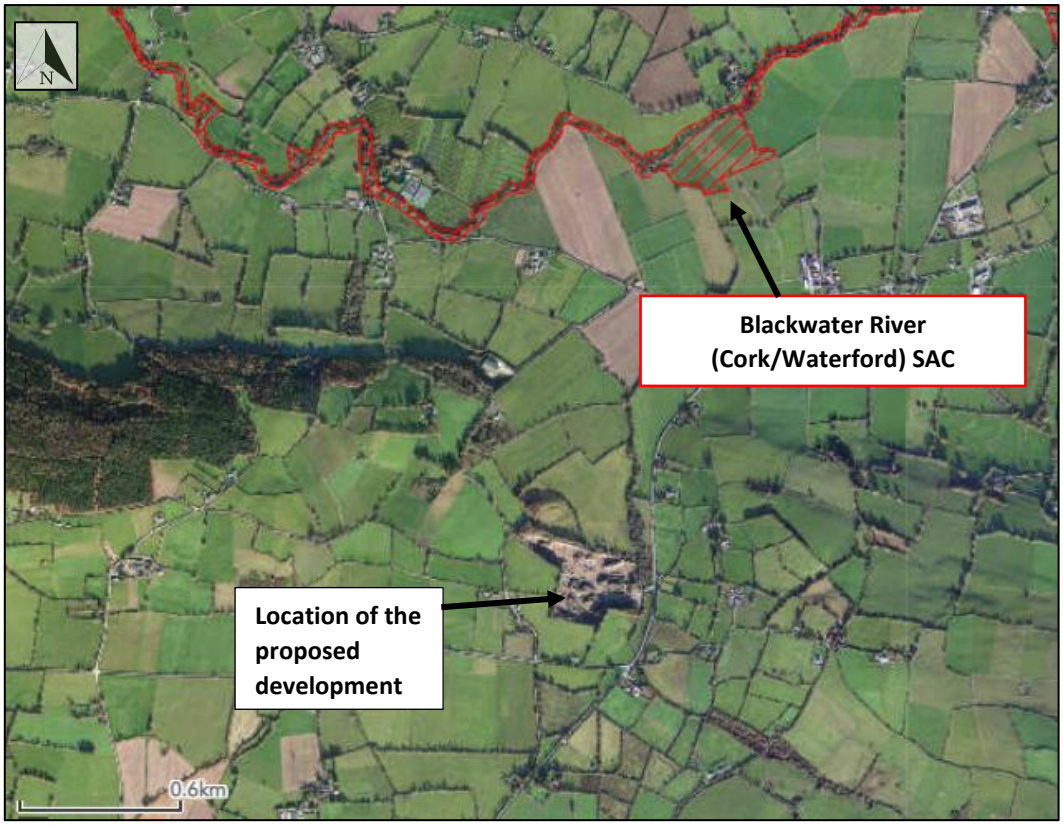

Figure 1.1: Proposed Development Relative to the Blackwater River (Cork/Waterford) SAC

Helvick Head to Ballyquin SPA (Site Code: 004192)

The conservation objectives for the SPA site are to maintain or restore the favourable conservation condition of the qualifying interests. An excerpt from the Natura 2000 Data Form for the Helvick Head to Ballyquin SPA is included below, while further details are available within the site's site synopsis (NPWS, 2016).

"Helvick Head to Ballyquin SPA is a linear site situated on the south-west coast of Co. Waterford. It includes the sea cliffs and land adjacent to the cliff edge between Helvick Head in the east and Ballyquin townland in the south-west. The high-water mark forms the seaward boundary, except around Helvick Head where the adjacent sea area to a distance of 500 m from the cliff base is included.

The low heath and agricultural farmland on the cliff tops provides good foraging habitat for Chough (*Pyrrhocorax pyrrhocorax*); the site is also important for Falco peregrinus. In addition, the site has important breeding seabird populations, cantered around Helvick Head."

The main site vulnerabilities, including any key pressures or trends within and around the Helvick Head to Ballyquin SPA that have been identified as impacting upon the site, may be summarised as:

- Invasive non-native species
- Outdoor sports and leisure activities, recreational activities
- Erosion

FLORA & HABITATS

During the site walkover, a number of different habitats were identified. The dominant habitats at the site are active quarries and mines (ED4), spoil and bare ground (ED2), recolonising bare ground (ED3) and other artificial lakes and ponds (FL8).

Within the southwest of the quarry site is recolonizing bare ground (ED3)/ scrub (WS1) habitat. Flora species found here include Ragwort (*Senecio jacobaea*), Figwort (*Scrophularia* sp.), Ribwort Plantain (*Plantago lanceolata*), Lesser Hawkbit (*Leontodon taraxacoides*), Spear Thistle (*Cirsium vulgare*) Willow (*Salix spp.*), Moss (*Brachythecium*) Clover (*Trifolium* spp.), Colt's Foot (*Tussilago farfara*), Chamomile (*Chamaemelum nobile*), Sow-thistle (*Sonchus* spp.), Willowherb (*Epilobium* spp.), Bramble (*Rubus fruticosus*), Gorse (*Ulex europaeus*), Foxglove (*Digitalis purpurea*), Thistle (*Cirsium* spp.), Hemlock (*Conium maculatum*), Montbretia (*Crocosmia* X *crocosmiflora*), Bindweed (*Calystegia* spp.), Butterfly-bush (*Buddleja davidii*), Weld (*Reseda luteola*), Birch (*Betula* spp.), Creeping Thistle (*Cirsium arvense*), Hogweed (*Heracleum sphondylium*), Couch-grass (*Elytrigia repens*), Nettle (*Urtica dioica*), Ribwort Plantain (*Plantago lanceolata*), Perforate St John's-wort (*Hypericum perforatum*), Rushes (*Juncus* spp.), Creeping Bent (*Agrostis stolonifera*), Fuchsia (*Fuchsia magellanica*) and Vetch (*Vicia* spp.).

Other areas of scrub are within the quarry site and along the boundary with similar species to above except Japanese Knotweed (*Fallopia japonica*) is found within the site close to the site offices. The area of scrub along the woodland/ Clashnadarriv Stream also has similar flora

listed above except there is no Japanese Knotweed (*Fallopia japonica*) but Bracken (*Pteridium aquilinum*) is present.

Exposed sand gravel or till (ED1) has similar flora recolonizing bare ground (ED3) with occasional Buckler-fern (*Dryopteris* spp.) and abundant Moss (*Bryophyta*).

Active quarries and mines (ED4) and buildings and artificial surfaces (BL3) have limited vegetation with occasional seedlings of species found in ED1/ED3.

Stone walls and other stonework (BL1) habitat is found along the northern laneway and field boundary. With Hard fern (*Blechnum spicant*), Herb-Robert (*Geranium robertianum*), Foxglove (*Digitalis purpurea*), Ivy (*Hedera helix*) and abundant Moss (*Bryophyta*)

The large quarry pond is shallow and is devoid of aquatic vegetation. The settlement pond located in northeast corner of the active quarry has Bulrush (*Typha latifolia*) that is dominant and rare Water-Starworts (Callitriche spp.).

The Clashnadarriv Stream is classified as eroding upland rivers (FW1). This stream is culverted and passes through woodland/scrub habitat with low light levels that limit the growth of aquatic flora. Flora found here are Moss (*Fontinalis* spp.), Water-cress (*Rorippa nasturtium-aquaticum*) and Water-Starworts (Callitriche spp.)

A dominant habitat found surrounding the quarry is improved agricultural grassland (GA1). The dominant flora is Ryegrasses (*Lolium* spp.) with Annual Meadow-grass (*Poa annua*), Meadow-grasses (*Poa* spp.), Broad-leaved Dock (*Rumex obtusifolius*), Creeping Thistle (*Cirsium arvense*), Buttercup (*Ranunculus* spp.), Clover (*Trifolium* spp.), Daisy (*Bellis perennis*), Dandelion (*Taraxacum* spp.), Sticky Mouse-ear (*Cerastium glomeratum*) and Shepherd's-purse (*Capsella bursa-pastoris*).

The boundary of the site and along field boundaries is predominately Hedgerows (WL1) and Treelines (WL2). Flora include Ash (*Fraxinus excelsior*), Bramble (*Rubus fruticosus*), Cleavers (*Galium aparine*), Hawthorn (*Crataegus monogyna*), Ivy (*Hedera helix*), Blackthorn (*Prunus spinosa*), Beech (*Fagus sylvatica*), Elm (*Ulmus* sp.), Oak (*Quercus* spp.), Scot's Pine (*Pinus sylvestris*), Alder (*Alnus* spp.), Hazel (*Corylus avellana*) and Holly (*Ilex aquifolium*). Less frequent flora species include Hogweed (*Heracleum sphondylium*), Elder (*Sambucus nigra*), Nettle (*Urtica dioica*), Buttercup (*Ranunculus* spp.) Hart's Tongue Fern (*Asplenium scolopendrum*), Herb-Robert (*Geranium robertianum*), Snowberry (*Symphoricarpos albus*), Butterbur (*Petasites hybridus*) and Tutsan (*Hypericum androsaemum*).

Mixed broad-leafed woodland (WD1) is found at northwest boundary of the quarry. The flora are similar to WL1/WL2 with Oak (*Quercus* spp.) and Beech (*Fagus sylvatica*) Grasses, Nettle (*Urtica dioica*) and Bramble (*Rubus fruticosus*) dominate the understory. The mixed broad-leafed woodland along the Clashnadarriv Stream has Ash (*Fraxinus excelsior*) and Willow (*Salix* spp.) dominate with Hawthorn (*Crataegus monogyna*), Holly (*Ilex aquifolium*), Blackthorn (*Prunus spinosa*), Sycamore (*Acer pseudoplatanus*), Alder (*Alnus* spp.) and Oak (*Quercus* spp.). Understory is similar to WL1.

The twelve habitats identified as per the Fossitt habitat classification scheme for the proposed development are summarised in Table 1.7 and are shown on a habitat map included as Figure 1.2. See Attachment 1.A for Full List of Recorded Flora and Attachment 1.B for Photo Log.

Table 1.7: Summary of Habitats Identified at the Proposed Development Site

HABITAT CLASSIFICATION HIERARCHY		
LEVEL 1	**LEVEL 2**	**LEVEL 3**
B – Cultivated and build land	**BL –** Built land	**BL1 -** Stone walls and other stonework
		BL3 - Buildings and artificial surfaces
E - Exposed rock and disturbed ground	**ED** - Disturbed ground	**ED1** – Exposed sand gravel or till
		ED3 - Recolonising bare ground
		ED4 - Active quarries and mines
F - Freshwater	**FL** - Lakes and ponds	**FL8** - Other artificial lakes and ponds
	FW - Watercourses	**FW1** – Eroding upland rivers
G - Grassland and marsh	**GS** – Improved grassland	**GA1** - Improved agricultural grassland
W - Woodland and scrub	**WD** - Highly modified/non-native woodland	**WD1** – Mixed broad-leafed woodland
	WS - Scrub/ transitional woodland	**WS1** - Scrub
	WL - Linear woodland / scrub	**WL1** - Hedgerows
		WL2 - Treelines

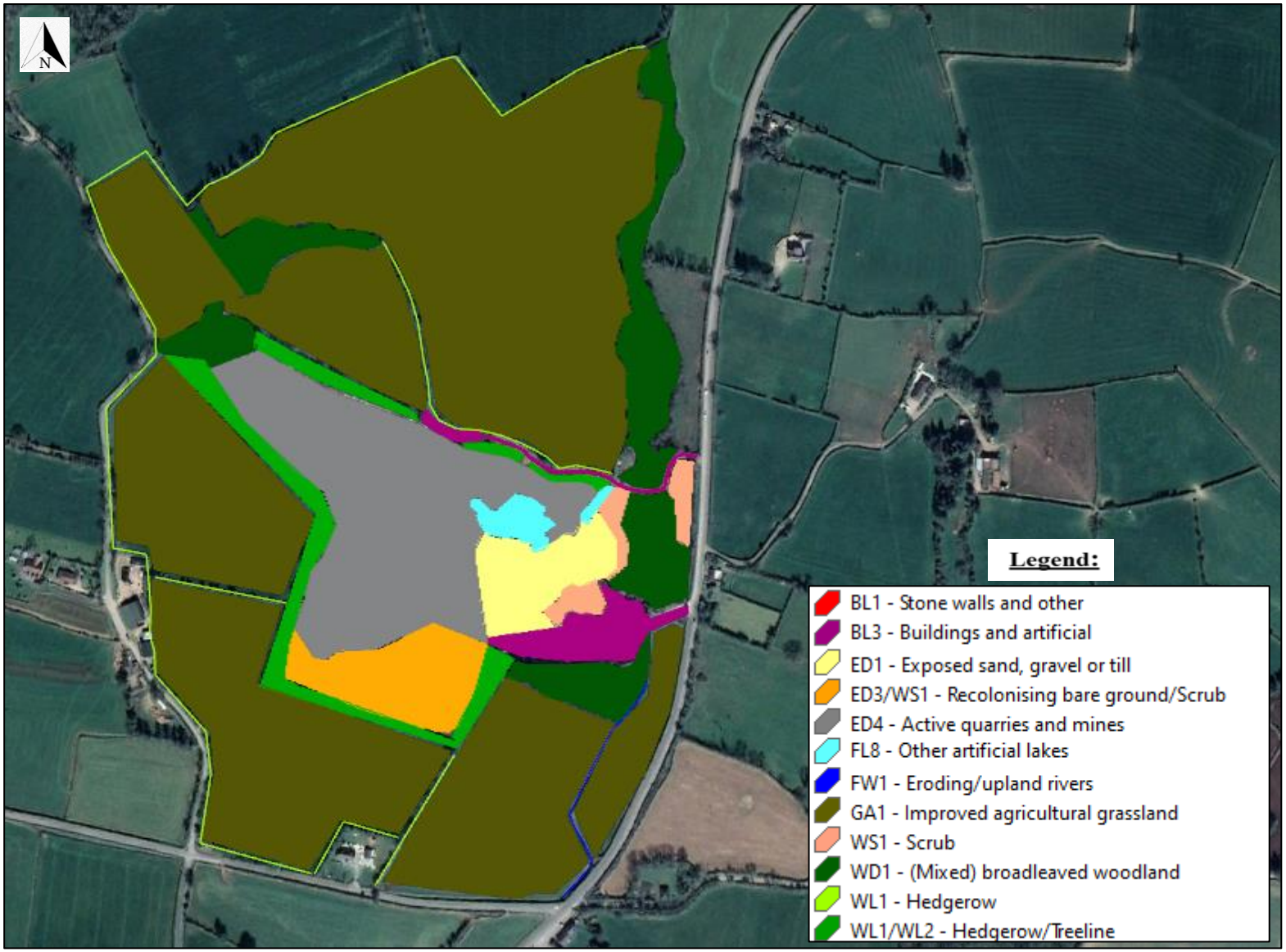

Figure 1.2: Habitat Map of Encountered Habitats at the Proposed Development Site

The majority of the proposed development site, being active quarries and mines, spoil and bare ground, scrub and buildings and artificial surfaces can be considered to be of low ecological value. The remainder of the site, comprising of treelines, hedgerows and mixed woodland, can be considered to be of moderate ecological value. The other artificial lakes and ponds would have low ecological value. The Clashnadarriv stream would have a higher ecological value.
No plant species of conservation significance were noted during the site assessment however one invasive plant species of concern noted during the site assessment.

FAUNA

Mammals, typical of that found throughout the rest of Ireland, which would be expected to be found in the general area include Badger (*Meles meles*), Fox (*Vulpes vulpes*), Otter (*Lutra lutra*), Pine Marten (*Martes martes*), Stoat (*Mustela erminea hibernica*), American Mink (*Mustela vison*), Irish Hare (*Lepus timidus hibernicus*), Rabbit (*Oryctolagus cuniculus*), Hedgehog (*Erinus europaeus*), Red Squirrel (*Sciurus vulgaris*), Grey Squirrel (*Sciurus carolinensis*), Wood Mouse (*Apodemus sylvaticus*), Pygmy Shrew (*Sorex minutus*), Brown Rat (*Rattus norvegicus*), Bats and Fallow Deer (*Dama dama*).

During the site walkover evidence of Rabbit (*Oryctolagus cuniculus*) and Fox (*Vulpes vulpes*) were recorded during the site assessment. There was no evidence of Otter or Badger, including setts or latrines at the proposed development site. No other mammals, or evidence of mammals, were noted within the development site during the survey

Areas of the proposed development site may provide suitable basking and refuge habitat for Viviparous Lizard (*Zootoca vivipara*).

With regards terrestrial invertebrates, the butterflies, Cabbage White (*Pieris rapae*), Peacock (*Inachis io*), Meadow Brown (*Maniola jurtina*) and Small Tortoiseshell (*Aglais urticae*) were recorded. No Marsh Fritillary were recorded. It was considered that the study area does not contain suitable habitat for protected whorl snail species (*Vertigo* spp.). Other terrestrial invertebrates recorded include Bumblebee (*Bombus*) Footman moth (*Eilema* sp.), Wasps (*Vespida*e), Ants (*Formicidae*) and Hoverflies (*Syrphidae*).

With regards aquatic fauna small fish possibly Minnow (*Phoxinus phoxinus*) or Three-spined stickleback (*Gasterosteus aculeatus*) were observed within the Clashnadarriv Stream. This stream would have the potential to contain aquatic macroinvertebrates. In addition, the settlement pond has some macroinvertebrates such as Beetles (*Coleoptera*), Dragonflies (*Anisoptera*) and Pond skaters (*Gerridae*). No fish were observed within these ponds, nor would these ponds offer suitable habitat for fish as the pond were shallow and high in sediment.

The Clashnadarriv Stream flows into the River Finisk which in turn flows into the River Blackwater. Lamprey sp, Atlantic Salmon (*Salmo salar*) and Brown Trout (*Salmo trutta fario*), have the potential to be found within the Rivers Finisk and Blackwater downstream of the Clashnadarriv Stream confluence.

Freshwater Pearl Mussel

The proposed development is located outside the current known distribution and favourable reference range of the freshwater pearl mussel (NPWS, 2013c). There are no NBDC records for pearl mussel within the vicinity of the proposed development. Freshwater pearl mussel is concentrated in the tributaries such as the Owentaraglin, Allow and Licky River. As Freshwater pearl mussel is located upstream from the main River Blackwater channel it is unlikely that Freshwater pearl mussel is located within the River Finisk.

White-clawed Crayfish

The proposed development is located outside the current known distribution and favourable reference of this qualifying interest (NPWS, 2019c). According to the Conservation Objectives white-clawed crayfish are confined to the Awbeg River and not within the main River Blackwater channel (NPWS, 2012). The NBDC has no records for white-clawed crayfish within the River Finisk.

Sea Lamprey

The proposed development is located outside the current known distribution range, but within the range of this qualifying interest (NPWS, 2019c). According to the Conservation Objectives Artificial barriers can block or cause difficulties to lampreys' upstream migration, thereby limiting species to lower stretches and restricting access to spawning areas (NPWS, 2012). The report by King J. J. and Linnane S. M. (2004) notes that numbers of juvenile sea lamprey were not found in the River Finisk but it is apparent that sea lamprey can in some years, ascend the weirs and other physical obstructions on the Blackwater in sufficient numbers to permit upstream dispersal prior to spawning. The nearest NBDC records for sea lamprey are recoded with tetrad X09.

Brook and River Lamprey

The proposed site is located within the current known range and favourable reference of these of Brook Lamprey but outside for all ranges for River Lamprey (NPWS, 2019c). The report by King J. J. and Linnane S. M. (2004) notes that sampling of the River Finisk populations were composed entirely of juvenile river / brook lamprey. Population density fluctuated little between sites ranging from 2 to 5 juveniles / m^2. The NBDC has no records for either lamprey along the River Blackwater channel.

Twaite Shad

The proposed development is located outside the current known distribution and reference range but within the favourable range of this qualifying interest (NPWS, 2019c). Regular breeding has been confirmed in the River Blackwater in recent years (NPWS, 2012). In some catchments, artificial barriers block twaite shads' upstream migration, thereby limiting species to lower stretches and restricting access to spawning areas. Major weirs on the Blackwater prevent potential exploitation of adult spawning grounds (NPWS, 2012). The NBDC has no records for either lamprey along the River Blackwater channel.

Atlantic Salmon

The proposed development is located within the current known distribution and favourable reference range of this qualifying interest (NPWS, 2019b). Surveys undertaken in 2008 by Inland Fisheries Ireland found salmon in both the Upper and Lower Blackwater Estuary. The Blackwater is noted as a salmon fishing river with upstream migration blocked by weirs in certain water conditions but do not generally prevent access to spawning areas. The Blackwater (upstream of Lismore) and tributaries such as the Bride [Waterford] and Coom are designated

as salmonid rivers under S.I. 293: European Communities (Quality of Salmonid Waters) Regulations, 1988. This directive sets strict water quality standards for fresh water.

Otter

The proposed development is located within the current known range and favourable reference range of Otter. The NBDC has otter records within the River Finisk and the 10km square (X19) in which the proposed site is located. The National Otter Survey of Ireland 2010/12 (2013) report noted that the occurrence of otter within survey sites for the south-eastern river basin district was 70.8%. As noted above, no evidence of otter, in the form of spraints, was recorded during the site walkover, however it is considered probable that otter are within the vicinity of the proposed site.

Other fish species, such as Sea trout / brown trout (*Salmo trutta*) and European Eel (*Anguilla anguilla*) would also be expected to be present within the River Blackwater (Munster).

FAUNA - BATS

Desk Based Review

No hedgerow/treeline will be removed for the proposed development. Some trees along the boundary of the quarry site could offer moderate roosting potential. The tree species are a mix of Beech (*Fagus sylvatica*), Oak (*Quercus* spp.) and Ash (*Fraxinus excelsior*). No buildings will be removed as part of the proposed development.

- Common Pipistrelle (*Pipistrellus pipistrellus*);
- Soprano Pipistrelle (*Pipistrellus pygmaeus*);
- Daubenton's Bat (*Myotis daubentonii*);
- Lesser Noctule (*Nyctalus leisleri*)

The NPWS's National Lesser Horseshoe Bat Roost Database was also consulted with regards any roost records for Lesser Horseshoe Bat (*Rhinolophus hipposideros*). The Lesser Horseshoe Bat is mainly confined to the west of Ireland, with the NPWS database indicating that this bat is absent from the south-east area.

AVIFAUNA

Given the agricultural land uses of the surrounding area, it would be expected that common grassland and hedgerow bird species would be present in the area. Given the site's distance to the Rivers Blackwater [Munster] and Finisk it would be expected that waterbird species would also be present within the surrounding area of the proposed site. The following table details the bird species recorded during the site walkovers on the 27th August 2021 and their protection and conservation concern statuses.

Table 1.8: Protection and Conservation Concern Statuses for Recorded Birds

COMMON NAME	SCIENTIFIC NAME	E.U. BIRDS DIRECTIVE	BoCCI* RED LIST	BoCCI* AMBER LIST
Blackbird	*Turdus merula*	-	-	-
Blue Tit	*Parus caeruleus*	-	-	-
Chaffinch	*Fringilla coelebs*	-	-	-
Dunnock	*Prunella modularis*	-	-	-
Goldfinch	*Carduelis carduelis*	-	-	-
House Martin	*Delichon urbicum*	-	-	✓
House Sparrow	*Passer domesticus*	-	-	✓
Jackdaw	*Corvus monedula*	-	-	-
Magpie	*Pica pica*	-	-	-
Pied Wagtail	*Motacilla alba*	-	-	-
Robin	*Erithacus rubecula*	-	-	-
Rook	*Corvus frugilegus*	-	-	-
Starling	*Sturnus vulagaris*	-	-	✓
Swallow	*Hirundo rustica*	-	-	✓
Woodpigeon	*Columba palumbus*	-	-	-
Wren	*Troglodytes troglodytes*	-	-	-

**The BoCCI (Birds of Conservation Concern in Ireland) List classifies bird species into one of three lists (Red, Amber or Green) based on their conservation status and conservation priority.*

A total of 16 bird species were recorded during the bird survey. No species is red listed under the BoCCI classification, four species, House Martin, Swallow, Starling and House Sparrow are amber listed. None of the bird species recorded are listed under Annex I of the E.U. Birds Directive.

The conservation statuses for the qualifying interests of the Helvick Head to Ballyquin SPA are outlined in **Table 1.9** below;

CODE	QUALIFYING INTEREST	CONSERVATION STATUS*	SITE LEVEL CONSERVATION STATUS**	POPULATION SIZE
A017	Cormorant (*Phalacrocorax carbo*)	Amber	Good	65
A013	Peregrine (*Falco peregrinus*)	Green	Good	5
A184	Herring Gull (*Larus argentatus*)	Red	Good	117
A188	Kittiwake (*Rissa tridactyla*)	Amber	Good	1037
A346	Chough (*Pyrrhocorax pyrrhocorax*)	Amber	Good	10

** Birds of Conservation Concern in Ireland 2021- 2026 (Gilbert, Stanbury & Lewis, 2021)*
***Sourced from NPWS (2020)*

RECORDS OF PROTECTED, RARE AND INVASIVE SPECIES

National Biodiversity Data Centre Records

Flora and fauna records were reviewed on the National Biodiversity Data Centre (NBDC) website for the 10km square (Tetrad X19) in which the proposed development site is situated.

No protected flora species under the Flora (Protection) Order, 2015 (S.I. No. 356 of 2015) were recorded for the thirty years previous for the 10km square (X19), while records were returned for six invasive flora species listed in the Third Schedule of the European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. No. 477 of 2011); Giant-rhubarb (*Gunnera tinctoria*), Canadian Waterweed (*Elodea canadensis*), Indian Balsam (*Impatiens glandulifera*), Japanese Knotweed (*Fallopia japonica*), Parrot's-feather (*Myriophyllum aquaticum*), Rhododendron ponticum and Three-cornered Garlic (*Allium triquetrum*).

Threatened flora species Opposite-leaved Pondweed (*Groenlandia densa*) and Smooth Brome (*Bromus racemosus*) are found within Tetrad X19.

Bird species of note recorded within the 10km square (Tetrad- X19) include Barn Owl (*Tyto alba*), Swallow (*Hirundo rustica*), Black-headed Gull (*Larus ridibundus*), Common Coot (*Fulica atra*), Grasshopper Warbler (*Locustella naevia*), Kestrel (*Falco tinnunculus*), Kingfisher (*Alcedo atthis*), Linnet (*Carduelis cannabina*), Snipe (*Gallinago gallinago*), Starling (*Sturnus vulgaris*), Swift *(Apus apus*), Curlew (*Numenius arquata*), Oystercatcher (*Haematopus ostralegus*), Teal (*Anas crecca*), Wigeon (*Anas penelope*), Woodcock *(Scolopax rusticola*), Great Black-backed Gull (*Larus marinus*), Great Cormorant (*Phalacrocorax carbo*), Great Northern Diver (*Gavia immer*), House Martin (*Delichon urbicum*), House Sparrow (*Passer domesticus*), Lesser Black-backed Gull (*Larus fuscus*), Little Egret (*Egretta garzetta*), Little Grebe (*Tachybaptus ruficollis*), Peregrine Falcon (*Falco peregrinus*), Mute Swan (*Cygnus olor*), Mallard (*Anas platyrhynchos*), Merlin (*Falco columbarius*), Northern Lapwing (*Vanellus vanellus*), Northern Wheatear (*Oenanthe oenanthe*), Rock Pigeon (*Columba livia*), Sand Martin (*Riparia riparia*), Sky Lark (*Alauda arvensis*), Spotted Flycatcher (*Muscicapa striata*), Sand Martin (*Riparia riparia*), Tufted Duck (*Aythya fuligula*)Water Rail (*Rallus aquaticus*) and Yellowhammer (*Emberiza citrinella*).

Fauna species of note recorded within the NBDC 10km square (Tetrad- X19) include the protected species, Smooth Newt (*Lissotriton vulgaris*), Badger (*Meles meles*), Pygmy Shrew (*Sorex minutus*), Red Squirrel (*Sciurus vulgaris*), Pine Marten (*Martes martes*) and West Hedgehog (*Erinaceus europaeus*).

Invasive species of note include American Mink (*Mustela vison*), Bank Vole (*Myodes glareolus*), Fallow Deer (*Dama dama*), European Rabbit (*Oryctolagus cuniculus*) and Brown Rat *(Rattus norvegicus*).

National Parks and Wildlife Services Records

Records of protected, rare or threatened flora and fauna species within 10km of the proposed development obtained from the NPWS are included in Tables 1.10 and 1.11 below.
Note some species have been excluded from this list due to the sensitive nature of the data and this data will not be made public.

Table 1.10: Records of Protected, Rare or Threatened Flora Species from the NPWS

COMMON NAME	SCIENTIFIC NAME	PROTECTION[1]	CONSERVATION STATUS[2,3]
Green-Winged Orchid	*Orchis morio*	None	Vulnerable
Opposite-leaved Pondweed	*Groenlandia densa*	Protected	Vulnerable
Henbane*	*Hyoscyamus niger*	None	Near Threatened
Betony*	*Stachys officinalis*	None	Least Concern
Divided Sedge*	*Carex divisa*	Protected	Endangered
Annual Knawel*	*Scleranthus annuus*	Protected	Vulnerable
Greater Broomrape*	*Orobanche rapum-genistae*	None	Near Threatened
Fiddle Dock*	*Rumex pulcher*	None	Vulnerable
Killarney Fern*	*Trichomanes speciosum*	Protected	Least Concern
Little-robin	*Geranium purpureum*	None	Near Threatened
Borrer's Saltmarsh-grass*	*Puccinellia fasciculata*	Protected	Near Threatened
Yellow Horned-poppy	*Glaucium flavum*	None	Near Threatened
Spruce's Bristle-moss	*Orthotrichum sprucei*	Protected	Vulnerable

Notes:
[1] HD II/IV = Habitats Directive Annexes II/IV; FPO = Flora Protection Order.
[2] Vascular flora from the Irish Red Data Book 1 Vascular Plants (Curtis and McGough, 1988; Wyse Jackson et al., 2016), Bryophytes from the Irish Red List No. 8 (Lockhart *et al.*, 2012);
2 IUCN Red list http://www.iucnredlist.org/ - accessed October 2021
3 * Records over 50 years old

Table 1.11: Records of Protected, Rare or Threatened Fauna Species from the NPWS

COMMON NAME	SCIENTIFIC NAME	PROTECTION[1]	CONSERVATION STATUS[2,3]
Common Lizard	*Zootoca vivipara*	WA	Least Concern
Badger	*Meles meles*	WA	Least Concern
Fallow Deer	*Dama dama*	WA	Least Concern
Freshwater Pearl Mussel	*Margaritifera margaritifera*	HD II, WA	Endangered
Common Frog	*Rana temporaria*	WA	Least Concern
Cormorant	*Phalacrocorax carbo*	WA	Medium Concern - Amber
Hedgehog	*Erinaceus europaeus*	WA	Least Concern

COMMON NAME	SCIENTIFIC NAME	PROTECTION[1]	CONSERVATION STATUS[2,3]
Irish Hare	*Lepus timidus hibernicus*	WA	Least Concern
Allis Shad	*Alosa alosa*	HD II, OSPAR	Least Concern
Common Sandpiper	*Actitis hypoleucos*	WA	Least Concern - Amber
Curlew	*Numenius arquata*	WA	Near Threatened - Red
Grey Wagtail	*Motacilla cinerea*	WA	Least Concern - Red
Kingfisher	*Alcedo atthis*	BDI, WA	Least Concern - Amber
Mute Swan	*Cygnus olor*	WA	Least Concern - Amber
Reed Warbler	*Acrocephalus scirpaceus*	WA	Least Concern - Amber
Pine Marten	*Martes martes*	WA	Least Concern
Little Egret	*Egretta garzetta*	BDI, WA	Least Concern - Green
Irish Stoat	*Mustela erminea subsp. hibernica*	WA	Least Concern
Otter	*Lutra lutra*	HD II/IV, WA	Near Threatened
Red Squirrel	*Sciurus vulgaris*	WA	Least Concern
Sand Martin	*Riparia riparia*	WA	Least Concern - Amber
Snipe	*Gallinago gallinago*	WA	Least Concern - Amber
Sea Lamprey	*Petromyzon marinus*	HD II, OSPAR	Least Concern
Twaite Shad	*Alosa fallax*	HD II	Least Concern
Teal	*Anas crecca*	WA	Least Concern - Amber
Whooper Swan	*Cygnus cygnus*	BDI, WA	Least Concern - Amber
Wigeon	*Anas penelope*	WA	Least Concern - Green

Notes:
[1] HD II/IV = Habitats Directive Annexes II/IV; WA = Wildlife Acts; BDI = Birds Directive Annex I. OSPAR Protection of marine environment NE Atlantic.
[2] Terrestrial Mammal Red List (Marnell *et al.* 2009); Birds of Conservation Concern in Ireland 2021-2026 (Gilbert, Stanbury & Lewis, 2021); Red-listed Amphibians, Reptiles and Freshwater Fish (King *et al.* 2011); Red-listed Non-marine Molluscs (Byrne *et al.*, 2009).
[3] IUCN Red list http://www.iucnredlist.org/ - accessed October 2021

WATER QUALITY

The proposed development is located within the Blackwater (Munster) Catchment (I.D: 18) and within the Finisk_SC_010 Sub-catchment (I.D: 18_15). The closest watercourse to the proposed site is the Clashnadarriv Stream (Code: 18C34 – Order 1) that flows along the boundary of the site with the R671 road. The Clashnadarriv flows into the Finisk River (Code: 18F02 – Order 4) after approximately 1.96km from the culvert at the site access point. The River Finisk flows into the River Blackwater (Munster) (Code: 18B02 – Order 6) approximately 6.1km downstream of the Finisk/Clashnadarriv confluence. Approximately 260m of the Clashnadarriv is designated as part of the Blackwater River (Cork/Waterford) Special Area of Conservation (SAC) site (Site Code: 002170). The Blackwater River (Cork/Waterford) SAC is designated for a number of aquatic species, including Freshwater Pearl Mussel (*Margaritifera margaritifera*), White-clawed Crayfish (*Austropotamobius pallipes*), Sea Lamprey (*Petromyzon marinus*), Brook Lamprey (*Lampetra planeri*), River Lamprey (*Lampetra fluviatilis*), Twaite Shad (*Alosa fallax*), Atlantic Salmon (*Salmo salar*) and Otter. The Conservation Objectives document for the SAC shows that water quality objectives

have been set for Freshwater Pearl Mussel (*Margaritifera margaritifera*) to restore water quality to high ecological status. White-clawed Crayfish (*Austropotamobius pallipes*) and Atlantic Salmon (*Salmo salar*), with a Q3-4 (moderate status) and Q4 (good status) values set as objectives in freshwater. Water quality objectives have also been set for Twaite Shad (*Alosa fallax*), with a target of oxygen levels no lower than 5mg/l. For nutrient sensitive habitats of Vegetation of flowing rivers [3260] a target of Water Framework Directive good status in terms of nutrient and oxygenation standards has been set.

The Environmental Protection Agency (EPA) undertake surface water monitoring along the Finisk River. The results for the nearest monitoring stations, as per Table 1.12, with available monitoring results for the period 2003 – 2018 are summarised in Figure 1.3 below for indicative purposes.

Table 1.12: Active Monitoring Stations within the Vicinity of the Proposed Development

Station No.	Station Location	Easting	Northing	Approx. Location to Confluence with Clashnadarriv
River Finisk				
RS18F020090	Br u/s Ballinamult Br	217408.63	107163.03	17.56 km Upstream
RS18F020300	Modelligo Br	217570.29	99292.33	8.14km Upstream
RS18F020500	Kilmolash Br	213044.6	94821.96	1.3km Downstream

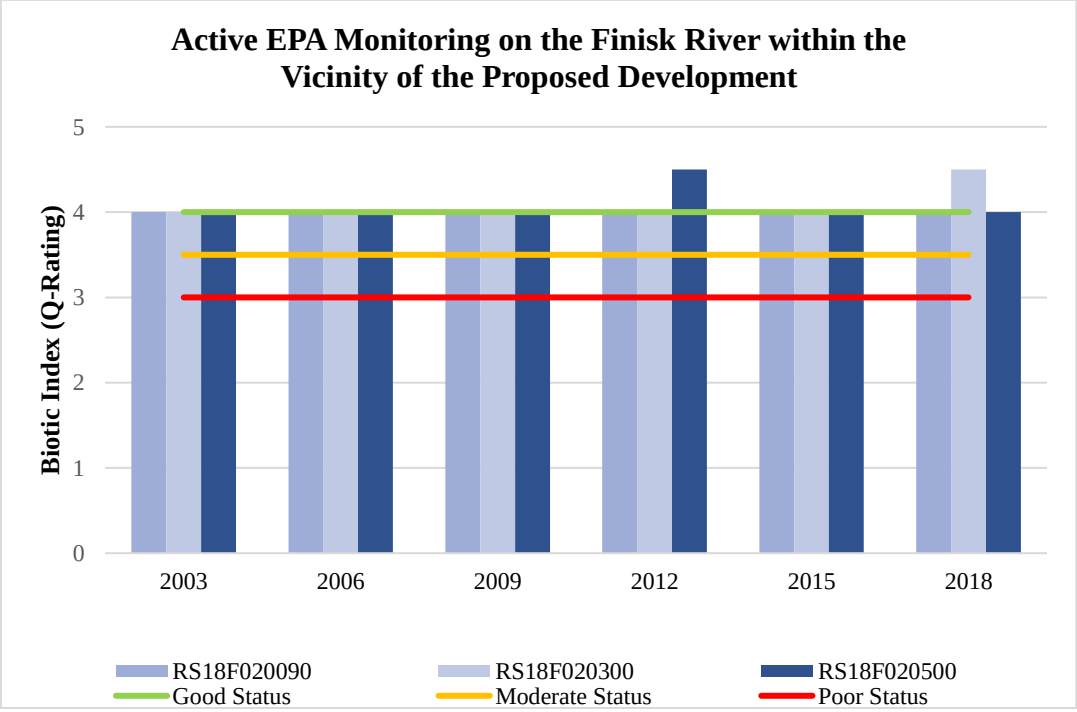

Figure 1.3: EPA Ecological Monitoring of the Finisk River from 2003 – 2018

As can be seen in Figure 1.3 above, the Finisk River was achieving an average water quality of Q4 (Good) between 2003 – 2018. EPA comments on the most recent monitoring results for the River Finisk are as follows "*The Finisk remains in overall satisfactory condition with High and Good ecological quality. The station at Modelligo Bridge (0300) improved from Good to*

High for the first time in 20 years. However, the decline at the lowermost site at Kilmolash Bridge (0500) from High quality in 2012 to Good quality in 2015 has persisted into 2018. While the Finisk is in overall satisfactory ecological condition, there has been a decline at the lowermost site from High quality in 2012 to Good quality in 2015."

Inland Fisheries Ireland fact sheet 2017/21 for the Finisk River is summarised below;

The Finisk River catchment is located in the South Western River Basin District and covers an area of approximately 128km^2. The majority of this river's main channel falls within the River Blackwater (Cork/Waterford) SAC. Three fish species were recorded at five sites surveyed on the Finisk River in 2017. Brown trout and Salmon were the most abundant species captured. Four age classes for brown trout (0+, 1+, 2+ and 3+) and three for salmon (0+, 1+ and 2+) were recorded. Site 3 was surveyed on two previous occasions. Brown trout density was higher in 2017, when compared with 2010 and 2014, however, the opposite was observed for salmon. One site (4) was assigned a fish ecological status of poor. Two sites (1 & 3) were assigned moderate. And one site (2) was assigned good (Matson et al, 2018).

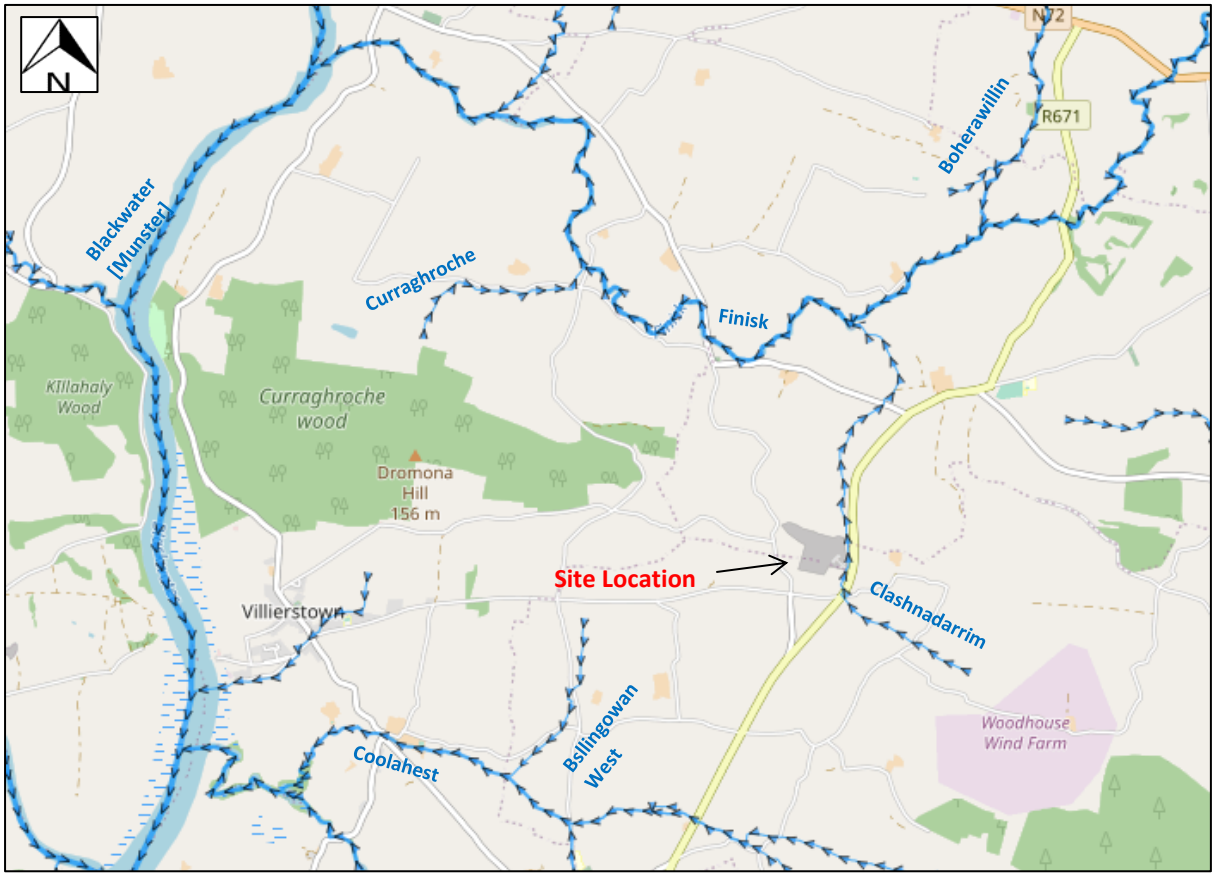

Figure 1.4: Watercourses within the vicinity of the site

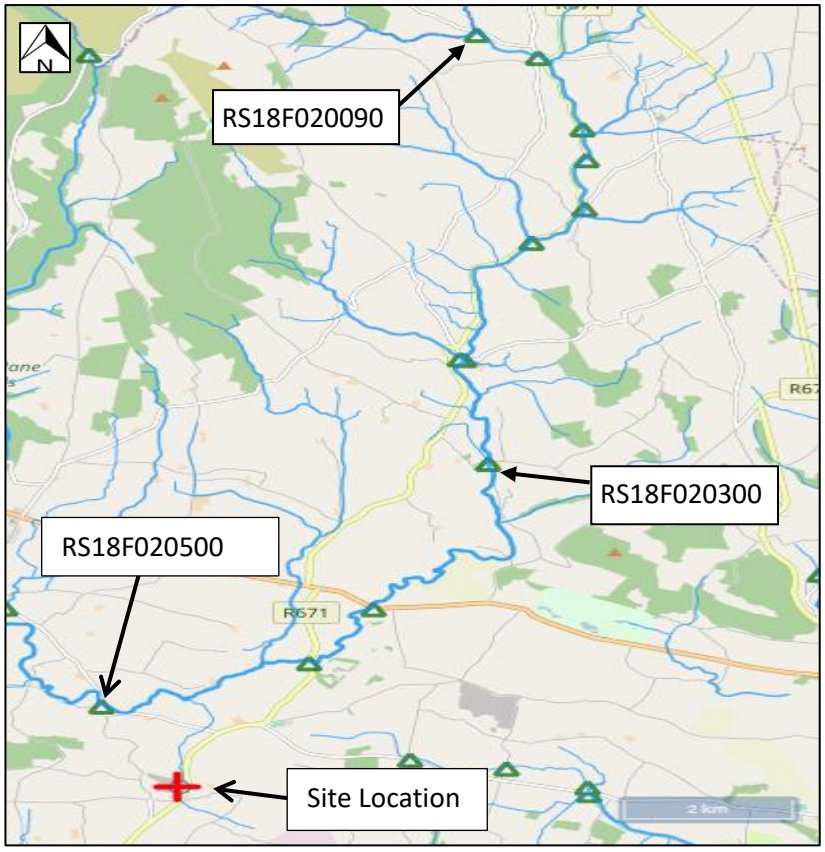

Figure 1.5: National Water Monitoring Stations on the Finisk River

GROUND WATER

Ground water will be assessed separately within this EIAR.

The quarry is located on a Locally Important Aquifer - Bedrock which is Moderately Productive only in Local Zones. With Rock at or Near Surface which would be typical of an active quarry of this scale. The quarry is located at the Ground Waterbody Glenville that's classified as Poorly productive bedrock with a current status of "Good". There is a borehole located at Kereen (2009SWW039) that is classified as "poor"

Material to be imported for the aggregate material will be classified as inert and will not contain hazardous waste or have the potential to leachate and cause a significant impact on groundwater. See Table 1.13 below.

1.6 CHARACTERISTICS OF THE PROPOSED DEVELOPMENT SITE

The proposed development will be for the recycling of construction and demolition materials within the footprint of the existing quarry at Kereen Lower, Cappoquin, Co Waterford. The development involves an activity that requires a waste facility permit. See Table 1.13 for materials and their European Waste Catalogue (EWC code). The aggregate recycling will be approximately 50,000 tonnes per annum. All imported materials are aggregates (concrete and tarmac) with concrete tested as outgoing material by smart test solutions. Any material with the potential to contain invasive flora will be thoroughly checked and screened before coming into the site. The estimated timeframe is 20 years with operational hours Monday-Friday 08:00am to 6:00pm and Saturday 8am to 2pm. Kereen Quarry currently carry out excavation works with the removal of bedrock. There are several environmental protection measures already in place such as a wheel wash facility, settlement pond and dust reduction measures. Dust monitoring at Kereen Quarry is undertaken for Compliance with Section 261, Subsection 6 of the Planning & Development Act Quarry Reg. No. Q11. The settlement pond has a stone filled drainage channel allowing restricted gravity flow to the Clashnadarrim stream (also referred to as Glenkereen stream). ALS Life Sciences Ltd undertaken water sampling analysis and measure for pH and suspended solids measuring <5 mg/l for method P202. A detailed description of the development is provided at the beginning of this EIAR report with detailed site plans.

Table 1.13: Materials and their European Waste Catalogue (EWC code)

EWC Code	Material
17 01 00	Concrete Block/Stone/Plaster
17 01 01	Concrete
17 01 02	Brick
17 05 04	Stone/Plaster/Clay/Fines
17 01 03	Slates

1.7 POTENTIAL IMPACTS OF THE PROPOSED DEVELOPMENT

1.7.1 DETERMINATION OF ECOLOGICAL VALUE

The ecological value of the habitat types and species identified at the proposed development site have been assessed following the criteria outlined in the National Roads Authority (NRA)

guidelines (2009). Tables 1.14 and 1.15 below detail the habitats recorded and potential species, and their associated ecological value.

Table 1.14: Ecological Value of Identified Habitats of the Proposed Development

HABITAT TYPE	HABITAT RATING	KEY ECOLOGICAL RECEPTOR?
Improved agricultural grassland (GA1)	Local importance, lower value	No. Species poor habitat. Low ecological value.
Mixed broadleaved woodland (WD1)	Local importance, lower value	Yes. Area of semi-natural habitat. May provide opportunities for bird nesting and foraging for bats
Scrub (WS1)	Local importance, lower value	Yes. May provide habitats for small mammals and nesting birds
Hedgerows/Treelines (WL1/WL2)	Local importance, lower value	Yes. Area of semi-natural habitat. May provide opportunities for bird nesting and foraging for bats.
Stone walls and other stonework (BL1)	Local importance, lower value	Yes. May provide opportunities for small animals
Buildings and artificial surfaces (BL3)	Local importance, lower value	No. Species poor habitat. Low ecological value.
Exposed sand gravel or till (ED1)	Local importance, lower value	No. Species poor habitat. Low ecological value.
Recolonising bare ground (ED3)	Local importance, lower value	No. Species poor habitat. Low ecological value.
Spoil and bare ground (ED2)	Local importance, lower value	No. Area of disturbed ground with recolonising vegetation. Low ecological value.
Active quarries and mines (ED4)	Local importance, lower value	No. Species poor habitat. Low ecological value.
Other artificial lakes and ponds (FL8)	Local importance, lower value	No. Species poor habitat. Low ecological value.
Eroding upland rivers (FW1)	Local importance, lower value	Yes. Area of semi-natural habitat. May provide opportunities aquatic species.
Improved agricultural grassland (GA1)	Local importance, lower value	No. Species poor habitat. Low ecological value.

Table 1.15: Ecological Value of Species Present / within the Vicinity of the Development

SPECIES	SPECIES RATING	KEY ECOLOGICAL RECEPTOR?
Badger	Local importance, higher value	Yes. Not recorded within the vicinity of the proposed site. Areas of scrub has some potential to support this species.

SPECIES	SPECIES RATING	KEY ECOLOGICAL RECEPTOR?
Otter	Local importance, higher value	Yes. Not recorded within the site however could be found in the River Finisk.
Pine Marten	Local importance, higher value	No. Not recorded within the vicinity of the proposed site. Site has limited potential to support this species.
Bats (foraging and commuting habitat only – no bat roosts identified)	Local importance, higher value	Yes. The hedgerows within and adjacent to the proposed development are likely to be utilised by bats for both foraging and commuting.
Hare	Local importance, higher value	No. Not recorded within the vicinity of the proposed site. Site has limited potential to support this species
Other Fauna	Local importance, low to high value	No. Site has limited potential to support other fauna species.
Breeding Birds	Local importance, higher value	Yes. All birds, their nests, eggs and young are protected under the Wildlife Act.
Common Lizard	Local importance, higher value	No. Not recorded within the vicinity of the proposed site. Protected under the Wildlife Act.

Table 1.16: Ecological Value of Aquatic Species within the Vicinity of the Development

SPECIES	SPECIES RATING	KEY ECOLOGICAL RECEPTOR?
Atlantic Salmon (1106)	Local importance, higher value	Yes. Salmon are present throughout much of the Blackwater catchment including the River Finisk.
Freshwater pearl mussel (1029)	Local importance, higher value	No. Proposed development and local catchment is outside of the recorded range and distribution for this species.
White Clawed crayfish (1092)	Local importance, higher value	No. Proposed development and local catchment is outside of the recorded range and distribution for this species.
Twaite Shad (1103)	Local importance, higher value	No. There are no records of Twaite Shad within the River Finisk.
Brook lamprey (1096)	Local importance, higher value	Yes. There are records of Lamprey sp. within the River Finisk below the proposed site.
River lamprey (1099)	Local importance, higher value	Yes. There are records of Lamprey sp. within the River Finisk below the proposed site
Sea lamprey (1095)	Local importance, higher value	Yes. There are records of Lamprey sp. within the River Blackwater below the proposed site. However, weirs are hindrance to this species

1.7.2 FISHERY VALUE

The Finisk River is tidal approximately 4.5km downstream of the confluence with the Clashnadarriv Stream. A fish stock survey was carried out at sites on the Blackwater (Munster) Estuary by the Central and Regional Fisheries Board (now part of the IFI) in 2008. The estuary is separated into two waterbodies, the upper and lower estuaries with the tidal section of the Finisk River part of the lower section. A total of 23 fish species and sea trout were captured in the Lower Blackwater waterbody;

Table 1.17: Fish Species of the Lower Blackwater

FISH OF LOWER BLACKWATER		
COMMON NAME	**SCIENTIFIC NAME**	**TOTAL CAPTURED**
Thick Lipped Grey Mullet	*Chelon labrosus*	37
Flounder	*Platichthys flesus*	419
Sea Bass	*Dicentrarchus labrax*	5
Sprat	*Sprattus sprattus*	748
Common Goby	*Pomatoschistus microps*	1097
Plaice	*Pleuronectes platessa*	7
Lesser Sandeel	*Ammodytes tobianus*	2
Eel	*Anguilla anguilla*	39
5-Bearded Rockling	*Ciliata mustela*	35
Dab	*Limanda limanda*	1
Brown Trout	*Salmo trutta*	7
Sea Trout*	*Salmo trutta*	4
Salmon	*Salmo salar*	1
3-Spined Stickleback	*Gasterosteus aculeatus*	4
Whiting	*Merlangus merlangus*	5
Roach	*Rutilus rutilus*	2
Cod	*Gadus morhua*	1
Pollock	*Pollachius pollachius*	7
2-Spotted Goby	*Gobiusculus flavescens*	7
Greater Pipefish	*Syngnathus acus*	1
Smelt	*Osmerus eperlanus*	43
Dace	*Leuciscus leuciscus*	48
Golden-Grey Mullet	*Liza aurata*	1
Saithe (Coalfish)	*Pollachius virens*	1

1.7.3 INVASIVE SPECIES

Knotweed (*Fallopia* sp.) is present at the quarry predominately within areas of scrub. As this is Third Schedule High Impact invasive species measures to prevent its spread must be taken.

Knotweed (*Fallopia* sp.) was introduced as a garden plant in 1896 from Asia. It is a member of the Polygonaceae family that includes knotweeds, sorrels and docks. Leaves of the

Polygonaceae family are alternative, simple and usually entire, fruits are an achene (Streeter, 2010). Due to their vigorous growth and impact on habitats near rivers and streams in addition to difficulty in their eradication they are considered a problematic invasive species in Ireland. Their control and the prevention of spreading is of high importance. Japanese knotweed (*Fallopia japonica*) eradication can be difficult if it is found next to a waterbody due to restrictions applied to chemical use on or near water thus limiting its methods of control. Rhizome fragments can be carried on machinery that has not been adequately cleaned. Rhizome has orange flesh inside. Such material can also arrive as a contaminant of imported topsoil in landscaping and building activities (Shaw, 2015).

Japanese knotweed is a terrestrial plant found across many habitats, including disturbed areas, roadsides, forests, and grasslands. It is a rhizomatous perennial plant that dies back each winter and can grow from 2m to 3m in height in summer. Its stems are clustered, erect and a zig-zag growth pattern, with one stem shoot per node. The leaves are ovate to oblong, measuring 6-12cm in length. The flowers are perfect/bisexual and are white/greenish in colour with a stipe-like base. They flower from August to October. It also has the ability to affect the germination of other plants by producing chemicals to inhibit their growth (Invasive Species Ireland, 2021).

As its roots are made up of a rhizome system this can make control difficult. A rhizome is an underground stem that gives rise to roots, aerial stems, and more rhizomes. Knotweed rhizomes spread vigorously, expanding the size of the knotweed stand. A very small piece of rhizome that is moved to another site will give rise to a new plant. While it is considered that Knotweeds (*Fallopia* sp.) can spread up to 7m from above ground plants within the soil, a study by Fennell et al (2018) has concluded that Japanese knotweed rhizome rarely extends more than 4m from above ground plants and is typically found within 2m for small stands and 2.5m for large stands. The rhizome of Knotweed typically grows to a depth of 2m. It also concluded that Japanese knotweed doesn't cause significant structural damage to buildings and cannot directly grow through concrete. If it is growing in close proximity to a building it will cause less damage in comparison to other plant species such as trees and shrubs. Knotweed is likely to grow to cracks in poorly built light structures such as garden sheds and footpaths. It can grow through tarmac and should be cleared completely before starting to build or lay roads.

Treatment will require the use of a systemic herbicide that will be absorbed by the plant's root system, such as glyphosate-based products. The rhizome root system is an underground stem that gives rise to roots, aerial stems, and more rhizomes. Knotweed rhizomes spread vigorously, expanding the size of the knotweed stand. Rhizomes are also very durable. Cutting is not an effective tool for managing knotweed as rhizomes may remain dormant for many years. A licence is required to remove and dispose of Japanese Knotweed and contractors employed to carry out this work should be aware of this requirement. If Knotweed (*Fallopia* sp.) is to be buried on site or disposed off-site, then glyphosate formulations can only be used.

1.7.4 OPERATIONAL PHASE

Designated Sites

As discussed in detail in Section 1.5 above, the European site considered to be within the potential zone of influence of the proposed development is the Blackwater River (Cork/Waterford) SAC (Site Code: 002170) due to hydrological connectivity and distance and

the potential for quarries to have suitable habitat for bird species associated with Helvick Head to Ballyquin SPA (Site Code: 004192).

The proposed development does not directly impinge on any part of a European site, and as such operational works would not be expected to impact upon a protected site through destruction or fragmentation of habitat, disturbance of habitat or direct reduction in species density during the operational phase.

It is not considered that the proposed development site would contain the habitats or species for which the Blackwater River (Cork/Waterford) SAC has been designated. The proposed development site contains no aquatic habitats of note. The Clashnadarriv Stream (Code: 18C34 – Order 1) flows along the boundary of the site with the R671 road. The tidal reach of the River Finisk is approximately 5.6km from Kereen Quarry. This quarry does not contain any areas of natural woodland, marsh, fen or swamp with potential links to designated habitats of the Blackwater River (Cork/Waterford) SAC. It is not considered that the proposed site would be suitable to support the SAC qualifying interests Killarney Fern. No evidence of otter was recorded at the proposed development site, given the site's quarrying activities and active machinery use, the whole quarry both active and area proposed for aggerate recycling are be considered to be of low ecological value, and in the absence of evidence of otter (including spraints and tracks) within the proposed development site itself, it is unlikely the proposed site would support this species.

The potential disturbance on protected species due to aggerate recycling noise would not be considered significant. A noise assessment of the quarry was carried out by NRGE Ltd. were found to be average noise levels influenced by quarry activity particularly screening and loading however the quarry activities were not considered significant. Given the nature and operational hours of the quarry it is not considered that noise would cause a significant impact on nocturnal fauna such as otter, badger or bats. The quarry is active during the day and birds within the vicinity of the site would be accustomed to the noise from movement of vehicles and machinery at the site. The background noise levels in the area are generally descriptive of rural environment with L90 values below 40dB(A).

Standard mitigation measures for the aggregate recycling facility will be followed to minimise an impact on protected habitats and species from dust and noise. These control measures are detailed in Section 1.8.

The proposed site is located within the Blackwater (Munster) Catchment, thus, the proposed development is hydrologically linked to the Blackwater River (Cork/Waterford) SAC. During the operational phase of projects, a deterioration in water quality can arise through the release of suspended solids during aggregate recycling works and the release of hydrocarbons, which could potentially impact upon the Blackwater River (Cork/Waterford) SAC. Given that no works would take place within a riparian or aquatic habitat and the site already has a settlement pond that's flow is monitored regularly, the risk of the proposed development impacting upon the Blackwater River (Cork/Waterford) SAC would be reduced. However, given the proximity of the Clashnadarriv Stream and the River Finisk, control measures are required to ensure that there would be no potential significant impacts to the listed habitats and species of the Blackwater River (Cork/Waterford) SAC due to a potential deterioration in water quality. These control measures are detailed in Section 1.8.

Habitats and Flora

The operational phase of the development would not result in a direct and permanent loss of the modified habitats from quarrying processes therefore the loss of this habitat would not be considered significant. The proposed development would not result in a direct and permanent loss of habitats of local importance (lower value) such as hedgerows (WL1) and treelines (WL2). The modified habitats such as exposed sand gravel or till (ED1), recolonising bare ground (ED3) and active quarries and mines (ED4) are not ecologically significant.

No rare plant species or protected flora under the Flora (Protection) Order 2015, were recorded within the proposed development area. Therefore, the proposed development would not be considered to impact upon any rare or protected flora species.

During operational works, there is potential for invasive species to be introduced to the proposed development site through the movement of materials, such as soil and stone, and the arrival of construction plant and equipment from an area with invasive species.

Under Regulation 49(2) of the European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. No. 477 of 2011), save in accordance with a licence granted under paragraph (7), any person who plants, disperses, allows or causes to disperse, spreads or otherwise causes to grow in any place specified in relation to any plant which is included in Part 1 of the Third Schedule shall be guilty of an offence. Materials containing invasive species such as Japanese Knotweed are considered "controlled waste" and, as such, there are legal restrictions on their handling and disposal. Under Regulation 49(7) of the European Communities (Birds and Natural Habitats) Regulations 2011, it is a legal requirement to obtain a license to move "vector materials" listed in the Third Schedule, Part 3.

The potential risk of introducing invasive species during the operational phase would be considered low as aggregates for recycling would not contain invasive flora species of concern were. However as noted above the presence of Knotweed (*Fallopia* sp.) requires control measures to be implemented.

The site contractor would also ensure that all equipment and plant would be thoroughly washed and inspected prior to arriving to the development site. Therefore, it is considered that there would be no significant risk of introducing invasive species during operational works from importation of materials or the arrival to site of construction plant and equipment.

Dust emissions may arise during operational activities, in particular during earth-moving works, which may have the potential to impact upon photosynthesis, respiration and transpiration processes of flora due to the blocking of leaf stomata. However, given the standard working practices including dust control at the quarry, the potential impact to flora would not be considered significant.

The potential impact upon habitats and flora due to a deterioration in water quality is discussed in detail below.

Fauna and Avifauna

As noted above, a considerable proportion of the land take would comprise of a disused/exhausted section of the quarry, which is considered modified and of low ecological value, therefore the loss of this habitat would not be considered significant.

Rabbit was noted as present during the site assessment and it is possibly using the hedgerows/scrub for cover. Rabbit is not a protected species but classified as medium impact invasive species. Fox faeces was noted during the site assessment. No protected fauna, or evidence of protected fauna, were noted as present within the development site itself. No evidence of otter, in the form of spraints, was recorded at the development site, given the industrial use of the site, it is unlikely that the proposed site would support this species.

Should protected fauna be present, it is not anticipated that operational works would have a significant impact owing to the habitat types impacted upon and the quarrying activities already within the vicinity of the proposed development.

Direct mortality of fauna may occur due to the removal of vegetation at the site, in addition to the use of heavy construction plant and machinery. Mortality of fauna is most likely to occur during the mammal and bird breeding season, when young are at their most vulnerable.

No hedgerow / tree removal is proposed as part of the development. If any hedgerow / tree is removed then it should not take place during the bird nesting season (1st of March – 31st of August), this will greatly reduce the potential for mortality. If it is necessary to undertake some hedgerow / scrub removal works during the bird nesting season then in such instances, a suitably qualified ecologist would be engaged to carry out inspections for the presence of breeding birds prior to any clearance works taking place. Where nests are present, the ecologist would make a decision as to whether a "Licence to interfere with or destroy the breeding places of any wild animals", is required from the NPWS. Alternatively, the ecologist may establish a suitable buffer zone around an active nest, with removal works rescheduled until chicks have fledged. Where no evidence of nests are found during inspection, hedgerow / scrub removal works must be undertaken within three days of inspection.

In the event a protected species is encountered during construction or vegetation removal works, an officer of the NPWS would be notified prior to the resumption of construction works.

Operational work has the potential to disturb fauna due to the generation of operational noise. However, operational noise would not be considered to pose a significant risk to fauna owing to the ongoing nature of works and given that all vehicles where possible would be equipped with mufflers to suppress noise, as is standard practice. Where possible, no operational works would be conducted outside of normal working hours, therefore there would be no significant disturbance to nocturnal species.

Bats

Operational works have the potential to result in direct and indirect impacts on local populations of bats through disturbance (increased lighting) potentially affecting existing foraging areas and commuting routes.

The majority of bat species utilise linear features, such as hedgerows and treelines, and areas of mature vegetation for foraging and commuting. There would be no loss of any known bat roosts during the operational phase. Trees along the edge of the quarry will not be removed as part of the proposed development. If any mature tree is to be removed, then additional survey for bat roosts must be undertaken during the active bat season. However, as noted previously no mature trees or hedgerows will be removed as part of this development. Therefore, the potential impact upon bats due to habitat loss would not be significant.

Artificial lighting during the operational phase has the potential to negatively impact upon bat species, as illumination can impact upon their roosting sites, commuting routes and foraging areas. While some bat species, such as Leisler's bats (*Nyctalus leisleri*), may take advantage of prey concentrating around light sources, other bat species are sensitive to lighting and will avoid artificially lit up areas. This can potentially sever commuting and foraging routes. As noted above, operational works are not anticipated to be conducted outside of normal working hours, which would considerably reduce the potential impacts upon bat species. As the site is currently an active quarry there is lighting already in place for health and safety. Measures with regards artificial lighting, as outlined in Section 1.8, would be required to be implemented to reduce the potential impact of light pollution.

Water Quality and Biodiversity

Operational works have the potential to impact upon flora and fauna due to a deterioration in water quality. Risks to water quality could arise due to the potential release of suspended solids during aggregate recycling works and the release of hydrocarbons (fuels and oils).

Suspended solids could become entrained in surface water run-off and could affect aquatic habitats through deposition. An increase in sediments has the potential to impact upon fish by damaging gravel beds required for spawning, smothering fish eggs and in extreme cases, by interfering with the gills of fish. An increase in suspended solids has the potential to reduce water clarity, which can impact the light penetration of water and may also affect certain behaviours of aquatic fauna such as foraging success. Aquatic flora and fauna could also be impacted upon by an increase in nutrients which are bound to suspended solids. A significant increase in nutrients can result in excessive eutrophication, leading to deoxygenation of waters and subsequent asphyxia of aquatic species. An increase in sediments has the potential to impact upon fish, including Brown Trout, Salmon and Lamprey sp. by damaging gravel beds required for spawning, smothering fish eggs and in extreme cases, by interfering with the gills of fish. There is considered the be a low risk of such impacts occurring at this site as no such potential spawning habitats were noted during onsite surveys. In addition, all water that leaves the quarry goes through a settlement pond and is tested regularly for sediments and pH to ensure compliance with acceptable quarry discharge levels.

A potential source of chemical contamination of surface water would be from the release of hydrocarbons (oils, fuels) from operational plant and equipment. Hydrocarbons can affect water quality, potentially resulting in toxic and / or de-oxygenating conditions for aquatic flora and fauna. Pollution could occur in a number of ways, such as neglected spillages, the storage handling and transfer of oil and chemicals and refuelling of vehicles.

Operational works would be confined to the proposed development footprint where possible. Therefore, the risk of suspended solids or hydrocarbons impacting upon surface water quality would be reduced.

Accidental leakage or discharge of chemicals and pollutants would have a minor impact on the fauna and flora due to the low volume of potentially hazardous substances that would be stored on site. Site operators would be informed of the importance of good housekeeping practices, including the immediate cleaning of spillages.

The principal legislation governing the control of the ambient quality of surface waters under the Water Framework Directive is the European Communities Environmental Objectives (Surface Waters) Regulations [S.I. No. 272 of 2009] as amended. This legislation sets out legal limits for parameters of water quality in the form of thresholds for quality status; pristine, good, moderate, and poor. All waters are required to achieve at least "good status" within timeframes set under the regulations. Under the Surface Water Regulations classification system, a waterbody is classified based upon the lowest score attained for any of the determining parameters (River Waterbody: Q-rating, BOD, orthophosphate, ammonia, temperature, pH, heavy metals and priority substances). The overall status of the Clashnadarriv Stream and River Finisk is "Not at risk".

Standard operational control methods for the protection of surface waters would be implemented during the operational phase of the development and are outlined in Section 1.8.

1.7.5 CUMULATIVE IMPACT

Considering the nature of the development and the adjacent quarry Roadstone Cappagh, it is considered that the main potential cumulative impact upon biodiversity would be a deterioration in water quality, dust and noise during the operational phase resulting in an impact upon protected flora and fauna species and disturbance to species.

However, with regards to water quality, it is not anticipated that there would be any significant impact upon water quality during the operational phase, given that all stormwater from the site and from the wheel wash / dust suppression is pumped to the settlement pond before passing through a stone filled channel. In addition to active monitoring for compliance with water quality.

With regards potential habitat loss or fragmentation of habitat, the proposed development is not anticipated to result in a significant impact upon habitat loss / fragmentation during either the operational phase, given that the majority of the land take would comprise of modified habitats of low ecological value. Therefore, there would be no cumulative habitat loss or fragmentation impacts which could pose a significant risk to biodiversity.

1.7.6 "DO-NOTHING" IMPACT

Should the development not go ahead, there would be no change to the environmental impacts of the existing site. The lands would likely be continued to be used for quarrying purposes. If left alone the site would likely go through plant succession. However, given the large amount of material removed from the site this would leave a significant impact on the wider environment. The spread of invasive species must be controlled to prevent these species from impacting on protected habitats. In addition, if the quarry is left to naturally fill with rainwater the water can be very deep with high mineral content that makes the water colder and less ecological active compared to natural lakes.

Should the development not go ahead, there would be no changes to the existing water quality, habitats or species within the Clashnadarriv Stream and River Finisk. Water quality within the Clashnadarriv Stream and River Finisk would be expected to remain of "Good" status under the water framework directive, due to the influence of the surrounding landscape. As these habitats within the site are of low ecological value, it is unlikely that the proposed site would be of significant ecological value in the future.

Birds of prey may utilise the quarry if it is left in its current state. If there is any exposed sand then burrowing birds such as Sand Martin (*Riparia riparia*) would utilise the site during the breeding season. The site is unlikely to be utilised by wintering aquatic birds.

1.7.7 "Worst Case" Scenario

In the absence of mitigation measures during the operational phase, there would be a potential risk of a deterioration of water quality during aggregate recycling works due to earth-moving activities and the operation of construction plant. Given that the Clashnadarriv Stream is within the boundary of the quarry, which in turn is a tributary of the River Finisk the potential impact would be considered as significance.

During operational works, there would be potential to inadvertently spread invasive species to the area. The material being brought into the site is unlikely to contain invasive species however where invasive species are confirmed, the loads would be required to be adequately treated or disposed of appropriately and therefore, would not be transported to the proposed development site. As the site contains Third Schedule High Impact invasive flora if no mitigation measures were implemented then this species would continue to spread throughout the site and possible impact further downstream.

1.7.8 POTENTIAL IMPACTS PRE-MITIGATION

Table 1.18 below provides a summary of the potential impacts of the proposed development pre-mitigation, during the construction/operational phases.

Table 1.18: Summary of Predicted Impacts Pre-Mitigation

IMPACT	DEVELOPMENT PHASE	DIRECT / INDIRECT	LIKELIHOOD	DURATION	REVERSIBLE	SIGNIFICANCE	IMPACT TYPE
Habitat Loss	Operational	Direct	Certain	Permanent	No	Slight to Moderate significance	Negative
Introduction of Invasive Flora Species	Operational	Direct	Likely	Temporary	Yes	Slight significance	Negative
Fauna Disturbance	Operational	Indirect	Unlikely	Permanent	Yes	Not significant	Neutral
Fauna Mortality	Operational	Direct	Dependent upon timing of works relevant to breeding season	Permanent	No	Moderate significance	Negative
Bats – Disturbance / Severance of Habitat	Operational	Indirect	Unlikely	Permanent	Yes	Slight significance	Negative
Surface Water Quality Deterioration	Operational	Direct	Unlikely	Permanent	Yes	Not significant	Neutral
Designated Sites	Operational	Indirect	Unlikely	Permanent	Yes	Not significant	Neutral

1.8 MITIGATION MEASURES

1.8.1 OPERATIONAL PHASE

The mitigation measures outlined below would be implemented to ensure there is no significant impact upon the biodiversity of the area and designated sites during the operational phase of the development. In addition, all quarrying and related activities would follow best site management practices as outlined by the EPA "Environmental Management In The Extractive Industry" thereby reducing the potential impact on the environment (EPA, 2006).

General Mitigation Measures

- All construction/operational works would be confined as far as possible to the development footprint;
- All plant machinery and equipment would be maintained in good working order and regularly inspected;
- Where possible, no works would be conducted outside of normal working hours.

Habitats and Flora

- Regular site inspections would be undertaken to ensure that no spread of invasive species has taken place;
- The site contractor would ensure that all equipment and plant is inspected for the presence of invasive species and thoroughly washed prior to arriving/leaving the development site;
- All relevant site personnel would be trained in invasive flora species (main species of concern, including Japanese Knotweed) identification and control measures;
- In the event of any invasive species listed in Part 1 of the Third Schedule spreading onsite, works within the immediate vicinity would cease until the invasive plant has been appropriately treated in accordance with Regulation 49 of the European Communities (Birds and Natural Habitats) Regulations 2011;
- Cognisance would be taken of National Roads Authority's Guidelines on "*The Management of Noxious Weeds and Non-Native Invasive Plant Species on National Roads*";
- Any excavated soil during earth-moving activities and excavations would be segregated into subsoil and topsoil and reused in reinstatement activities.

Additional Measures for Invasive Flora

The following mitigation measures would be proposed to ensure there is no significant impact upon the environment from the spread of invasive species. See Invasive Species Ireland for correct ID of invasive species. http://invasivespeciesireland.com;

- Any material should not be imported to the site if the presence of any invasive species is found, in particular Third Schedule species such as Himalayan balsam *(Impatiens glandulifera*), Japanese Knotweed (*Fallopia japonica*) and Rhododendron.

- An Invasive Species Management Plan (ISMP) must be put in place to prevent and treat Japanese Knotweed;
- All soil and materials with the potential to contain invasive species must be checked before coming into the site. With active monitoring of this soil/material for any invasive species that appear on site;
- A construction exclusion zone must be put in place around any area of Japanese Knotweed. This will be determined by the size and area of the Japanese Knotweed as the rhizomes came spread up to 7m from the plant.
- Chemical control methods, such as the use of systemic herbicides, will be required for invasive plant species that are encouraged by ground disturbance and those species that have extensive root (rhizome) systems such as Japanese Knotweed;
- If Japanese Knotweed is to be buried on site or disposed off-site, then glyphosate formulations can only be used.
- Due to the potential negative impacts on some non-target species it is recommend that herbicides are only applied by following the manufactures instructions on their correct use;
- Herbicide application should only be carried out by suitably qualified contractors or operators with strict reference to the product label, local land use, health and safety considerations and any pertinent regulations. All herbicide treatment must comply with the pesticide regulations S.I. No. 155/2012 - European Communities (Sustainable Use of Pesticides) Regulations 2012 or any amended or current regulations at the time of use
- Avoid using herbicides on foggy days, windy days or if rain is forecast within twelve hours of application. Care should be taken to apply the herbicide only to the target species and avoid affecting surrounding vegetation by run-off or drift;
- Treatment should be carried out between mid-August to mid-October when plants have started to flower ensuring an effective kill is achieved during this time in the growth season;
- Upon application of herbicide monitoring of the area for regrowth and to ensure herbicide has prevented the spread of this species;
- It is important to note that while herbicide treatment offers excellent control when applied properly and it will prevent the further spread of the plant throughout the site, it does not guarantee eradication. Total eradication can only be achieved by excavation;

An Invasive Species Management Plan will outline the main options for treated Japanese Knotweed (*Fallopia japonica*) within a site. These will include the excavation procedures and biosecurity measure to be put in place such as;

- Disposal of Japanese Knotweed is a contaminated waste using deep burial in a licenced landfill can be expensive with limited locations accepting this waste material;

- Treated Japanese Knotweed can be buried to a depth of at least 5m and sealed within root barrier membranes;

- Treated Japanese Knotweed can be removed to a bund and regrowth monitored and treated over a number of years.

- All methods require consideration for the long-term site management options.

It is therefore considered that, due to the proposed mitigation measures, there would be no significant risk of invasive species spreading into the protected habitats of the Natura 2000 network during the construction and operational phase of the proposed development

Fauna

- As a minimum, the site operator would comply with all legislative provisions relating to hedgerow / tree removal and the protection of birds, and would have regard to reducing impacts on nesting birds;
- No section of hedgerows and treelines will be removed as part of this development. If any hedgerow/tree/scrub should be removed, then it should not be carried out during the bird nesting season. If required to remove hedgerow/trees during the nesting season, the sections / trees required for removal would be inspected by a suitably qualified ecologist prior to any removal works for the presence of breeding birds. Where nests are present, the ecologist would make a decision as to whether a "Licence to interfere with or destroy the breeding places of any wild animals", is required from the NPWS. Alternatively, the ecologist may establish a suitable buffer zone around an active nest, with removal works rescheduled until chicks have fledged. Where no evidence of nests is found during inspection, hedgerow / tree removal works must be undertaken within three days of inspection;
- If any bird that utilizes quarries for nesting is found actively using the site, then measures must be taken to prevent directly disturbing this species while they actively nesting. The site is currently in use as an active quarry with any potential nesting birds accustomed to the noise and human activity associated with quarries;
- Should a protected fauna species such as badger, bat or hedgehog be found during the operational phase of the project, an officer of the NPWS would be notified prior to the resumption of works;
- To reduce the potential for disturbance due to noise, all plant and machinery would be maintained in good working order and regularly inspected, where possible vehicles would be equipped with mufflers to suppress noise and where possible, no operational works would be conducted outside of normal working hours.

Bats

Habitat Loss

- No hedgerows or trees with bat roosting potential will be removed as part of this development.

Artificial Lighting

- Operational works in the hours of darkness, when bats are active (April – October), would be kept to a minimum;
- Lighting of hedgerows / treelines would be avoided where possible;
- Should lighting be required during operational works, it would be of a low height (without compromising safe working conditions) to ensure minimal light spill. Where possible and where practicable to do so, timers or motion sensors would be used;
- Directional lighting would be used where possible, by use of louvres or shields fitted to the lighting;
- White light emitting diode (LED) would be used where possible, which is considered to be low impact in comparison to other lighting types.

Water Quality

The following mitigation measures would be proposed to ensure there is no significant impact upon the aquatic biodiversity of the area owing to a deterioration in water quality:

- The site contractor would adhere to standard construction/operational best practice, taking cognisance of the Construction Industry Research and Information Association (CIRIA) guidelines "*Control of Water Pollution from Construction Sites; guidance for consultants and contractors*" 2001 and "*Control of Water Pollution from Construction Sites – Guide to Good Practice*", 2002;
- Cognisance would be taken of the 2016 guidelines published by Inland Fisheries Ireland, "*Guidelines on Protection of Fisheries During Construction Works in and adjacent to Waters*";
- Inspections would be undertaken of the Clashnadarriv Stream with continued monitoring of the settlement pond discharge;
- Any earth-moving activities should be planned outside periods of heavy rainfall, to limit the potential for suspended solids to become entrained within surface water run-off;
- All plant machinery and equipment would be maintained in good working order and regularly inspected;
- Any fuels, oils or chemicals would be stored in accordance with the EPA guidance on the storage of materials, in designated bunded areas at the temporary site compound, with adequate bund provision to contain 110% of the largest drum volume or 25% of the total volume of containers;
- Fuels / oils would be handled and stored with care to avoid spillage or leakage;
- All loading and unloading of hydrocarbons would take place within the bunded area where possible;
- Deliveries of fuels and oils to the site would be supervised;
- Any waste fuel / oils would be collected in bunded containers at a designated area within the site compound and properly disposed of to an authorised waste contractor;

- Spill kits, with an adequate stock of spill clean-up materials such as booms and absorbent pads, would be readily available during construction works;
- The site operator would ensure the relevant site personnel are trained in spillage control;
- In the unlikely event of a hydrocarbon spillage, contaminated spill clean-up material would be properly disposed of to an authorised waste contractor;
- Where appropriate, small construction plant equipment would be placed on drip trays;
- Re-fuelling of construction plant to takes place within the designated areas at Kereen Quarries. Under no circumstances would re-fuelling take place within the vicinity of the Clashnadarriv Stream within the boundary of the site;
- Re-fuelling onsite would only be undertaken by experienced and trained personnel;
- In the unlikely event of a suspected deterioration in water quality within the Clashnadarriv Stream, works would immediately cease and an investigation into the cause undertaken and the relevant NPWS and Inland Fisheries Ireland (IFI) personnel informed.

In addition to the above measures, the construction works contractor would take cognisance of the following guidelines:

- CIRIA, 2001: *Control of Water Pollution from Construction Sites; guidance for consultants and contractors*;
- CIRIA, 2002: *Control of Water Pollution from Construction Sites – Guide to Good Practice*;
- IFI, 2016: *Guidelines on Protection of Fisheries During Construction Works in and adjacent to Waters.*

Traffic and Dust Control

Operational works have the potential to impact upon traffic volumes in the area, which may subsequently impact upon the generation of noise and dust emissions. No works are required at the site entrance works to facilitate traffic associated with the proposed development. A wheel wash is currently installed at the site with additional dust control measures such as hosing down the access road in dry conditions. The site operator would ensure the following:

- Deliveries to the site would be via suitably contained vehicles, with sheeting and covers where required; and materials would not be delivered to the site until required;
- The construction traffic will be required to coordinate and schedule all deliveries to the site, ensure that all access roads are kept clear of mud and debris;
- Haulage contractors must plan an appropriate route to and from the site, and to adhere to good traffic management principles;
- Where possible, large-scale vehicle movements would be timed outside peak hours on the local road network.

- Deliveries to the site would be scheduled during the operationaal hours of 8:00am to 7:00pm Monday to Friday, and 8:00am to 2:00pm on Saturdays;
- Cognisance would be taken of the National Roads Authority's "*Guidelines for the Treatment of Noise and Vibration in National Road Schemes*", the British Standard 5228: Part 1 "*Code of practice for Noise Control on Construction and Open Sites*" and the CIRIA 2015 "*Environmental Good Practice on Site*";
- Care would be taken when unloading vehicles to minimise noise disturbance. Materials should be lowered, not dropped, insofar as practicable and safe;
- Regular visual inspections would be undertaken around the proposed site boundary and local road network to monitor the effectiveness of dust control measures;

1.9 PREDICTED IMPACTS WITH MITIGATION

The following table provides a summary of the residual effects the proposed development may have, once recommended mitigation measures are implemented. It is not envisaged that there would be any considerable adverse impacts upon water quality or biodiversity due to the proposed development.

Table 1.19: Summary of Residual Impacts Post-Mitigation

IMPACT	DEVELOPMENT PHASE	SIGNIFICANCE	MITIGATION MEASURES	RESIDUAL SIGNIFICANCE	RESIDUAL IMPACT TYPE
Habitat Loss	Operational	Slight to moderate significance	• Recycling of aggregates would not cause impact on any habitats of high ecological value.	Not significant	Neutral
Spread of Invasive Flora Species	Operational	Slight significance	• Construction plant would be inspected and washed prior to arriving onsite; • Any machinery working in an area treated for Knotweed sp. Would be thoroughly cleaned with biosecurity measures implemented. • Regular site inspections for the spread of invasive species would be undertaken; • Should invasive species appear to be spreading, works would immediately cease until the site was appropriately treated and under control.	Not significant	Neutral
Fauna Disturbance	Operational	Slight significance	• Where possible, no construction works would be conducted outside of normal working hours • All plant machinery and equipment would be maintained in good working order and regularly inspected • Where possible, vehicles would be equipped with mufflers to suppress noise • As a minimum, the construction work contractor would comply with all legislative provisions relating to hedgerow / tree removal • Should a protected fauna species be found during the construction phase, the NPWS would be notified prior to the resumption of construction works	Slight significance	Minor Negative

IMPACT	DEVELOPMENT PHASE	SIGNIFICANCE	MITIGATION MEASURES	RESIDUAL SIGNIFICANCE	RESIDUAL IMPACT TYPE
Fauna Mortality	Operational	Moderate significance	• As a minimum, the construction work contractor would comply with all legislative provisions relating to hedgerow / tree removal • No Hedgerows/trees will be removed however if required then hedgerow / tree removal works should not be carried out during the bird nesting season (1st March to 31st August), the sections / trees for removal would be inspected by an ecologist for the presence of breeding birds. Where nests are present, a decision would be made as to whether a licence is required from the NPWS, or whether a suitable buffer zone could be established around the active nest with removal works rescheduled until chicks have fledged. • If any bird that utilises quarries for nesting is found actively using the site, then measures must be taken to prevent directly disturbing this species while they actively nesting.	Slight significance	Minor Negative
Bats – Disturbance / Severance of Habitat	Operational	Moderate significance	• No mature trees with bat roosting potential will be removed as part of the development. • Measures would be implemented to reduce the potential for light pollution • Operational works in the hours of darkness would be kept to a minimum during the active bat season. • Lighting design measures would be implemented to reduce the potential for light pollution	Not significant	Neutral

IMPACT	DEVELOPMENT PHASE	SIGNIFICANCE	MITIGATION MEASURES	RESIDUAL SIGNIFICANCE	RESIDUAL IMPACT TYPE
Surface Water Quality Deterioration	Operational	Moderate significance	• Standard operational control measures for the protection of surface waters would be implemented • Continued monitoring of the discharge for compliance with water quality parameters. • Appropriate storage and handling of fuels and oils • Provision of spill kits	Not significant	Neutral
Designated Sites	Operational	Moderate significance	• Standard operational control measures for the protection of surface waters would be implemented • Continued monitoring of the discharge for compliance with water quality parameters. • Appropriate storage and handling of fuels and oils • Provision of spill kits	Not significant	Neutral

1.10 DIFFICULTIES ENOUNTERED IN COMPILING INFORMATION

Survey limitations are discussed in detail in Section 1.3. No other difficulties were encountered in compiling this chapter.

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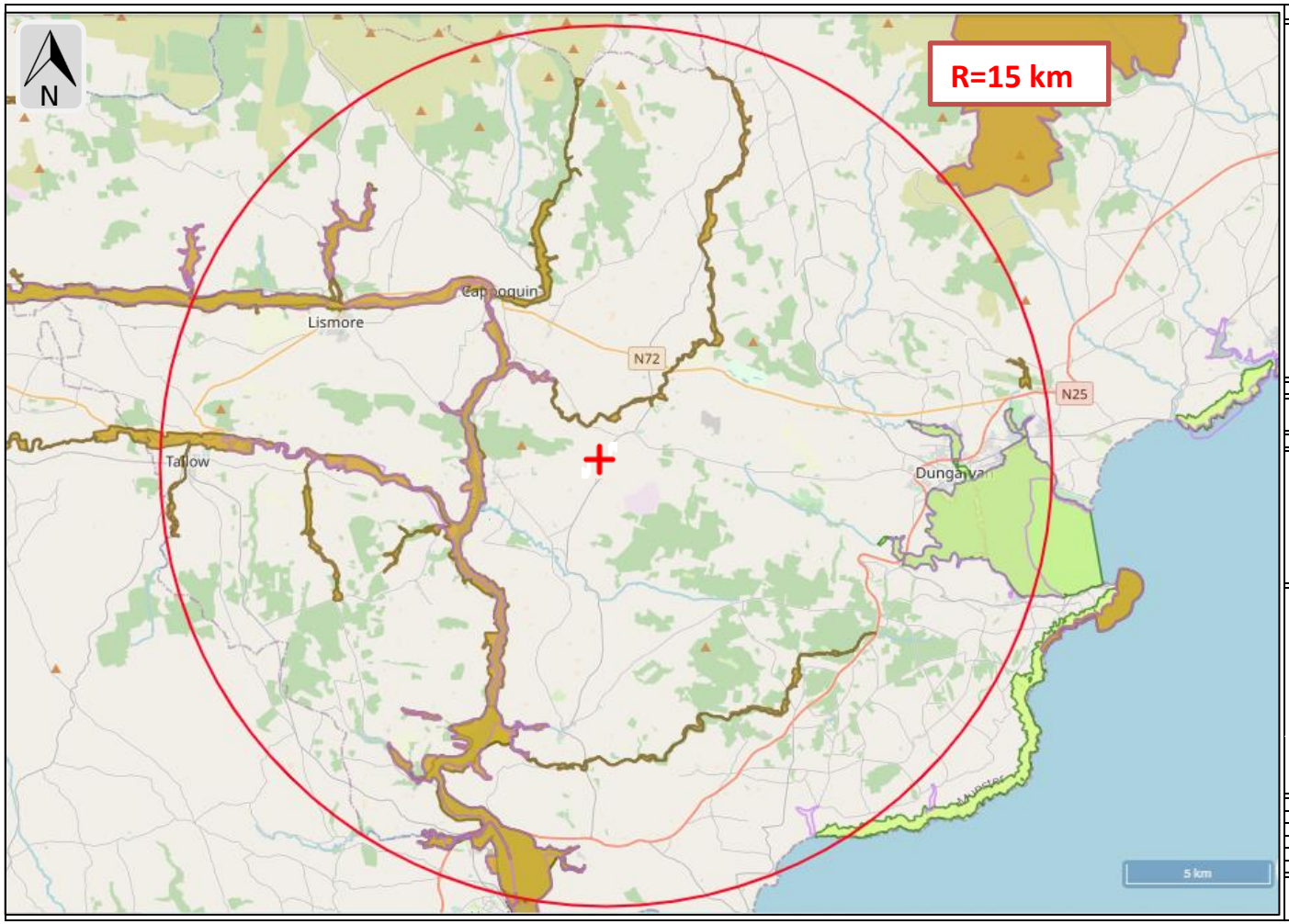
APPENDIX A
- PROTECTED SITES -



Notes

Site Location –

SPA –

SAC –

NHA –

pNHA –

RAMSAR –

Project Title:

PROTECTED SITES MAP

Client Name:

PANTHER ENVIRONMENTAL SOLUTIONS LTD
UNITS 3 & 4
INNOVATION CENTRE
GREEN ROAD
CARLOW
R93 W248
TELE: 059 91 34222
MOBILE: 087 851 9284
EMAIL: info@pantherwms.com
WEB: www.pantherwms.com

Drawing Status:	**Scale:**	NTS	A4
Report	**Datum:**		EPA Envision
Drawing Number: PES_ 21242	**Drawn:**		PES
	Checked:		MF
Revision:	**Approved:**		-
R0	**Date:**		28/08/2021