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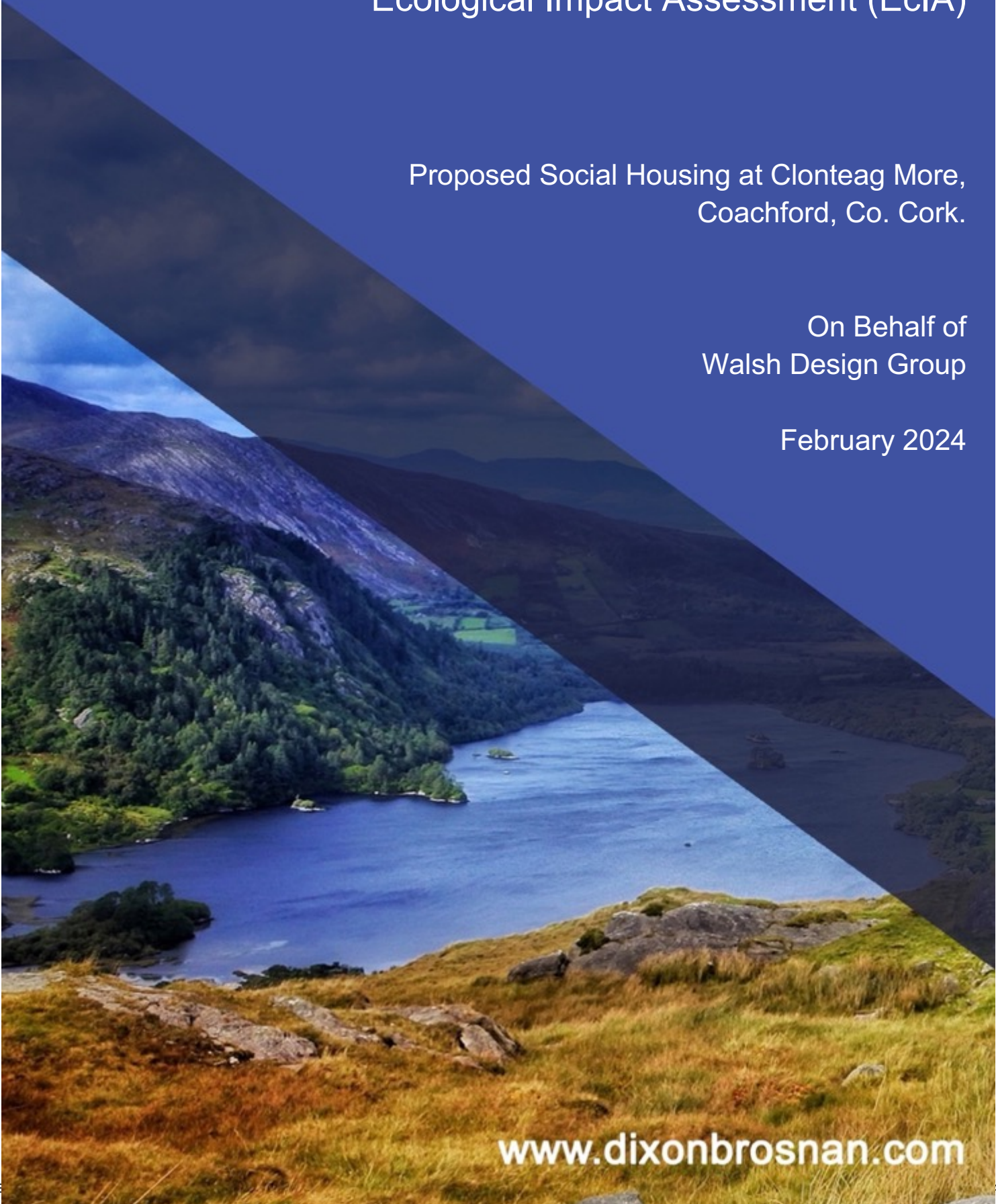
Ecological Impact Assessment (EcIA)

Proposed Social Housing at Clonteg More,
Coachford, Co. Cork.

On Behalf of
Walsh Design Group

February 2024

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1. Introduction

DixonBrosnan Environmental Consultants were commissioned to assess the potential impacts of a proposed social housing at Clonteag More, Coachford, Co. Cork, and all associated site works on terrestrial and aquatic flora and fauna. This report describes and evaluates the habitats with their representative flora and fauna and addresses the potential impacts of the development on the ecology of the site and the surrounding area.

2. Methodology

2.1 Introduction

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

2.2 Desktop Review

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

- National Parks & Wildlife Service (NPWS) - www.npws.ie
- Environmental Protection Agency (EPA) – www.epa.ie
- National Biodiversity Data Centre (NBDC)– www.biodiversityireland.ie
- Cork County Biodiversity Action Plan 2009-2014;
- Cork County Development Plan 2022;
- Bat Conservation Ireland – <http://www.batconservationireland.org>;
- Birdwatch Ireland - <http://www.birdwatchireland.ie/>
- Invasive Species Ireland - <http://www.invasivespeciesireland.com/>
- Coachford D0427-01 Wastewater Treatment Plant (WWTP) Annual Environmental Report 2021 (Irish Water 2022)

This report follows the Environmental Protection Agency's *Guidelines on the information to be contained in Environmental Impact Assessment Reports* (EPA 2022). It also takes account of the *Draft Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment* (Department of Environment, Community and Local Government, August 2018), *Assessment of Ecological Impacts of National Road Schemes* (National Roads Authority, 2009) Chartered Institute of Ecology and Environmental Management *Guidelines on Ecological Impact Assessment in the UK and Ireland, 2nd edition*

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

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

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

- *Best Practice Guidance for Habitat Survey and Mapping* (Heritage Council, 2011)
- *A Guide to Habitats in Ireland* (Fossitt, 2000)
- *Guidelines for the treatment of Badgers prior to the construction of National Road Schemes. National Roads Authority, Dublin* (National Roads Authority (NRA) 2005a)
- *Best Practice Guidelines for the Conservation of Bats in the Planning of National Road Schemes* (National Roads Authority (NRA) 2005b)
- *Guidelines for the treatment of bats during the construction of national road schemes* (National Roads Authority (NRA) 2005c)
- *Guidelines for the protection and preservation of trees, hedgerows and scrub prior to, during and post construction of national road schemes.* (National Roads Authority (NRA) 2006)
- *Guidelines for the treatment of Otters prior to the construction of National Road Schemes* (National Roads Authority (NRA) 2008)
- *Bat Surveys for Professional Ecologists: Good Practice Guidelines (4th edn)*' (Collins, J. (ed.), 2023)
- *Bat mitigation guidelines for Ireland v2.* Marnell, F., Kelleher, C. & Mullen, E. (2022) *Irish Wildlife Manuals, No. 134. National Parks and Wildlife Service, Department of Housing, Local Government and Heritage, Ireland*
- *Bird Census Techniques* Bibby, C.J., Burgess, N.D., Hill, D.A. & Mustoe, S.H. (2000) and
- *Bird Monitoring Methods - a Manual of Techniques for Key UK Species.* Gilbert, G., Gibbons, D.W. & Evans, J. (1998)

2.2 Legislative Context

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

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

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

2.2.1 Relevant European Legislation

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

2.2.2 Relevant Irish Legislation

- Wildlife Act 1976 as amended by Wildlife Act 1976 (Protection of Wild Animals) Regulations 1980, Wildlife (Amendment) Act 2000, Wildlife (Amendment) Act 2010, Wildlife (Amendment) Act 2012, European Communities (Wildlife Act, 1976) (Amendment) Regulations 2017 (The Wildlife Act);
- European Communities (Conservation of Wild Birds) Regulations 1985 (S.I. No. 291/1985) as amended by S.I. No. 31/1995 (The Wild Birds Regulations);

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

2.3 Survey Overview

A site walkover survey was carried out on 11th of January 2024 and 15th of February 2024. The following surveys were conducted:

- Habitats were mapped according to the classification scheme outlined in the Heritage Council publication '*A Guide to Habitats in Ireland (Fossitt, 2000)*' and following the guidelines contained in '*Best Practice Guidance for Habitat Survey and Mapping (Heritage Council, 2011)*';
- A general mammal survey was carried out in conjunction with the habitat survey following NRA guidelines (NRA 2005b, NRA 2005c, NRA 2008) and
- A daytime assessment of tree suitability for roosting bats and Potential Roost Features (PRFs) was carried out. Surveys followed the guidelines set out in Collins (2023).
- The proposed development area was surveyed for invasive species and
- All bird species recorded during the walkover survey and habitat survey were recorded as per Gilbert *et al.* 1998.

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

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

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

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

Sorcha Sheehy PhD (Ecology/ornithology) is an ecologist and ornithologist who has worked for 13 years in environmental consultancy. She has worked on Screening/NISs for a range of small and large-scale projects with expertise in assessing impacts on birds.

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

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

2.4 Limitations

Standard survey methods were followed. However, any biases or limitations associated with these methods could potentially affect the results collected. Although every effort was made to provide a full assessment and comprehensive description of the study area, natural fluctuations in populations may not be fully reflected due to the instantaneous nature of the field surveys. However, the field surveys together with the background knowledge provided by the desk study, provides a robust representation of the baseline for the habitats and species within the zone of influence.

The timeline for the project meant that breeding bird surveys and bat emergence surveys could not be carried out in season.

Habitat surveys were conducted outside the main growing season i.e., April to September. This is the optimum time for field survey as the majority of higher plants flower during this period, facilitating identification. However, species were largely identifiable vegetatively during the site surveys.

3. Proposed Development

3.1 Existing site

The proposed development is located at Clonteag More, Coachford, Co. Cork just north of the main street of Coachford village (**Figure 1**). The village of Coachford is located c.10.7km northwest of Ballincollig and c.11.8km east of Macroom. The site area within the application redline boundary is 1.01ha.

The proposed development site is located on a greenfield site, with the regional route R619 running along the south-eastern boundary and a small local road running along the western boundary. Although Coachford village is located to the immediate south of the site, the area is largely rural in nature and is dominated agricultural and silvicultural land uses.

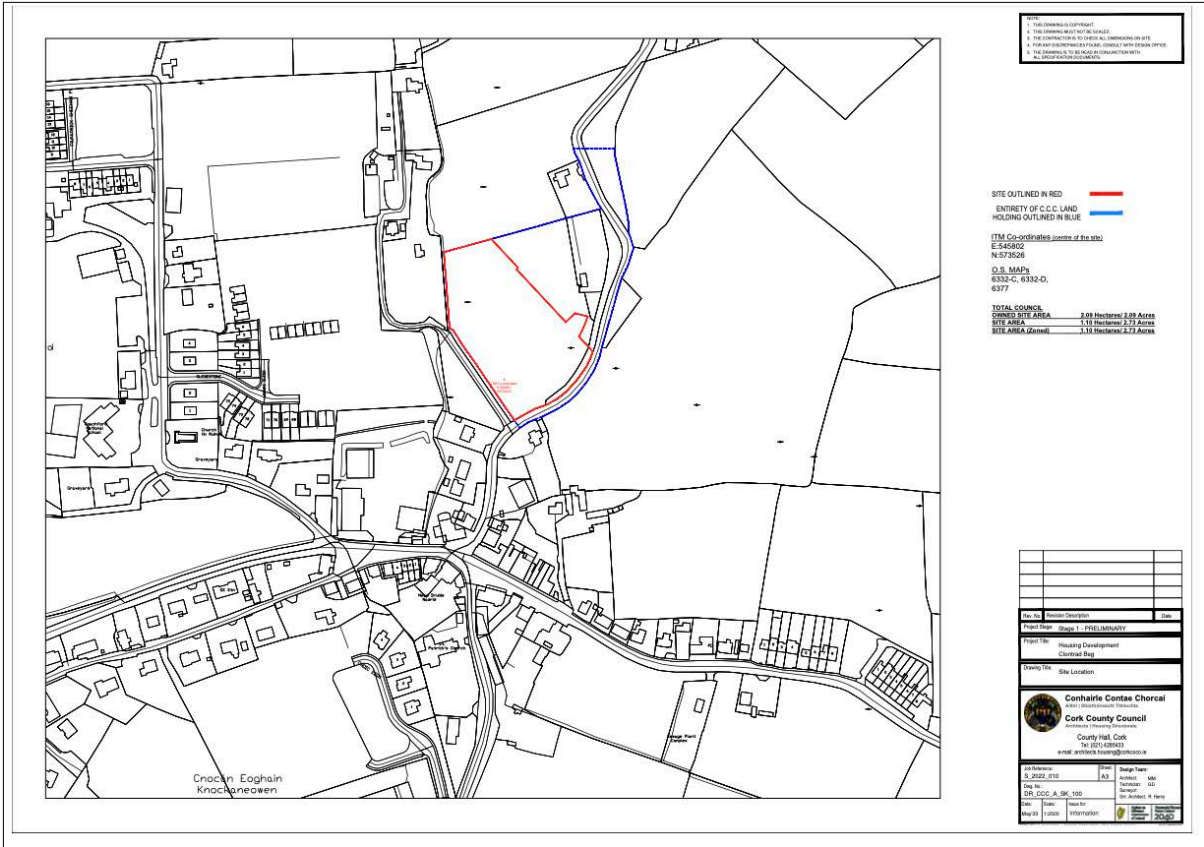


Figure 1. Proposed development site (approximate location) | Source Cork County Council



Figure 2. Site layout | Source Cork County Council

3.2 Proposed development

The proposed housing development will consist of a mix of residential unit types and associated ancillary works (roads, sanitary services, SUDS, utilities, landscaped green areas, parking areas, service diversions, retaining structures and ancillary works to adjoining roads, traffic calming, drainage upgrades, miscellaneous works etc.) to create a high-quality development.

Layout plans have been prepared for the Council owned sites which indicates.

- 6no. 3 bed houses,
- 10no. 2 beds houses and
- 10no. 1 bed apartments

The site layout is shown in **Figure 2**.

3.3 Surface Water

The proposed storm sewer collection system consists of a 100mm diameter pipe collection network around each house in accordance with TGD part H discharging to 225mm diameter uPVC sewer or larger in the public areas of the development. The surface water network layout is shown in drawing no. 23028-XX-XX-XX-XX-DR-WDG-CE-002.

The surface water sewers have been designed using the Causeway Flow design software and the Wallingford procedure for the design and analysis of urban drainage. The surface water system for the development is a single network falling generally from north to south, exiting the site in its southern corner and continuing under the R619 to its junction with the R618 in Coachford Village. It is intended to discharge the stormwater to an existing culvert on the southern side of the R618 at the junction.

In accordance with the recommendations of sustainable urban drainage systems (SuDS) the allowable stormwater discharge from the surface water network was calculated by means of the QBAR equation for small rural catchments (< 25 km²) as indicated in the institute of Hydrology, UK Report No. 124.

This single network is designed to fall generally from north to south and exit the development in the southernmost corner at the junction between the R619 and the L-96192-11. To reduce the forward flow from the developed site to a maximum of the QBAR greenfield runoff rate of 10.06 l/s a hydrobrake shall be constructed in a manhole prior to the sewer exiting the site. Choking the flow to this rate will result in the requirement for temporary attenuation storage. A certain amount of attenuation storage shall be provided in the roadside swales, but the primary storage element shall be a shallow detention basin in the lower, southwest area of the site. These features are described in more detail in the drainage impact assessment below.

It is intended to continue the new surface water network southwards under the R619 to Coachford Village where it is proposed to discharge the stormwater to an existing culvert on the southern side of the R618 at the junction.

SuDS measures are proposed for the development in both public and private areas in accordance with the guidance from the County Development Plan 2022 Advice Note 1 on Surface Water management and the CIRIA SuDS Manual C753.

The Measures proposed will decrease the impact of the development on the receiving environment and also provide amenity and biodiversity in many cases. Regular maintenance of the SuDS measures will be required to ensure that they are effective throughout their design life. The following paragraphs describe the following SuDS features proposed: a detention basin, permeable paving, underdrained roadside swales, bio-retention tree pits, bio-retention raingardens and water butts.

3.4 Wastewater

The layout of the proposed wastewater drainage network for the development is shown on WDG drawing no. 23028-XX-XX-XX-DR-WDG-CE-002. 1 conventional piped, gravity sewer network is proposed. The network will generally fall from the north to the south where it will connect to existing Irish Water infrastructure near the junction of the R619 and the L-96192-11 just south of the site.

All sewers within the curtilage of individual houses are to be installed in accordance with TGD Part H (2010) and will consist of 100 mm diameter uPVC Sewers from individual houses laid to falls of min 1:60 to connect to a 150mm and 225mm uPVC sewer to be laid under the estate road. Inspection chambers will be constructed within 1m of the boundary of each private property in accordance with Irish Water Standard Details.

All wastewater sewers in the public realm have been designed in compliance with Irish Water's Code of Practice for Wastewater Infrastructure – A Design and Construction Guide for Developers (Revision 2) July 2020. All construction details within the public realm will be in accordance with Irish Water, Wastewater Infrastructure Standard Details (Revision 4), July 2020.

A pre-connection enquiry was submitted to Irish Water to assess the feasibility of providing a connection to the site and Irish Water subsequently issued a confirmation of feasibility for the development. A wastewater connection for the site is feasible without infrastructure upgrade by Irish Water.

For the purposes of clarity, the wastewater sewer system has been designed using the following parameters, as required in Irish Water document IW-CDS-5030-03 Section 3.6:

- Flow per person: 150 L/day
- Average persons per household: 2.7 persons
- Unit consumption allowance (infiltration): 10%
- Minimum velocity for pipe running full: 0.75 m/sec
- Peak flow: 6 DWF

The population equivalent (PE) for the development is: 26 dwellings x 2.7 = 70.

4. Designated Conservation Areas

4.1 European (Natura 2000) Sites

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

The proposed development site does not form part of any SPA or SAC. Determination of this project's likely Zone of Impact (Zoi) was achieved by assessing all elements of the proposed project against the ecological receptors within the project footprint, in addition to all ecological receptors that could be connected to and subsequently impacted by the proposed project through impact pathways. To this end, the Zoi extends outside of the proposed development footprint to include ecological receptors connected to the project through overlap /intersection, proximity and connectivity to features such as waterbodies. The proposed development site is located within the potential Zoi of a number of European sites as listed in **Table 1** and illustrated in **Figure 3**).

The proposed development site is potentially hydrologically connected to one European site i.e. Cork Harbour SPA, which is located 24.2km southeast of the proposed development site. The Knockaneowen Stream, a 2nd order tributary of the River Lee is located along the western boundary of the proposed development site. The River Lee meets Cork Harbour SPA c.32.6km downstream of the proposed development site. Although unlikely given the distances involved, there is potential hydrological connection between the proposed development site and Cork Harbour SPA.

Wastewater from the site will ultimately discharge into River Lee via the Coachford Wastewater treatment plant (WWTP) approximately 32.5km upstream of Cork Harbour SPA. This could potentially impact on water quality within the Cork Harbour SPA (**See Figure 3**).

Although unlikely given the distance involved, surface water run-off during the construction or operational phases as well as wastewater discharges from the proposed development could potentially impact on Cork Harbour SPA via the Knockaneowen Stream and River Lee. Given the distance from Cork Harbour SPA, the proposed development site will not provide significant *ex-situ* habitats for SCI birds of Cork Harbour SPA or any other European site.

Therefore, a source-pathway-receptor link has been identified between the source (proposed development) and the receptor (Cork Harbour SPA) via a potential pathway (surface water and wastewater discharges during operation). Further information on the Cork Harbour SPA is provided below and a full site synopsis included **Appendix 1**.

Given the distances involved and/or the lack of significant hydrological or other pathways connections, no potential pathway for impact has been identified between the proposed development and any other European site.

Cork Harbour is a large, sheltered bay system, with several river estuaries - principally those of the Rivers Lee, Douglas, Owenboy and Owennacurra. The SPA site comprises most of the main intertidal areas of Cork Harbour, including all of the North Channel, the Douglas River

Estuary, inner Lough Mahon, Monkstown Creek, Lough Beg, the Owenboy River Estuary, Whitegate Bay, Ringabella Creek and the Rostellan and Poul nabibe inlets.

The site is a Special Protection Area (SPA) under the E.U. Birds Directive, of special conservation interest for the following species: Little Grebe, Great Crested Grebe, Cormorant, Grey Heron, Shelduck, Wigeon, Teal, Mallard, Pintail, Shoveler, Redbreasted Merganser, Oystercatcher, Golden Plover, Grey Plover, Lapwing, Dunlin, Black-tailed Godwit, Bar-tailed Godwit, Curlew, Redshank, Greenshank, Blackheaded Gull, Common Gull, Lesser Black-backed Gull and Common Tern. The site is also of special conservation interest for holding an assemblage of over 20,000 wintering waterbirds. The E.U. Birds Directive pays particular attention to wetlands and, as these form part of this SPA, the site and its associated waterbirds are of special conservation interest for Wetland & Waterbirds.

Cork Harbour has a nationally important breeding colony of Common Tern (102 pairs in 1995). The birds have nested in Cork Harbour since about 1970, and since 1983 on various artificial structures, notably derelict steel barges and the roof of a Martello Tower.

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

European sites name and code	Distance from site boundary (at closest point) and potential source-pathway-receptor link	Qualifying interests (QI)/ Special Conservation Interests (SCI)
Special Area of Conservation (SAC)		
The Gearagh SAC (site code 00108)	<p>11.8km southwest. Although located within the River Lee catchment, this site is located upstream of the proposed development and there is no pathway to this site.</p> <p>Given the distance from the proposed development site and absence of significant pathways for impact, this site has been screened out from further assessment.</p>	<p>3260 Water courses of plain to montane levels with the Ranunculion fluitantis and Callitriche-Batrachion vegetation</p> <p>3270 Rivers with muddy banks with Chenopodium rubri p.p. and Bidention p.p. vegetation</p> <p>91A0 Old sessile oak woods with Ilex and Blechnum in the British Isles</p> <p>91E0Alluvial forests with Alnus glutinosa and Fraxinus excelsior (Alno-Padion, Alnion incanae, Salicion albae)</p> <p>1355 <i>Lutra lutra</i> (Otter)</p>
Special Protection Area (SPA)		
Cork Harbour SPA (site code 004030)	<p>24.2km southeast (32.6km downstream)</p> <p>The Knockaneowen Stream, a 2nd order tributary of the River Lee is located along the western boundary of the proposed development site. The River Lee meets Cork Harbour SPA c. 32.6km downstream of the proposed development site. Although</p>	<p>Birds</p> <p>A193 Common Tern (<i>Sterna hirundo</i>)</p> <p>A028 Grey Heron (<i>Ardea cinerea</i>)</p>

European sites name and code	Distance from site boundary (at closest point) and potential source-pathway-receptor link	Qualifying interests (QI)/ Special Conservation Interests (SCI)
	<p>unlikely given the distances involved, there is potential hydrological connection between the proposed development site and Cork Harbour SPA. Therefore, although unlikely, surface water run-off during the construction or operational phases could potentially flow into the Cork Harbour SPA via the Knockaneowen Stream.</p> <p>Wastewater from the site will ultimately discharge into River Lee via the Coachford Wastewater treatment plant (WWTP) approximately 32.5km upstream of Cork Harbour SPA. This could potentially impact on water quality within the Cork Harbour SPA.</p> <p>Although unlikely given the distance involved, surface water run-off/discharges during the construction or operational phases as well as wastewater discharges from the proposed development could potentially impact on Cork Harbour SPA via the Knockaneowen Stream and River Lee.</p>	<p>A130 Oystercatcher (<i>Haematopus ostralegus</i>)</p> <p>A140 Golden Plover (<i>Pluvialis apricaria</i>)</p> <p>A157 Bar-tailed Godwit (<i>Limosa lapponica</i>)</p> <p>A056 Shoveler (<i>Anas clypeata</i>)</p> <p>A156 Black-tailed Godwit (<i>Limosa limosa</i>)</p> <p>A052 Teal (<i>Anas crecca</i>)</p> <p>A183 Lesser Black-backed Gull (<i>Larus fuscus</i>)</p> <p>A054 Pintail (<i>Anas acuta</i>)</p> <p>A149 Dunlin (<i>Calidris alpina</i>)</p> <p>A017 Cormorant (<i>Phalacrocorax carbo</i>)</p> <p>A162 Redshank (<i>Tringa totanus</i>)</p> <p>A004 Little Grebe (<i>Tachybaptus ruficollis</i>)</p> <p>A050 Wigeon (<i>Anas penelope</i>)</p> <p>A160 Curlew (<i>Numenius arquata</i>)</p> <p>A005 Great Crested Grebe (<i>Podiceps cristatus</i>)</p> <p>A069 Red-breasted Merganser (<i>Mergus serrator</i>)</p> <p>A048 Shelduck (<i>Tadorna tadorna</i>)</p> <p>A142 Lapwing (<i>Vanellus vanellus</i>)</p>

European sites name and code	Distance from site boundary (at closest point) and potential source-pathway-receptor link	Qualifying interests (QI)/ Special Conservation Interests (SCI)
		A179 Black-headed Gull (<i>Chroicocephalus ridibundus</i>) A182 Common Gull (<i>Larus canus</i>) A141 Grey Plover (<i>Pluvialis squatarola</i>) Habitats Wetlands
The Gearagh SPA (site code 004109)	<p>13.3km southwest. Although located within the River Lee catchment, this site is located upstream of the proposed development and there is no pathway to this site.</p> <p>Based on maximum foraging distances for SCI species (SNH 2016), the proposed development site will not form a significant foraging area for these species.</p> <p>Given the distance from the proposed development site and absence of significant pathways for impact, this site has been screened out from further assessment.</p>	A050 Wigeon (<i>Anas penelope</i>) A052 Teal (<i>Anas crecca</i>) A053 Mallard (<i>Anas platyrhynchos</i>) A125 Coot (<i>Fulica atra</i>) A999 Wetland and Waterbirds
Mullaghanish to Musheramore Mountains SPA (site code 004162)	<p>14.5km northwest. This SPA is located in a separate catchment and there is no hydrological or other pathway to this site.</p> <p>Based on maximum foraging distances for SCI species (SNH 2016), the proposed development site will not form a significant foraging area for these species.</p> <p>Given the distance from the proposed development site and absence of significant pathways for impact, this site has been screened out from further assessment.</p>	A082 Hen Harrier (<i>Circus cyaneus</i>)



Figure 3. European sites within likely zone of impact of proposed development site | Source EPA Envision mapping | Not to scale



Figure 4. Proposed Natural Heritage Areas (pNHAs) in the vicinity of the proposed development site | Source: EPA Envision mapping <https://gis.epa.ie/EPAMaps/> | Not to scale

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

NHAs & NHAs/pNHAs	Site Code	Overlaps with European site		Distance at closest point and potential source-pathway-receptor link
Glashgarriff River pNHA	001055	No	Site comprises a small stream and associated wooded valley with diverse humic vegetation communities. Site also supports Otter (<i>Lutra lutra</i>) and Badger (<i>Meles meles</i>).	3.1km northwest. No potential pathway identified
Lough Gal pNHA	001067	No	This site supports a small lake/fen. The site also supports an extensive area of freshwater marsh and is important for wetland bird species.	5.1km northwest. No potential pathway identified
Lee Valley pNHA	000094	No	The Lee Valley pNHA occupies five different sections of the River Lee valley and is of regional conservation importance for the diverse range of semi-natural habitats that occur. The site supports wet broadleaved woodland, wet grassland, dry broadleaved woodland, unimproved dry grassland, freshwater marsh. A number of wetland bird species are known to breed in the site including Mallard, Heron, Sedge and Grasshopper warblers and Reed bunting. Small blue and White wood butterfly, both locally distributed species also occur	8.84km south-southeast (11.2km downstream). A source-pathway-receptor link has been identified via a potential pathway (surface water and wastewater discharges during operation).

4.2 Nationally Protected Sites

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

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

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

The NHAs and pNHAs located in the vicinity of the proposed development site are listed in **Table 2** and are shown in **Figure 4**.

Effluent from the proposed development will ultimately be conveyed to Coachford WWTP for treatment prior to discharging into the waters of the River Lee. Large sections of the River Lee, upstream and downstream of the primary discharge point from the Coachford WWTP, form part of the Lee Valley pNHA. Therefore there is a potentially hydrological connection to this pNHA via wastewater discharges. Surface water runoff during construction and operation could potentially impact on this pNHA via the Knockaneowen Stream.

4.3 Ramsar Sites

The Convention on Wetlands, called the Ramsar Convention, is an intergovernmental treaty that provides the framework for national action and international cooperation for the conservation and wise use of wetlands and their resources. A key commitment of Ramsar Contracting Parties is to identify and place suitable wetlands onto the List of Wetlands of International Importance. Cork Harbour is listed as a Ramsar site, which is a non-statutory designation.

4.4 Important Bird Areas – Cork Harbour

Important Bird and Biodiversity Areas (IBAs) are sites selected as important for bird conservation because they regularly hold significant populations of one or more globally or regionally threatened, endemic or congregator bird species or highly representative bird assemblages. The European IBA programme aims to identify, monitor and protect key sites for birds all over the continent. It aims to ensure that the conservation value of IBAs in Europe (now numbering more than 5,000 sites or about 40% of all IBAs identified globally to date) is maintained, and where possible enhanced. The programme aims to guide the implementation of national conservation strategies, through the promotion and development of national

protected-area programmes. Through their designation they aim to form a network of sites ensuring that migratory species find suitable breeding, stop-over and wintering places along their respective flyways.

The function of the Important Bird Area (IBA) Programme is to identify, protect and manage a network of sites that are important for the long-term viability of naturally occurring bird populations, across the geographical range of those bird species for which a site-based approach is appropriate. As detailed above, the proposed development site has a potential hydrological connection via the River Lee (and Knockaneowen Stream) and Lee Estuary to the Cork Harbour IBA (Site Code: IE088).

The site qualifies for designation under the IBA Criteria (2000) listed in **Table 3**:

- A4iii - The site is known or thought to hold, on a regular basis, $\geq 20,000$ waterbirds or $\geq 10,000$ pairs of seabird of one or more species.
- B1i - The site is known or thought to hold $\geq 1\%$ of a flyway or other distinct population of a waterbird species
- B2 - The site is one of the most important in the country for a species with an unfavourable conservation status in Europe and for which the site-protection approach is thought to be appropriate.
- C3 - The site is known to regularly hold at least 1% of a flyway population or of the EU population of a species threatened at the EU level (not listed on Annex 1 of The Birds Directive).
- C4 - The site is known to regularly hold at least 20,000 migratory waterbirds and/or 10,000 pairs of migratory species of one or more species.
- C6 - The site is one of the five most important in the European region in question for a species or subspecies considered threatened in the European Union.

Table 3. Provides a summary of the Cork Harbour IBA trigger species.

Species	Current IUCN Red List Category	Season	Year(s) of estimate	Population estimate	IBA Criteria Triggered
Eurasian Curlew (<i>Numenius arquata</i>)	NT	winter	1995	1,669 individuals	B2
Bar-tailed Godwit (<i>Limosa lapponica</i>)	NT	winter	1996	456 individuals	B2
Black-tailed Godwit (<i>Limosa limosa</i>)	NT	winter	1996	1,399 individuals	B1i, C3
Dunlin (<i>Calidris alpina</i>)	LC	winter	1995	12,050 individuals	B1i, B2, C3
Common Redshank (<i>Tringa tetanus</i>)	LC	winter	1996	1,344 individuals	B1i, C3

Common Tern (<i>Sterna hirundo</i>)	LC	breeding	1995	102 breeding pairs	C6
A4iii Species group - waterbirds	n/a	winter	-	20,000 individuals	A4iii, C4

4.5 Salmonid Waters – River Lee

The River Lee main channel from source to Cork City waterworks at Lee Road is a designated salmonid fishery under the EC (Quality of Salmonid Waters) Regulations of 1988 (SI 84 of 1988), implementing the Freshwater Fish Directive (78/659/EEC). The section of the River Lee into which the Coachford WWTP discharges to forms part of this designation. The River Lee and its larger tributaries are known to support Atlantic Salmon *Salmo salar* as well as other Annex II species such as Lamprey. The River Lee is known to contain populations of Brown Trout *Salmo trutta* and European Eel *Anguilla anguilla*. As detailed above, the proposed development site has a potential hydrological connection via the River Lee and Knockaneowen Stream.

5. Habitats



A site walkover survey was carried out on the 11th of January and 15th of February 2024. A current overview of habitats recorded within the site is shown in **Figure 5** and the habitats recorded on site are described in **Table 4**. Photographs of the site are also included below. The ecological value of habitats has been defined using the classification scheme outlined in the *Guidelines for Assessment of Ecological Impacts of National Road Schemes* (National Roads Authority, 2009) which is included in **Appendix 1**. It should be noted that the value of a habitat is site specific and will be partially related to the amount of that habitat in the surrounding landscape. Habitats that are considered to be good examples of Annex I and Priority habitats are classed as being of International or National Importance. Semi-natural habitats with high biodiversity in a county context and that are vulnerable, are considered to be of County Importance. Habitats that are semi-natural, or locally important for wildlife, are considered to be of Local Importance (higher value) and sites containing small areas of semi-natural habitat or maintain connectivity between habitats are considered to be of Local Importance (lower value).


No Annex I habitats were recorded during the site survey. No rare species were recorded during the site survey, nor are they expected to occur given that the habitats within the proposed development site are dominated by managed habitats.



Table 4. Habitats recorded within proposed development site



Habitat	Comments	Ecological value (NRA Guidelines)
Treeline WL2/Earth bank BL2	Running along the northern boundary of the site there is a short section of earth bank with a treeline (H1) which has developed from an overgrown hedge. There is one mature oak along this treeline (See plate 2). In general, the treeline is dominated by Hawthorn, Holly and occasional Elm. Wild Rose	Local importance (higher value)


Habitat	Comments	Ecological value (NRA Guidelines)
	<p>was also noted as well as Bramble, Ivy, Herb Robert, Harts tongue fern, Soft shield fern, Cleavers and Nettle.</p> <p>Running along the local road at the western boundary, a treeline has developed on an elevated bank with no significant areas of stonewall (H2). Trees along this treeline include immature Ash, mature Hawthorn, Willow and Sycamore. Immature Elm are occasional. Understory species include Male fern, Rush, Bramble, Cocksfoot, Cleavers, Creeping buttercup, Honeysuckle, Gorse and Harts tongue Fern. Trees are generally devoid of significant cracks or crevices are generally multi-stemmed and without significant dense Ivy growth. They are considered of negligible potential for bats, although they could forage along this treeline.</p>  <p>Plate 1. Short section of treeline along northern boundary</p>	



Habitat	Comments	Ecological value (NRA Guidelines)
	 <p data-bbox="437 1070 1091 1126">Plate 2. Large mature multi-stemmed oak along northern boundary</p>  <p data-bbox="437 1944 1091 2000">Plate 3. Treeline on elevated bank along western boundary</p>	



Habitat	Comments	Ecological value (NRA Guidelines)
	 <p data-bbox="437 1070 1091 1126">Plate 4. Treeline on elevated bank along western boundary</p>	
Treeline WL2	<p data-bbox="437 1223 1091 1559">A semi mature treeline along the western boundary separates the site from the Knockaneowen Stream (H3). Large amounts of Cherry laurel were recorded in the understory of this boundary habitat. Bramble, Hawthorn, Herb Robert, Cleavers, Soft shield fern and Holly were recorded. Occasional trees include semi-mature ash Hawthorne, Sycamore and Semi mature Oak. Trees are generally devoid of significant cracks or crevices are generally multi-stemmed and without significant dense Ivy growth. They are considered of negligible potential for bats, although they could forage along this treeline.</p> <p data-bbox="437 1592 1091 1715">Where the proposed footpath exits the site there is a section of stone wall/earth bank with Elm, Blackthorn and one semi-mature Sycamore. A small drain runs along the site boundary at this location.</p>	Local importance (higher value)



Habitat	Comments	Ecological value (NRA Guidelines)
	 <p data-bbox="437 741 906 770">Plate 5. Treeline along western boundary</p>  <p data-bbox="437 1581 906 1610">Plate 6. Treeline along western boundary</p>	


Habitat	Comments	Ecological value (NRA Guidelines)
	 <p data-bbox="437 768 1086 801">Plate 7. Treeline where footpath exits the site.</p>	
<p data-bbox="204 824 416 981">Dry meadows and grassy verge GS2 (outside proposed development site boundary)</p>	<p data-bbox="437 824 1094 1010">On the southern boundary of the site, running between an existing concrete fence and the R619 regional road, there is a band of dry meadows and grassy verge habitat which has been cleared at some time in the past. Species recorded include Rush, Cocksfoot, Creeping buttercup, Ribwort plantain, Nettle and Bramble.</p>  <p data-bbox="437 1823 1094 1883">Plate 8. Dry meadows and grassy verge habitat along southern boundary</p>	<p data-bbox="1118 824 1391 884">Local importance (lower value)</p>
<p data-bbox="204 1915 416 2007">Hedgerow WL1/Earth bank BL2/Scrub WS1</p>	<p data-bbox="437 1915 1094 2033">Along the southern boundary, where the concrete fence ends, there is an old earth bank field boundary with Harts tongue fern, Herb Robert, Nettle, Bramble, Honeysuckle (H4). The hedgerow that was initially present here been cut back. There</p>	<p data-bbox="1118 1915 1391 1975">Local importance (lower value)</p>

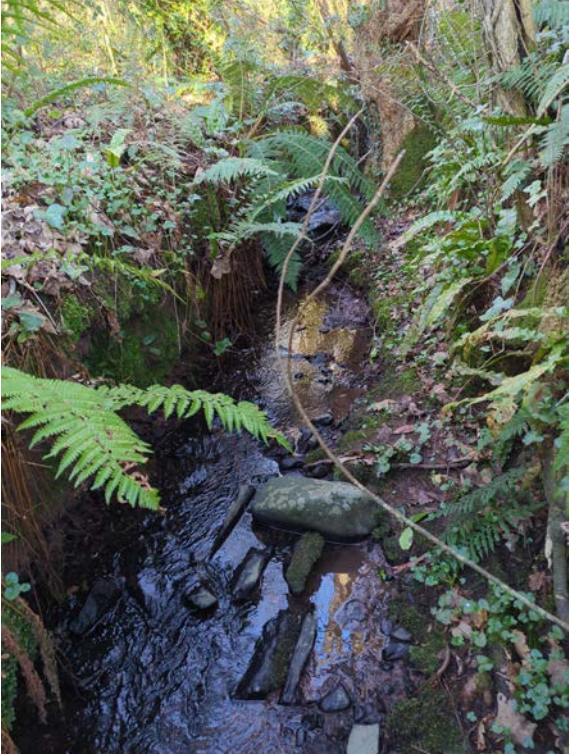

Habitat	Comments	Ecological value (NRA Guidelines)
	<p>are now some stumps of occasional Hawthorn, Sycamore and Elm. Most of this boundary habitat is located outside the proposed development site boundary.</p> <p>Running along the R619 road on the south-eastern side of the site there is a wide band of scrub emerging into the grassland. It is dominated by dense thickets of Bramble with Gorse, immature Elm, immature Ash as well as Cleavers, and Willowherb grass. Occasional Willow, Hawthorn and Blackthorn were also recorded. Some old silage bales in this area have been grown over by Nettles, Bramble, etc some taller tussocky grass species including False oat grass, Cocksfoot and Field Thistle are present. In one corner there are for mature Cypress along the boundary.</p>  <p>Plate 9. Cut back hedgerow on earth bank on southern boundary</p>  <p>Plate 10. Scrub emerging along south-eastern boundary</p>	



Habitat	Comments	Ecological value (NRA Guidelines)
	 <p data-bbox="437 1025 1085 1057">Plate 11. Mature cypress trees along southern boundary</p>	
Drainage ditch FW4	<p data-bbox="437 1088 1093 1209">As above small drain/watercourse emerges from the site onto the R619 road. At this location it goes outside the field boundary to a culvert. Flows are low and insufficient size to support fish or significant invertebrate populations.</p>  <p data-bbox="437 1977 1093 2009">Plate 12. Small drain emerges from the site onto the R619</p>	Local importance (lower value)

Habitat	Comments	Ecological value (NRA Guidelines)
	 <p data-bbox="437 1021 1094 1081">Plate 13. Small drain running along southern boundary of site adjoining the R619.</p>	
Scrub WS1	<p data-bbox="437 1115 1094 1395">The northwest/interior of the site is dominated by Willow scrub with occasional immature Elder. Although there is some grazing by horses, pressure is low which has allowed this scrub to become established. Trees are generally widely spaced with a grassy understory. The absence of understory vegetation means area of scrub does not provide particular cover for wildlife and does not have its own microclimate. The boundaries of this area are poorly defined as individual trees encroach into the adjoining grassland.</p>  <p data-bbox="437 1883 1018 1910">Plate 14. Willow scrub at northwest interior of site.</p>	Local importance (lower value)

Habitat	Comments	Ecological value (NRA Guidelines)
	 <p data-bbox="437 741 927 770">Plate 15. Willow scrub adjoining grassland</p>  <p data-bbox="437 1581 1091 1644">Plate 16. Poached areas of grassland along poorly defined scrub boundary</p>	
Improved agricultural grassland GA1	The remainder of the site consist of improved agricultural grassland on relatively soft ground. Some water logging was recorded in parts due to poor drainage. However, it is likely to dry up during the summer months. Some poaching of softer ground by horses was noted. Species noted include common grass species with a limited variety of herbaceous species, including Creeping buttercup, Daisy, Nettle, Willlowherb, Ragweed and Nettle.	Local importance (lower value)

Habitat	Comments	Ecological value (NRA Guidelines)
	 <p>Plate 17. Improved agriculture grassland</p>  <p>Plate 18. Improved agriculture grassland</p>	
<p>Upland (eroding) river FW1 (outside proposed development site boundary)</p>	<p>Outside the western boundary of the site is the Knockaneowen Stream. This is a small watercourse with high banks on both sides. The stream has a natural riffle glide sequence. Although unlikely to be of significant value, it could potentially support brown trout along its reach. However, this population may not be sustainable during periods of dry weather. The substrate consists of mixture of gravels with high levels of siltation. Heavy shading along banks with adjoining treeline/woodland. This stream is culverted downstream of the site under the adjoining road.</p>	<p>Local importance (higher value)</p>

Habitat	Comments	Ecological value (NRA Guidelines)
	 <p data-bbox="437 1070 1091 1126">Plate 19. Knockaneowen Stream to the west of proposed development site</p>  <p data-bbox="437 1944 1091 2000">Plate 20. Emergence point of Knockaneowen culvert downstream of proposed development site</p>	

Habitat	Comments	Ecological value (NRA Guidelines)
<p>Stone walls and other stonework BL2/Amenity grassland GA2/Buildings and artificial surfaces BL3</p>	<p>The proposed footpath along the R619 includes gardens, with domestic shrubs, newly build stone walls as well as small sections of old stone wall and amenity grassland. Species recorded along this area include Holly, Buddleia and Winter heliotrope.</p> <p>Along the walls Pennyworth, Bramble, Bittercress, Willowherb, Herb Robert, Spleenwort, Dandelion, Red fescue, Ragweed and Cleavers were recorded.</p> <p>A small number of trees are present along the roadway including Sycamore and Willow nd these are discussed in Section 7.2.2 below.</p>  <p>Plate 21. Section of older stonewall at the curve where the roads meet</p>  <p>Plate 22. Stone walls along gardens</p>	<p>Local importance (lower value)</p>

Habitat	Comments	Ecological value (NRA Guidelines)
	 <p>Plate 23. Older section of stone wall with some specialised species</p>  <p>Plate 24. Lower section of the wall with dense climbers and some common species such as cleavers, pennywort etc</p>  <p>Plate 25. Amenity grassland</p>	


Habitat	Comments	Ecological value (NRA Guidelines)
	 <p data-bbox="437 1167 1043 1223">Plate 26. Final section of proposed footpath where it meets the village.</p>	



Figure 5. Habitats recorded within proposed development site (habitats along proposed footpath are discussed in Table 4)

6. Flora

The site of the proposed development lies within Ordnance Survey National Grid 10km square W47. The National Parks and Wildlife Service (NPWS) rare plant database does not note the presence of any protected plant species within grid square W47. No rare species were recorded during the site survey.

7. Fauna

7.1 Otter

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

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

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

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

A review of existing records showed that Otter or signs of Otter have been recorded on eight occasions within grid square W47, the most recent being in May 2017 (Source NBDC October 2024). Otter has been recorded on the Knockaneowen Stream at Dripsey bridge approximately 3.6km downstream of the proposed development site (NBDC spraint records). In addition, Otter has been recorded along the main channel of the River Lee just south of Coachford in proximity to the primary effluent emissions point for the Coachford WWTP (NBDC spraint records) and the River Lee provides important foraging habitat for Otter.

The drain which runs along the southern boundary of the site has no potential for foraging Otters. As noted above Otters occur within the catchment and therefore there is the potential for Otter to commute along and feed within the Knockaneowen Stream in close proximity to the proposed development site. However, no signs of Otter were recorded during the proposed development site survey i.e. within 150m of the proposed development site boundary.

7.2 Bats

7.2.1 Bat Background Data

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

A review of existing bat records within grid squares W47 (sourced NBDC) showed that eight of the nine Irish bat species have been recorded locally (**Table 5**).

Table 5. Presence of Irish bat species within W47

Common name	Scientific name	Presence	Date of last record
Brown Long Eared Bat	<i>Plecotus auritus</i>	Present	11/08/2001
Daubenton's Bat	<i>Myotis daubentonii</i>	Present	27/08/2011
Leisler's Bat/ Lesser Noctule	<i>Nyctalus leisleri</i>	Present	08/08/2011
Lesser Horseshoe Bat	<i>Rhinolophus hipposideros</i>	Present	
Nathusius' Pipistrelle	<i>Pipistrellus nathusii</i>	Present	18/08/2005
Natterer's Bat	<i>Myotis nattereri</i>	Absent	15/07/2001
Pipistrelle	<i>Pipistrellus pipistrellus sensu lato</i>	Present	12/08/2008
Soprano Pipistrelle	<i>Pipistrellus pygmaeus</i>	Present	08/08/2011
Whiskered Bat	<i>Myotis mystacinus</i>	Absent	20/05/2008

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The Lesser Horseshoe Bat is the only species of bat listed on Annex II of the Habitats Directive (Directive 92/43/EEC). A Lesser Horseshoe Bat roost has been recorded west of Ovens, approximately 5.6km southeast of the proposed development site (undisclosed location). Lesser Horseshoe Bats normally forage in woodlands/scrub within 2.5km of their roosts (Bontadina *et al.* 2002). Consequently, in order to link roosting and foraging sites, linear features such as hedgerows, treelines and stone walls provide vital connectivity for this

species, most importantly within 2.5km around each roost (Schofield, 2008). There are no known roosts for Lesser Horseshoe bat in the vicinity of the proposed development site.

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

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

Bat species	Common Name	Habitat indices
All Bats		34.67
<i>Pipistrellus pygmaeus</i>	Soprano pipistrelle	43
<i>Plecotus auratus</i>	Brown long-eared bat	51
<i>Pipistrellus pipistrellus</i>	Common pipistrelle	43
<i>Rhinolophus hipposideros</i>	Lesser horseshoe	6
<i>Nyctalus leisleri</i>	Leisler's bat	41
<i>Myotis mystacinus</i>	Whiskered bat	43
<i>Myotis daubentoniid</i>	Daubenton's bat	31
<i>Pipistrellus nathusii</i>	Nathusius' pipistrelle	10
<i>Myotis nattereri</i>	Natterer's bat	44

Source: NBDC 08/02/24

7.2.2 Bat Surveys


A daytime assessment of tree suitability for roosting bats and Potential Roost Features (PRFs) was carried out on the 11th of January 2024 and 15th of February 2024. This survey followed the guidelines set out in '*Bat Surveys for Professional Ecologists: Good Practice Guidelines (4th edn*' (Collins, 2023). There are no buildings within the site boundary. Semi-mature and mature trees within the site boundary are described in **Table 7**.



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



- rot holes



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


Table 7. Preliminary roost assessment within the proposed development site


Location (CF with Figure 5)	Photograph	Description
H1		<p>Located along northern boundary. Semi-Mature Beech. Limited ivy covering and no significant cracks or crevices.</p> <p>Negligible roost potential</p>

Location (CF with Figure 5)	Photograph	Description
H1		<p>Semi mature oak. Some cracks or crevices. No evidence of bats.</p> <p>Low to negligible roost potential</p>
H1		<p>Large mature oak multi-stemmed from approximately 15 ft. No significant cracks or crevices, but relatively dense ivy on the main stem in lower section.</p> <p>Low roost potential</p>

Location (CF with Figure 5)	Photograph	Description
H1/H2		<p>Semi mature oak with ivy covering on the corner of the site. Moderate ivy coverage but to small in diameter to be of value for roosting bats.</p> <p>Negligible roost potential</p>
H4		<p>Group of cypress trees outside eastern edge of proposed development site boundary. No significant ivy or cracks or crevices.</p> <p>Low to negligible root potential.</p>

Location (CF with Figure 5)	Photograph	Description
H3 along proposed footpath		Semi mature Sycamore with moderately dense ivy but low diameter stems. Considered low to negligible potential for bats
Along proposed footpath		Mature willow. Some cracks and crevices. Low potential for roosting bats

Location (CF with Figure 5)	Photograph	Description
	 A photograph showing a green snake with a white diamond-shaped pattern on its back, coiled around a dark, textured tree trunk. The snake is positioned horizontally across the trunk. Several thin, light-colored branches are visible in the foreground and background, some crossing the snake and the trunk. The background is slightly blurred, showing green foliage.	

Location (CF with Figure 5)	Photograph	Description
Along along proposed footpath		<p>Mature Sycamore. Multi-stemmed from 7 ft regrowth from the from the base. Ivy not particularly dense and low diameter.</p> <p>Low to negligible potential for bats</p>

All trees within the proposed development site were classified as negligible to low potential for roosting bats. No signs of bats were recorded on any trees during the site survey.

It is noted that site surveys were carried out during the winter period and therefore an activity survey for bats was not possible. Based on an assessment of habitats at the site, the following was observed. The treelines and hedgerows along the northern and western boundary of the site are likely to provide foraging habitat for local bat species. The treeline along the western boundary of the site, adjoining the Knockaneowen Stream is likely to be the most valuable habitat in terms of foraging and commuting bats. The scrub habitat at the interior of the site lacks mature or semi-mature trees which could provide foraging habitat for bats. The small section of hedgerow along the southern boundary of the site is low growing with immature trees and is unlikely to provide foraging/commuting habitat for bats.

7.3 Other terrestrial mammals

Eight other mammal species protected under the Irish Wildlife Act (as amended) have been recorded within W47 namely Badger *Meles meles*, Red Squirrel *Sciurus vulgaris*, Pygmy Shrew *Sorex minutus*, Irish Hare *Lepus timidus subsp. Hibernicus*, Irish Stoat *Mustela erminea subsp. hibernica*, Pine Marten *Martes martes*, Sika Deer *Cervus nippon* and Hedgehog *Erinaceus europaeus*.

7.3.1 Badger

Badgers and their setts are protected under the provisions of the Wildlife Act 1976, as amended, and it is an offence to intentionally, knowingly or unknowingly kill or injure a protected species, or to willfully interfere with or destroy the breeding site or resting place of a protected wild animal. Badger setts are formed by a complex group of interlinked tunnels, and therefore works in proximity to setts can potentially cause damage a protected species. Badgers are also protected under Appendix III of the Berne. Badgers are common locally with 115 records of Badger within W47 held by the NBDC. However, no signs of Badger were recorded within the proposed development site.

7.3.2 Irish Hare

Irish Hare is one of three lagomorphs found on the Island of Ireland and the only native lagomorph. It is listed on Appendix III of the Berne Convention, Annex V(a) of the EC Habitats Directive (92/43/EEC) and as an internationally important species in the Irish Red Data Book. Irish Hare have been recorded on four occasions within W47. The managed grassland at the site is sub-optimal for this species and no signs of Irish Hare were recorded during the site survey.

7.3.3 Hedgehog

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

7.3.4 Irish Stoat

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

7.3.5 Red Squirrel

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

7.3.6 Sika Deer

Sika Deer is a non-native species to Ireland. They prefer forest with dense understorey, thickets, natural woodlands and commercial plantations, but will also forage in open grassy areas with dense cover nearby. Sika Deer are highly opportunistic feeders, foraging on grasses to a range of shrubs and tree species. However, Sika Deer is not likely to occur within or in the vicinity of the proposed development site.

7.3.7 Pygmy Shrew

Pygmy Shrew is common throughout mainland Ireland and has a preference for habitats such as hedgerows and grasslands. No sign of Pygmy Shrew was recorded, although this species could occur with the proposed development site.

7.3.8 Pine Marten

Pine Marten are listed Annex V of the EU Habitats Directive 1992 and Appendix III of the Bern Convention 1979, are habitat specialists, requiring forest or scrub habitat to exist in an area. They are adept at climbing trees as they have powerful non-retractable claws. The species is primarily active at night and individuals live in territories that can vary in size from 50 hectares to 400 hectares. Due to the habitats recorded within the site, it is unlikely that Pine marten occurs.

7.4 Reptiles and Amphibians

According to records held by the NBDC, Common Frog (*Rana temporaria*) and Smooth Newt (*Lissotriton vulgaris*) have been recorded within W47.

Common Frog is listed on Annex V of the EU Habitats Directive and is protected under the Wildlife Acts. The Smooth Newt is the only member of the Urodela (the tailed amphibians) found in Ireland. While commonly encountered near water bodies, adult newts are actually terrestrial, only returning to water bodies to breed.

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

Common Lizard (*Zootoca vivipara*) is Ireland's only native terrestrial reptile and is so protected under the Wildlife Act. Ideal habitats for the species are south-facing, damp tussocky grassland, scrub covered hillsides, dunes or banks, and woodland tracks, and it also resides in peat bogs, dry grasslands and heathlands. The species has not been recorded in the surrounding landscape (NBDC) and it is unlikely that the species occurs within or in proximity to the proposed development site. The site is of negligible value for reptiles and they have not been recorded in W47.

7.6 Birds

The National Biodiversity Centre online data base has recorded the following species within W47 which are protected under Annex I of the Birds Directive Kingfisher (*Alcedo atthis*), Little Egret (*Egretta garzetta*), Merlin (*Falco columbarius*), Peregrine Falcon (*Falco peregrinus*) and Whooper Swan (*Cygnus cygnus*).

A bird survey was carried out in conjunction with habitat survey in January 2024. No Annex I bird species were recorded during the site survey. The majority of birds recorded as considered common in the local landscape. Species recorded within the site are shown in **Table 8**.

Table 8. Bird Species recorded during site survey

Species		Annex I (Birds Directive)	BOCCI Red List	BOCCI Amber List
<i>Turdus merula</i>	Blackbird			
<i>Fringilla coelebs</i>	Chaffinch			
<i>Carduelis carduelis</i>	Goldfinch			
<i>Parus major</i>	Great Tit			
<i>Corvus monedula</i>	Jackdaw			
<i>Erithacus rubecula</i>	Robin			
<i>Corvus frugilegus</i>	Rook			
<i>Turdus philomelos</i>	Song Thrush			
<i>Columba palumbus</i>	Woodpigeon			
<i>Troglodytes troglodytes</i>	Wren			

The mix of scrub and grassland habitats within the proposed development site alongside hedgerow and treeline provides habitat for a number of common bird species. While the low grazing pressure onsite has allowed scrub to develop in some areas, the absence of understory vegetation means area of scrub does not provide particular cover for birds.

Site boundaries are dominated by a mixture of hedgerows and treelines. Native hedgerow and treelines provide valuable feeding/nesting resources for birds i.e. Hawthorn, Blackthorn, Willow.

Overall, most of the proposed development site is of a low to moderate local value for terrestrial bird species that are relatively common in the Irish countryside. No species of high conservation status were recorded within the proposed development site.

While grassland habitats can potentially provide terrestrial foraging habitat for wading birds, there is nothing to differentiate this area from other grasslands in the vicinity. No SCI species were recorded during 2024 site surveys.

7.7 Invasive Species

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

Where a non-native species displays invasive qualities and is not managed it can potentially: (1) out compete native vegetation, affecting plant community structure and habitat for wildlife;

(2) cause damage to infrastructure including road carriageways, footpaths, walls and foundations; and, (3) have an adverse effect on landscape quality. The NBDC lists a number of high impact invasive species which have been recorded within grid square W47 (**Table 8**).

Table 8. NBDC list of high impact invasive species recorded in W47

Species group	Species name
Flatworm (Turbellaria)	<i>Arthurdendyus triangulatus</i>
flowering plant	Canadian Waterweed (<i>Elodea canadensis</i>)
flowering plant	Cherry Laurel (<i>Prunus laurocerasus</i>)
flowering plant	Giant Hogweed (<i>Heracleum mantegazzianum</i>)
flowering plant	Japanese Knotweed (<i>Fallopia japonica</i>)
flowering plant	Nuttall's Waterweed (<i>Elodea nuttallii</i>)
flowering plant	<i>Rhododendron ponticum</i>
insect - beetle (Coleoptera)	Harlequin Ladybird (<i>Harmonia axyridis</i>)
terrestrial mammal	American Mink (<i>Mustela vison</i>)
terrestrial mammal	Brown Rat (<i>Rattus norvegicus</i>)
terrestrial mammal	House Mouse (<i>Mus musculus</i>)
Terrestrial mammal	Raccoon (<i>Procyon lotor</i>)
terrestrial mammal	Sika Deer (<i>Cervus nippon</i>)

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

No third schedule species were recorded within the proposed development site. One other invasive species i.e. Cherry Laurel *Prunus laurocerasus* was recorded along the western treeline (H3). Cherry Laurel is not included in the Third Schedule of the Birds and Natural Habitats Regulations 2011 (SI 477 of 2011). Therefore, its presence at the site does not have the potential to lead to an offence under the Birds and Natural Habitats Regulations 2011 (S.I. 477 of 2011). Cherry Laurel (*Prunus laurocerasus*) is listed by the National Biodiversity Data Centre as a high-risk invasive species. Cherry laurel is a dense thicket forming invasive ever-green shrub of gardens, parks and woodlands from Southwest Asia. The leaves are thick and laurel-like and are poisonous with cyanide. Its rapid growth and the way it casts an all-year-round dense shade means that it shades out plants from the woodland floor, and generally out-competes less vigorous shrubs and young trees. Like *Rhododendron ponticum* with which it often grows, if unmanaged, it will form almost impenetrable shrubberies or understories in woodland and effectively kill off all other vegetation except the mature trees.

Two other invasive species *Buddleia davidii* and Winter Heliotrope *Arctostaphylos luciana* were recorded along the proposed footpath location. These species are not included in the Third Schedule of the Birds and Natural Habitats Regulations 2011 (SI 477 of 2011). Therefore, their presence at the site does not have the potential to lead to an offence under

the Birds and Natural Habitats Regulations 2011 (S.I. 477 of 2011). Buddleia is listed as a medium impact listed species by the NBDC. The NBDC notes that under the right ecological conditions these species may have an impact on the conservation goals of a European site or impact on a water body achieving good/high ecological status under the Water Framework Directive (Directive 2000/60/EC).

Winter Heliotrope is classified as a low-risk invasive species by the NBDC. Winter Heliotrope is included in the NRA *Guidelines on the Management of Noxious Weeds and Non-native Species on National Roads* (NRA, 2010) as these species have been shown to have an adverse impact on landscape quality, native biodiversity or infrastructure; and are likely to be encountered during road schemes.

7.8 Other species

A search of the NBDC database was carried out to determine if any protected, rare or notable species of invertebrates within 2km of the proposed development site (W47L).

There are no records of rare or threatened invertebrates within W47L. Whilst no site is without invertebrate interest, it is considered unlikely, given the managed agricultural grassland and low value scrub which dominates the site, that the proposed development site would provide valuable habitat for protected invertebrate species.

The River Lee rises in Co. Cork in the Shehy Mountains near the Cork–Kerry border. It drains Gouganebarra Lake and flows eastwards through Ballingearry, Lough Allua and Cork City before entering the sea at Cork Harbour. Brown Trout, Perch, Lamprey, Pike, Atlantic Salmon and 3-spined stickleback have been recorded along the main channel of the River Lee (Corcoran *et al.* 2020; Southwestern Regional Fisheries Board (2009).). The Knockaneowen Stream, located just outside the proposed development site, is a 2nd order tributary of the River Lee. Although unlikely to be of significant value, it could potentially support Brown Trout along its reach. However, this population may not be sustainable during periods of dry weather.

8. Water Quality

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

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

The EPA has published an updated draft Catchment Assessment for each of our 46 catchments. These assessments provide an overview of the situation in the catchment, draw comparison between Cycle 2 and Cycle 3, and will help support the draft River Basin Management Plan 2022-2027 public consultation process. The third cycle RBMP, which was published in July 2022, aims to build on the progress made during the second cycle. Key measures during the first cycle included the licensing of urban waste-water discharges (with an associated investment in urban waste-water treatment) and the implementation of the Nitrates Action Programme (Good Agricultural Practice Regulations). The former measure has

resulted in significant progress in terms both of compliance levels and of the impact of urban wastewater on water quality. The latter provides a considerable environmental baseline which all Irish farmers must achieve and has resulted in improving trends in the level of nitrates and phosphates in rivers and groundwater. It is acknowledged, however, that sufficient progress has not been made in developing and implementing supporting measures during the first and second cycles.

Overall, RBMP assesses the quality of water in Ireland and presents detailed scientific characterisation of our water bodies. The characterisation process also takes into account wider water quality considerations, such as the special water-quality requirements of protected areas. The characterisation process identifies those water bodies that are *At Risk* of not meeting the objectives of the WFD, and the process also identifies the significant pressures causing this risk. Based on an assessment of risk and pressures, a programme of measures has been developed to address the identified pressures and work towards achieving the required objectives for water quality and protected areas. Data relating to the watercourses in the vicinity of the proposed development site are provided in **Table 9** and the location of these shown in **Figure 6**. While waterbodies in the vicinity of the proposed development site i.e. Lee (Cork)_080 (Knockaneowen Stream) and the Iniscarra area of the River Lee were classified as 'At Risk' during the 2nd Cycle of the WFD, during the 3rd cycle these have been upgraded to 'Not at risk' with a 'Good' water quality status.

Table 9. River Basin Management Plan (RBMP) data

Catchment: Lee, Cork Harbour and Youghal Bay (Code 19)
<p>This catchment includes the area drained by the River Lee and all streams entering tidal water in Cork Harbour and Youghal Bay and between Knockaverry and Templebreedy Battery, Co. Cork, draining a total area of 2,153km². The largest urban centre in the catchment is Cork City. The other main urban centres in this catchment are Ballincollig, Macroom, Carrigaline, Crosshaven, Blarney, Glanmire, Midleton, Carrigtohill, Cobh, Passage West and Belvelly. The total population of the catchment is approximately 328,854 with a population density of 153 people per km².</p> <p>Several small coastal rivers drain the area to the southeast of Cork Harbour and the area at the eastern extreme of the catchment is drained by the Womanagh River which flows into the sea on the western side of Youghal Bay.</p> <p>The Lee-Cork Harbour catchment comprises 18 sub-catchments with 92 river water bodies, three lakes, 13 transitional, six coastal water bodies and 16 groundwater bodies. There are five heavily modified and no artificial water bodies in the catchment.</p> <p>The proposed development site is located within the Lee[Cork]_SC_040 sub catchment.</p> <p>Summary of WFD 2nd Cycle.</p> <p><i>Two out of four river water bodies within this sub-catchment are AT RISK: Dripsey_010 due to Poor biological status; Lee (Cork)_080 due to Moderate biological status. One lake water body is AT RISK, Inniscarra due to Moderate biological status (driven by chlorophyll, phytoplankton and macrophytes). The significant issues within Dripsey_010 were identified as siltation and elevated nutrients from forestry activities (both clearfelling and aerial 53ertilization). Waste water treatment may be impacting nutrient concentrations within Dripsey_010.</i></p> <p><i>Recycling of nutrients from lake sediments is a likely significant pressure within Inniscarra. In addition Inniscarra is a Heavily Modified water body created by the damming of the River Lee with Carrigdrohid Dam. Lee (Cork)_080 may also be impacted by this impoundment.</i></p>

Catchment: Lee, Cork Harbour and Youghal Bay (Code 19)				
Waterbodies relevant to the proposed project (3 rd Cycle)				
Waterbody	WFD Risk	WFD Status (2016-2021)	Significant Pressure	Pressure Category
Lee(Cork)_080 (Knockaneowen Stream)	Not at risk	Good	No	-
Iniscarra	Not at risk	Good	No	-
Lee Cork Estuary Upper	At risk	Poor	Yes	Urban runoff, urban wastewater
Lee Cork Estuary Lower	At risk	Moderate	Yes	Urban runoff, urban wastewater
Lough Mahon	At risk	Moderate	Yes	Urban runoff, urban wastewater

Source: EPA envision mapping and www.catchments.ie



Figure 6. WFD status (2016-2021) of waterbodies in the vicinity of the proposed development | Source: EPA Envision mapping <https://gis.epa.ie/EPAMaps/> | not to scale

8.2 Urban Wastewater Treatment Directive

The Wastewater Discharge (Authorisation) Regulations 2007 (S.I. 684 of 2007) gives effect to the requirements of the Urban Wastewater Treatment Directive (Directive 91/271/EEC) and the Water Framework Directive (2000/60/EC) in Ireland. The Urban Wastewater Treatment Directive (UWWTD) lays down the requirements for the collection, treatment and discharge of

urban wastewater and specifies the quality standards which must be met — based on agglomeration size — before treated wastewater is released into the environment.

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

As part of the proposed development wastewater discharging from the proposed development will be conveyed to the Coachford WWTP (D0427-01) for treatment prior to discharging into the River Lee.

9. Evaluation of Potential Impacts

9.1 Do Nothing' Impact

Most of the habitats to be affected have been significantly modified from their natural state by human activity. In pockets of semi-natural habitats within the site boundary, the general pattern of succession from grassland to scrub to woodland, particularly from boundary habitats, would be expected to continue. In the absence of development, it is expected that the lands within the planning boundary would largely remain under the same management regimes and continue to support a range of common fauna. No significant changes to the habitats within the boundary are likely to occur, in the “do nothing” scenario.

9.2 Impact Appraisal

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

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

Table 10. EPA Impact Classification

Impact Characteristic	Term	Description
Quality	Positive	A change which improves the quality of the environment.
	Neutral	No effects or effects that are imperceptible, within normal bounds of variation or within the margin of forecasting error.
	Negative	A change which reduces the quality of the environment.
Significance	Imperceptible	An effect capable of measurement but without significant consequences.
	Not Significant	An effect which causes noticeable changes in the character of the environment but without significant consequences.
	Slight	An effect which causes noticeable changes in the character of the environment without affecting its sensitivities.
	Moderate	An effect that alters the character of the environment in a manner consistent with existing and emerging trends.

Impact Characteristic	Term	Description
	Significant	An effect, which by its character, magnitude, duration or intensity alters a sensitive aspect of the environment.
	Very Significant	An effect which, by its character, magnitude, duration or intensity significantly alters most of a sensitive aspect of the environment.
	Profound	An effect which obliterates sensitive characteristics.
Duration and frequency	Momentary Effects	Effects lasting from seconds to minutes.
	Brief Effects	Effects lasting less than a day.
	Temporary Effects	Effects lasting less than a year.
	Short-term	Effects lasting one to seven years.
	Medium-term	Effects lasting seven to fifteen years.
	Long-term	Effects lasting fifteen to sixty years.
	Permanent	Effects lasting over sixty years.
	Reversible Effects	Effects that can be undone.
	Frequency	Describe how often the effect will occur. (once, rarely, occasionally, frequently, constantly – or hourly, daily, weekly, monthly, annually)
	Irreversible	When the character, distinctiveness, diversity, or reproductive capacity of an environment is permanently lost.
	Residual	Degree of environmental change that will occur after the proposed mitigation measures have taken effect.
	Synergistic	Where the resultant effect is of greater significance than the sum of its constituents.
	'Worst Case'	The effects arising from a development in the case where mitigation measures substantially fail.

10. Potential Impacts

10.1 Potential Impacts on Designated Sites

DixonBrosnan prepared a screening for Appropriate Assessment (AA) which accompany this planning application. This report investigated the potential for the proposed development to have significant effects on Natura 2000 sites (SAC/cSAC/SPA) either alone or in combination with other plans or projects. The screening report concluded the following:

The proposed development, either alone or in-combination with other plans and/or projects, does not have the potential to significantly affect any European Site, in light of their conservation objectives. Therefore, a Stage 2 Appropriate Assessment is deemed not to be required.

Similarly, as no significant effects have been identified in the absence of mitigation and therefore, there will be significant effect on the Lee Valley pNHA or any other NHA/pNHA as a result of the proposed development.

10.2 Potential Impacts on Flora/Habitats

Based on the criteria outlined by EPA (2022), as described above, the predicted impacts are detailed in **Table 11**. No Annex I terrestrial habitats or other high value terrestrial habitats will be directly or indirectly impacted. It is noted that impacts on qualifying species and habitats within nearby Natura 2000 sites are specifically addressed by the AA screening for this development. No rare flora were recorded at the site.

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

Habitat	Ecological value (NRA Guidelines)	
Treeline WL2/Earth bank BL2	Local importance (higher value)	These habitats will be retained as outlined in DRLA Landscape plan. Tree protection measures will be implemented during construction works to ensure there is no impact on Root Protection Areas (RPAs) as outlined in the outline Construction Environmental Management Plan (oCEMP) and summarized below in Section 12. No impact
Treeline WL2	Local importance (higher value)	These habitats will be retained as outlined in DRLA Landscape plan. Tree protection measures will be implemented during construction works to ensure there is no impact on Root Protection Areas (RPAs) as outlined in the oCEMP and summarized below in Section 12. No impact
Dry meadows and grassy verge GS2	Local importance (lower value)	This habitat will be removed during construction/site clearance works Negative, imperceptible, long-term
Hedgerow WL1/Earth bank BL2/Scrub WS1	Local importance (lower value)	This habitat will be removed during construction/site clearance works Negative, not significant, long-term
Drainage ditch FW4	Local importance (lower value)	Onsite drainage will be diverted to the proposed attenuation area (detention basin) as outlined in the WDG drawing 23028-xx-xx-xx-DR-WDG-CE-002 which will facilitate the creation of a Natural Biodiversity Attenuation area as illustrated in DRLA landscape plan. This will lead to a positive impact in-terms of onsite ecology with the creation of new wetland habitat onsite. Positive, slight, long-term
Scrub WS1	Local importance (lower value)	This habitat will be removed. Negative, slight, long-term
Improved agricultural grassland GA1	Local importance (lower value)	This habitat will be removed. Negative, imperceptible, long-term
Upland (eroding) river FW1 (outside proposed development site boundary)	Local importance (higher value)	This habitat is located outside the proposed development site and there will be no direct impact on this habitat. Indirect impacts on water quality are discussed in Section 11 of this report.

No third schedule invasive species were recorded within the proposed development site. Three other species i.e. Cherry Laurel, Buddleia and Winter Heliotrope were recorded. As noted in **Section 7.7** of this report, there is no statutory obligation to remove Cherry Laurel. However, should it be concluded that these species should be removed, mitigation measures have been specified below.

10.3 Potential Impacts on Fauna

10.3.1 Otter

As noted above Otters occur within the catchment and therefore there is the potential for Otter to commute along and feed within the Knockaneowen Stream in close proximity to the proposed development site. However, no signs of Otter were recorded during the proposed development site survey i.e. within 150m of the proposed development site boundary.

The proposed development will result in an increase in noise and disturbance during the construction phase during daytime hours. However, given Otter's largely nocturnal habits, ability to move away from short-term disturbance and ability to habituate to anthropogenic noise and disturbance, the impact on Otter during construction will not be significant. The proposed development site is located within an urban edge/rural setting. During operation and occupancy of the dwellings, noise and disturbance is likely to increase. However, given the absence of habitats for Otter within the proposed development site and the retention of riparian areas/treelines along the Knockaneowen Stream there will significant disturbance effects during the operational phase.

During construction, mitigation measures will ensure there is no impact on local water quality. During operation water will be largely managed onsite via the creation of a new attenuation area. Any offsite discharges will be diverted to the existing municipal stormwater network and there will be no impact on local water quality. Therefore, no impact on foraging habitat for Otter has been identified.

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

10.3.2 Bats

The grassland and scrub habitats which cover most of the site are unlikely to provide suitable foraging habitat for bats. A small section of the patchy hedgerow area along the southern boundary will be removed to create a new footpath. Given the nature of this hedgerow, i.e. low growing, large gaps, immature trees, this is unlikely to provide foraging habitat for bats. This hedgerow is also unlikely to provide significant connectivity to the wider area. No trees which could provide significant potential as bat roosting habitat were recorded during the site survey.

Boundary trees and hedgerows along the northern and eastern site boundary are likely to provide the most valuable foraging/commuting habitat for bats within the site. These habitats will be retained as part of the proposed development. Tree protection measures have also been specified to ensure there is no accidental damage to retained trees during construction works. The creation of a new wetland area and shrub area adjoining the western treeline will create a buffer to this existing habitat and create additional foraging habitat for bats. Additional

tree planting of native trees along the northern and eastern boundary of the proposed development site will provide new foraging areas for bats as these habitats mature.

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

As construction works will largely be confined to daytime hours, lighting during the construction phase will be minimal and there will no impact on foraging bats. However, as a precautionary measure construction lighting mitigation measures have been specified in **Section 12.3** of this report. While no PRFs were recorded during the ground level assessment, it is noted that the presence of occasional roosting bats in trees at the site cannot be altogether excluded. During operation, lighting at the site will increase from current levels. However, the lighting plan has been designed to reduce any potential impacts on foraging/commuting/roosting bats by following bat conservation guidelines on lighting. Lighting at the site is confined to internal areas, roads and footpaths. There is no lighting proposed along the retained northern and western treelines/hedgerow or along the proposed attenuation biodiversity area and scrub area. This will ensure that dark areas are retained within these habitats. Lighting along the proposed southern hedgerow planting will be confined to the access road light spillage in these areas will be minimised. Further detail on operational lighting is included in the lighting layout drawings which accompany this application. These measures will ensure that potential foraging areas for bats are maintained and created within the proposed development site.

Overall, the impact of the proposed development will be negative, not significant and long-term on local bat populations.

10.3.3 Other Mammals

Although the habitats to be directly affected may form part of the territories of mammal species such as Hedgehog and Pygmy Shrew, they are largely of low value and do not provide critical resources. No signs of Badger were recorded within the proposed development site and no effects on this species have been identified. Increased noise and disturbance are predicted to occur during construction and to a lesser degree during operation. The predicted noise level will not be excessive in the context of normal domestic and road traffic levels.

The proposed landscape planting, includes native tree planting and SuDS measures. As trees and shrubs mature these will provide shelter for small mammal species such as Hedgehog and Pygmy Shrew. Lighting has been designed to minimise impacts on nocturnal foraging mammals (See **Section 12.3**). The impact on other mammals is predicted to be negative, imperceptible and long-term at a local level.

10.3.4 Birds

The terrestrial bird species recorded within the proposed development site are typical of the terrestrial habitats onsite and are generally common. No rare or uncommon bird species or species of high conservation value were recorded or are likely to occur within the development boundary. The most valuable habitats at the site for birds are the treelines/hedgerows along the northern and western boundary. These habitats will be retained. The scrub habitat which will be removed, lacks an understory and would be unlikely to provide valuable nesting or foraging habitat for birds. A small section of hedgerow along the southern boundary proposed for removal is likely to provide low value nesting habitat for birds. However, given its small size and the absence of trees this is unlikely to provide locally valuable nesting habitat. There will be a loss of common bird foraging habitat within the proposed development site i.e., grassland. However, this habitat has low value for birds.

Some displacement of feeding birds may occur during construction due to increased noise and disturbance. Disturbance can cause sensitive species to deviate from their normal, preferred behaviour, resulting in stress, increased energy expenditure and, in some cases, species mortality. It is noted that operational lighting has been designed in line with wildlife lighting guidelines (in compliance with lighting requirements) to minimise impacts of operation lighting on wildlife.

It is noted that the area in proximity to the proposed development is subject to disturbance from existing dwellings and roads and therefore any birds which utilise this area will have habituated to moderate levels of daytime disturbance. Given the availability of similar habitat in the surrounding area and the ability of birds to move away from disturbance, the impact on the feeding behaviour of these species is predicted to be slight. During the operational phase, the levels of activity will stabilise and birds in the surrounding landscape will be expected to habituate to any increased noise and disturbance levels. Landscape planting will provide some additional habitat at the site. As trees and shrubs mature these will provide nesting and foraging habitats for common bird species. The impact on terrestrial birds, in habitats adjoining the proposed development site is therefore predicted to be negative, slight and long-term.

10.3.5 Other species

The proposed development area is only likely to support common invertebrate species. The use of native tree planting as well as pollinator friendly species will encourage invertebrate use of newly planted areas during the operational phase of the development. The proposed development area is only likely to support common invertebrate species. Therefore impacts on invertebrate populations will be neutral.

As outlined below in **Section 11**, there will be no direct surface water discharges to local watercourses and no significant effects on aquatic invertebrates or fish populations are predicted to occur.

The creation of a new wetland area, alongside naturally recolonising grassland and planted native shrubs is likely to provide potential habitat for amphibians. However, it is noted that this area is unlikely to hold standing water outside periods of heavy rainfall. Therefore its use is likely to be limited to adult Common Frogs and it would not provide breeding habitat for amphibians. Impacts on amphibians is likely to be positive, not significant and long-term.

11. Potential impact on water quality

11.1 Surface Water Runoff/Discharges

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

Inadvertent spillages of hydrocarbon and/or other chemical substances during construction could introduce toxic chemicals into the aquatic environment via direct means, surface water run-off or groundwater contamination. Some hydrocarbons exhibit an affinity for sediments and thus become entrapped in deposits from which they are only released by vigorous erosion or turbulence. Oil products may contain various highly toxic substances, such as benzene, toluene, naphthenic acids and xylene which are to some extent soluble in water; these penetrate fish and can have a direct toxic effect. The lighter oil fractions (including kerosene, petrol, benzene, toluene and xylene) are much more toxic to fish than the heavy fractions (heavy paraffins and tars). In the case of turbulent waters, the oil becomes dispersed as droplets into the water. In such cases, the gills of fish can become mechanically contaminated and their respiratory capacity reduced (Svobodova *et al*, 1993).

High levels of silt can impact on fish species, in particular salmonids. If of sufficient severity, adult fish could theoretically be affected by increased silt levels as gills may become damaged by exposure to elevated suspended solids levels and aquatic invertebrates may be smothered by excessive deposits of silt. In areas of stony substrate, silt deposits may result in a change in the macro-invertebrate species composition, favouring less diverse assemblages and impacting on sensitive species. Significant impacts on fish stocks could impact on Otter due to a reduction in prey availability.

During construction there may be an increased probability of silt discharging from the proposed development site. In the absence of appropriate design and mitigation, high levels of silt in surface water run-off could theoretically arise. The retention of riparian treelines along the Knockaneowen Stream would prevent significant construction runoff to the stream. However, as a precautionary measure several mitigation measures have been specified to ensure that water quality within the Knockaneowen Stream is not impacted during construction works (**Section 12**). Therefore, there will be no significant impact on local surface water from the proposed development during the construction phase.

During operation SuDS measures are proposed for the development in both public and private areas in accordance with the guidance from the County Development Plan 2022 Advice Note 1 on Surface Water management and the CIRIA SuDS Manual C753. The measures proposed will decrease the impact of the development on the receiving environment and also provide biodiversity enhancement areas. SuDS measures proposed include detention basin (attenuation area), permeable paving, underdrained roadside swales, bio-retention tree pits, bio-retention raingardens and water butts. It is intended to continue the new surface water network southwards under the R619 to Coachford Village where it is proposed to discharge the stormwater to an existing culvert (within the municipal stormwater network) on the southern side of the R618 at the junction. There will be direct discharge proposed to local watercourses.

The proposed surface water network has been tested with the Causeway Flow software, simulating rainfall events up to and including the 24-hour, 100 year storm with a 20% addition allowed for climate change. Modelling shows that no flooding occurs in any rainfall event tested.

Given the existing and proposed measures, no significant effect on local water quality from surface water runoff and/or risks of flooding is predicted to occur. The impact on local water quality is predicted to be imperceptible in the short and long term.

11.2 Wastewater Discharges

The proposed housing development could potentially result in an increase in nutrients discharging to the River Lee from the Coachford WWTP (D0427-01). Increased nutrients can potentially impact on freshwater and estuarine habitats by changing baseline ecological conditions and increasing algal growth. Although unlikely given the distance downstream (32.5km), this could impact on feeding success for birds listed as qualifying interests for the Cork Harbour SPA.

Wastewater from the proposed development will be conveyed for treatment to Coachford WWTP. The Coachford agglomeration is served by a wastewater treatment plant with a Plant Capacity Population Equivalent (P.E.) of 1,600. The WWTP obtained a discharge licence (Reg: D0427-01) from the EPA and has assigned emission limit values (ELV's) for a range of parameters to ensure a high degree of protection to the River Lee, the Lee Estuary and surrounding waters.

Treated effluent from the proposed development will discharge from the Coachford WWTP via the main treated effluent line. The discharge licence assigns ELV's for total phosphorous (Total P), chemical oxygen demand (COD), total suspended solids (TSS), biological oxygen demand (BOD), Ammonia, pH and orthophosphate. The ELVs are set based on the full design capacity (P.E. 1,600) and are aimed at providing a high degree of protection to the receiving waterbody and to ensure the receiving waterbody is capable of accommodating the proposed discharge without causing or exacerbating a breach in the relevant standards.

It is noted that the proposed occupancy of the housing development is approximately 70 PE (based on 2.7 persons per dwelling). In 2022 the agglomeration PE for Coachford WWTP was 665. The proposed development would increase the current WWTP P.E. from 665 to 735, which is well within the 1,600 P.E. design capacity. Thus, given the limited scale of the proposed development and the ability of the WWTP to cater for the additional loading, no impact is expected.

The 2021 AER notes that the final effluent from the Primary Discharge Point was non-compliant with the Emission Limit Values in 2021. The WWTP discharge was not compliant with the ELV's set in the wastewater discharge licence for the following: Total Nitrogen mg/l, Ammonia-Total (as N) mg/l.

In relation to ongoing monitoring of water quality, the 2021 AER also noted the following:

- The WWTP discharge was not compliant with the ELV's set in the wastewater discharge licence.

- The ambient monitoring results do not meet the required EQS at the upstream and the downstream monitoring locations. The EQS relates to the Oxygenation and Nutrient Conditions set out in the Surface Water Regulations 2009.
- The discharge from the wastewater treatment plant does not have an observable impact on the water quality.
- The discharge from the wastewater treatment plant does not have an observable negative impact on the Water Framework Directive status.

A new WWTP has been operational at Coachford since early 2022. The non-compliance detailed above was recorded prior to the upgrade of the WWTP.

A pre-connection enquiry was submitted to Irish Water to assess the feasibility of providing a connection to the site and Irish Water subsequently issued a confirmation of feasibility for the development. A wastewater connection for the site is feasible without infrastructure upgrade by Irish Water.

The addition of the effluent discharge from the proposed housing development to the Coachford WWTP is well within its design capacity and will not comprise the operational capability of the WWTP to treat effluent to comply with emission limit values. Therefore, the impacts from the proposed development will be negligible given the current operating conditions at the WWTP. Minor increases in nutrient levels potentially discharged by the WWTP will not have a significant impact water quality within the River Lee and/or the Cork Harbour SPA. Therefore, no impact on water quality within European or National sites from wastewater discharges is predicted to occur.

12. Mitigation Measures

The mitigation measures have been drawn up in line with current best practice and include an avoidance of sensitive habitats at the design stage. Whilst the proposed methods of mitigation may be amended and supplemented, the risk that the mitigation measures will not function effectively in preventing significant ecological impacts is low.

An outline Construction and Environmental Management Plan (oCEMP) has been submitted with this application. This includes are mitigation measures relevant to the proposed development. Mitigation measures relevant to ecology are summarized below.

Construction best practice measures (of relevance in respect of any potential ecological impacts) will be implemented throughout the project, including the preparation and implementation of detailed method statements. The works will incorporate the relevant elements of the guidelines outlined below:

- NRA (2010) *Guidelines for the Management of Noxious Weeds and Non- Native Invasive Plant Species on National Roads*. National Roads Authority, Dublin.
- Murphy, D. (2004) *Requirements for the Protection of Fisheries Habitat during Construction and Development Works at River Sites*. Eastern Regional Fisheries Board, Dublin.
- H. Masters-Williams et al (2001) *Control of water pollution from construction sites. Guidance for consultants and contractors (C532)*. CIRIA.

- E. Murnane, A. Heap and A. Swain. (2006) *Control of water pollution from linear construction projects. Technical guidance (C648). CIRIA.*
- E. Murnane et al., (2006) *Control of water pollution from linear construction projects. Site guide (C649). CIRIA.*
- *Guidelines on protection of fisheries during construction Works in and adjacent to waters (IFI, 2016)*

All personnel involved with the project will receive an on-site induction relating to operations and the environmentally sensitive nature of local watercourses and waterbodies, to re-emphasise the precautions that are required as well as the mitigation to be implemented.

12.1 Water Protection Measures

Run-off into excavations/earthworks cannot be prevented entirely and is largely a function of prevailing weather conditions. Care will be taken to ensure that exposed soil surfaces are stable to minimise erosion. All exposed soil surfaces will be within the main excavation site which limits the potential for any offsite impacts. All run-off will be prevented from directly entering any water courses as no construction will be undertaken directly adjacent to open water.

No significant dewatering will be required during the construction phase which would result in the localised lowering of the water table. There may be localised pumping of surface run-off from the excavations during and after heavy rainfall events to ensure that the excavations are kept safe and relatively dry.

The measures outlined in the following sections will be put in place during the construction phase to ensure protection of surface waterbodies. Construction works will be informed by best practice guidance from Inland Fisheries Ireland on the prevention of pollution during development projects.

12.1.1 Suspended Solids

Prior to the commencement of topsoil stripping and earthworks operations, the following site-specific surface water management measures will be put in place:

- Where possible, significant earthworks operations should be limited to the summer months.
- Silt fencing will be installed around the perimeter of the site. The location of the silt fencing will be determined in the construction stage oCEMP and will be subject to a detailed assessment of the area or phase to be developed. The purpose of the silt fencing is to prevent silt laden water leaving the site and entering neighbouring land with the potential to impact nearby watercourses. A typical silt fencing arrangement is shown below in **Figure 7**. It will consist of a double layer of geotextile membrane fixed to wooden stakes approximately 600mm high. The membrane will be anchored into the ground to form a continuous barrier to silt laden water from the works site. Silt fences will be monitored via a silt inspection log (to be maintained by the Environmental Manager/ECOW) and periodically maintained during the construction period. Typical maintenance will consist of repairs to damaged sections of membrane and removal of

a build-up of silt on the upslope side of the fence. Daily silt fence inspections are recommended as part of their operation ensuring that any necessary repairs can be expedited.



Figure 7. Typical silt fence arraignment.

Drainage ditches will be installed to intercept surface water where there is a risk of significant water flow into excavations or onto adjoining lands. There will also be a requirement to periodically pump water from excavations. All collected and pumped water will have to be treated prior to discharge. The run-off will be directed through appropriately sized settlement ponds in series to remove suspended solids before being discharged.

- Emergency contact numbers for the Local Authority Environmental Section, Inland Fisheries Ireland, the Environmental Protection Agency and the National Parks and Wildlife Service will be displayed in a prominent position within the site compound. These agencies will be notified immediately in the event of a pollution incident.
- Site personnel will be trained in the importance of preventing pollution and the mitigation measures described here to ensure same.
- The Environmental Manager or ECoW will be responsible for the implementation of these measures. They will be inspected on at least a daily basis for the duration of the works, and a record of these inspections will be maintained.
- Any temporary storage of soil, hardcore, crushed concrete or similar material will be stored 50m from any surface water drains. All temporary storage areas should also have surface runoff controls in place to prevent migration of possible materials. There can be no direct pumping of silty water from the works directly to any watercourse. All

water from excavations must be treated by infiltration over lands or via settlement ponds, silt busters etc.

- The subject site is elevated and sloping to a degree that flooding is not anticipated in any event. The flood extent maps drawn up as part of the Southwestern CFRAM Study (floodinfo.ie) show that Coachford is prone to flooding.

12.1.2 Control of Cement Runoff

The washing out of concrete delivery vehicles is a potential source of pollution and shall be carried out in designated wash out areas only.

Wash-out areas on site will be located more than 50m from any natural watercourse and properly designed with an impermeable liner to contain all cement laden water. No wash-out of ready-mix concrete vehicles shall be located within 10m of any temporary or permanent drainage features. Signage shall be erected to clearly identify the wash-out areas. Sufficient wash-out areas shall be provided to cater for all vehicles at peak delivery times.

On-site batching of concrete is not envisaged, but ready to use mortar silos are often used for housing developments. These systems involve the delivery and storage of dry cement and aggregates in silos, water is added at the point of delivery to make mortar or plaster. The following controls shall be put in place for the on-site batching of concrete, mortar and render:

- The plant shall be maintained in good condition,
- Delivery of cement shall be means of a sealed system to prevent escape of cement,
- The plant shall be situated on a paved area at least 20m from any temporary or permanent drainage features,
- Emergency procedures shall be in place to deal with accidental spillages of cement or mortar.
- Accidental Leaks or Spills

No bulk chemicals will be stored within the active construction areas. Temporary oil and fuel storage tanks may be kept in the material storage area in suitable containers and will be stored on appropriately bunded spill pallets as required. Any fuel and oil stored on site shall be stored on bunded spill pallets (approved under BS EN 1992-3:2006). All bunds will be impermeable and capable of retaining a volume of equal to or greater than 1.1 times (>110%) capacity of the containers stored on them. In the event of a spillage, excess oil or fuel will be collected in the bund.

Refuelling of vehicles and the addition of hydraulic oils or lubricants to vehicles will be undertaken off site where possible. Where this is not possible, filling and maintenance will take place in a designated material storage compound, which is located at least 10 metres from any temporary or permanent drainage features. Spill protection equipment such as absorbent mats, socks and sand will be available in clearly marked bins/silos and in construction vehicles to be used in the event of an accidental release during refuelling. Training will be given to site workers in how to manage a spill event.

The following mitigation measures will be taken at the construction site to prevent any spillages to ground of fuels during machinery activities and prevent any resulting soil and/or groundwater quality impacts:

- Refuelling will be undertaken off site where possible,
- Where mobile fuel bowsers are used the following measures will be taken:
 - Any flexible pipe, tap or valve will be fitted with a lock and will be secured when not in use,
 - Any pump or valve will be fitted with a lock and will be secured when not in use,
 - All bowsers to carry a spill kit and operatives must have spill response training; and
 - Portable generators or similar fuel containing equipment will be placed on suitable drip trays,
 - Weekly checks of spill kits will be carried out to ensure they are sufficiently stocked.

12.1.3 Monitoring

Daily checks will be carried out and recorded in a Surface Water Management Log to ensure surface water drains are not blocked by silt, or other items, and that all storage is located the required distance from surface water receptors. A daily log of inspections will be maintained, and any significant blockage or spill incidents will be recorded for root cause investigation purposes and updating procedures to ensure incidents do not reoccur.

12.2 Noise

Specific noise abatement measures shall comply with the recommendations of BS5228-1 2009. These measures will include:

- No plant used on site will be permitted to cause an ongoing public nuisance due to noise,
- The best means practicable, including proper maintenance of plant, will be employed to minimise the noise produced by on site operations,
- All vehicles and mechanical plant will be fitted with effective exhaust silencers and maintained in good working order for the duration of the contract,
- Compressors and generators will be attenuated models fitted with properly lined and sealed acoustic covers which will be kept closed whenever the machines are in use and all ancillary pneumatic tools shall be fitted with suitable silencers,
- Machinery that is used intermittently will be shut down or throttled back to a minimum during periods when not in use,
- Any plant, such as generators or pumps, required to operate outside of permitted working hours for lighting, pumping etc. will be surrounded by an acoustic enclosure or portable screen,

- Location of plant shall consider the likely noise propagation to nearby sensitive receptors.

The earthworks will generate typical construction activity related noise and vibration sources from use of a variety of plant and machinery such as rock breakers (where required), excavators, lifting equipment, dumper trucks, compressors, and generators. The noise levels shall comply with the mitigation measures and any planning conditions.

12.3 Lighting

12.3.1 Lighting During Construction

Lighting will be provided as necessary at construction compounds. Consideration of best practice and guidance in relation to lighting and wildlife impact such as Bats & Lighting Guidance Notes for Planners, Engineers, Architects and Developers (Bat conservation Ireland, December 2010); All lighting will be directional with appropriate cowling installed to minimise light spillage from the site. The height of lamp posts will be restricted (e.g., <8m where possible) to reduce the amount of light spillage to where it is not needed. The lights will be positioned facing away from the woodland and stream to the west, where possible, to minimize impact on bats that may use this area as a commuting route as well as other species who may use this habitat. Where possible all light fittings will be LED, have asymmetrical projection i.e. directional, and with colour temperature of 2700K (warm spectrum preferred by bats). The radiation will be above 500nm to avoid the blue or UV light, most disturbing to bats.

Construction work will generally be confined to daylight hours and lighting will generally not be required for the construction phase. There will however be occasions where the provision of portable lighting will be required such as evening work during later winter/early spring, works on roadways and power floating floors. Where possible and without jeopardising site safety, lights will be pointed down at a 45-degree angle and away from sensitive receptors. The site compound will have external lights for safety and security. This lighting will also be controlled by occupancy/motion sensors so that it will remain at a low output unless activated. This will mitigate light overspill as well as avoiding energy wastage. Construction stage lighting will be designed to minimise the broadcast of light to surrounding areas including sensitive receptors.

12.3.2 Lighting During Operation

The lighting scheme has taken into account best practice, as published by the UK Bat Conservation Trust, in respect of mitigation strategies, to minimise the impact of outdoor lighting upon bat populations in line with Cork County Council Lighting requirements.

- LED type lanterns, of the Warm White type will be utilised where possible. Colour Temperature of 3,000 kelvin, as is considered least disruptive to the emergence of bats from roosts at dusk, and subsequent movement from habitats to foraging locations.
- Lanterns are of the fully cut off type with no light output above the horizontal plane.
- Height of columns kept as low as possible taking cognisance of need to make lanterns vandal resistant
- Maximum spacing between lighting

Lighting will be faced away from the retained boundary habitats to minimise the impact on bats foraging along these areas. Full details on the proposed lighting layout are included in the current planning application (by Kelleher Electrical Ltd).

12.4 Ecology

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

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

A landscape plan has been developed by DRLA which includes native tree planting, a biodiversity attenuation area, naturally recolonised grassland/wildflower areas and pollinator friendly shrubs and bulb planting.

Trees along the boundary will be protected in accordance with *BS: 5837:2012 Trees in relation to design, demolition and construction*. Tree root systems can be damaged during site clearance and groundworks. No materials should be stored within the root protection area of mature trees. Materials, especially soil and stones, can prevent air and water circulating to the roots. Retention of the existing networks of treelines/hedgerows that form the external boundaries of the site will provide natural screening and help to maintain biodiversity.

Protection fencing shall consist of 1.8m high panels (min. height), chainlink with galvanised posts, or similar material allowing sunshine and wind to filter through. To minimise root disturbance, fence footings shall be concrete or rubber blocks that sit on the surface and are not installed in the ground. The fencing shall not be moved, even temporarily, during construction and under no circumstances shall materials be stored under the tree canopies. The landscape architect or horticulturalist should be consulted prior to any proposed alteration to the protection fencing. Refer BS 5837 Code of Practice for Trees in Relation to Construction for best practice standards.

Tree Protection Fencing - construction Notes

1) The fencing shall be maintained in good and effective condition for the duration of construction activities. The fencing effectiveness and location will be reviewed by the Landscape Architect at each site visit.

2) The following measures shall also be adhered to:

- a- Materials are never to be stored within the canopy of the tree;

- b- No oil, tar, bitumen, cement or other deleterious material shall come in contact with the ground within the root zone; surface flow must also be considered as site gradients fall towards the trees;
- c- Trees to be retained shall neither be used as anchorages or support mechanisms for equipment, services or signage nor utilised any other construction activities;
- d- Soil levels are to be maintained as existing within the protection fencing. No excavation is allowed, even surface scratching. The majority of roots lie within the upper 500mm of the soil, so any alteration to soil levels within the root zone will result in a negative impact on the trees.

To prevent Japanese Knotweed or other invasive species from outside the site being inadvertently brought in to the site, the contractor will be required to inspect vehicles before using them on site. If applicable, the supplier of fill will be required to provide a guarantee that the fill to be imported does not contain knotweed. In addition, the fill will be inspected for signs of knotweed, prior to importation to site.

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

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

No bat roosts were recorded within trees earmarked for removal. However, the presence of occasional roosting bats in mature and semi-mature trees cannot be altogether ruled out. Although no trees suitable for roosting bats are earmarked for removal, as precaution the following measures should be implemented where crown reduction of mature/semi-mature trees is required. The following precautionary measures will be implemented.

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

- Treelines earmarked for retention, but adjacent to tree removal areas and thus at risk, will be clearly marked by a bat specialist to avoid any inadvertent damage.

12.4 Biodiversity Enhancement

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

It is proposed that six bird nesting boxes (various types including open fronted, entrance hole and kestrel nest boxes e.g., <https://www.nhbs.com/kestrel-nest-box>) will be installed at the proposed development site. These will be located within retained treelines along the site boundary. These will be positioned at least 10m from any light fittings.

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

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

12.5 Invasive Species

12.5.1 Cherry Laurel

As noted in **Section 7.7** of this report, there is no statutory obligation to remove Cherry Laurel. However, should it be concluded that Cherry Laurel at the proposed development site should be removed, the following treatment methods are recommended.

1. Resurvey to ensure there is up to date survey data.
2. Note the age, condition and previous treatments at the site.
3. Areas should be prioritised. It may be easier to clear less heavily infested areas to begin with or sites where seed production has not yet occurred. Also, ideally work with prevailing wind direction, rather than against it, to help minimise seed dispersal into recently cleared areas.
4. Create suitable conditions for the recovery of native ground flora. This will reduce open areas for recolonisation.
5. Develop a Management Plan including timeframes for planned clearance and repeated treatments.
6. Follow-up work will be necessary to ensure that any small plants and seedlings have not been missed.

Treatment programmes can be divided into 3 main stages: initial removal, control of stems and roots, and follow up. The following treatment options have been widely tested and measured for effectiveness across Ireland. In almost all cases, failures can be accredited to

poor application of a particular technique and/or logistical difficulties, rather than the control method itself. Care should be taken when embarking on a control programme and resources should be identified and allocated for repeated treatments.

Cut and remove stems by hand or chainsaw, cutting as close to the ground as possible to remove above ground growth. Chip or remove the cut material from the area to allow for effective follow-up work and prevent regrowth. Chipped material can provide good weed barrier around ornamental garden areas. Flailing has also been effectively used in Ireland to treat young or immature growth. Although not suitable on all sites and locations, especially steeply sloping or wet sites, it is very effective as it breaks up woody stems upon contact.

The removal of above ground growth will not prevent regrowth as Cherry Laurel will regrow from cut stems and stumps. There are four recommended methods to achieve successful management after the initial cut and removal:

1. Digging the stumps out. The effectiveness of this technique is increased by removing all viable roots. This can be done manually or with a tractor and plough. To avoid regrowth, stumps should be turned upside down and soil should be brushed off roots.

2. Direct stump treatment by painting or spot spraying freshly cut low stumps with a herbicide immediately after been cut. Glyphosate (20% solution), triclopyr (8% solution) or ammonium sulphate (40% solution) are known to be effective during suitable weather conditions i.e. dry weather. The herbicide concentrations used and timings of applications vary according to which chemical is used. Use of a vegetable dye is recommended to mark treated stumps and all stumps should be targeted. A handheld applicator will help avoid spray drift onto surrounding non-target species. Always read the label and follow the manufacturers guidelines when using herbicides. Remember that using

3. A variation on the stump treatment method is stem injection, using a 'drill and drop' methodology, whereby, if the main stem is cut and is large enough for a hole to be drilled into it, the hole can be used to facilitate the targeted application of glyphosate (25% solution).

4. Stump regrowth and seedlings can be effectively killed by spraying regrowth with a suitable herbicide, usually glyphosate. Best practice spraying protocols should be carefully followed. General broadcast spraying is not as effective as stump spot treatment and has the potential to impact on surrounding non-target species. Cherry Laurel leaves are thick and waxy. For herbicide treatment to be effective each individual leaf needs to be thoroughly wetted with herbicide to kill the plant.

12.5.2 Buddleia Management During Construction Phase

As noted above, there is no statutory obligation to remove Buddleia. However, should it be concluded that Buddleia at the proposed development site should be removed, the following treatment methods are recommended.

Buddleia is straightforward to control using a mixture of mechanical removal and herbicide treatment.

Buddleia is a plant that favours disturbed sites, physical grubbing of plants can provide ideal conditions for the germination of seeds. Therefore, care needs to be taken to ensure re-vegetation of controlled areas is undertaken swiftly. The branches of Buddleia are capable of

rooting as cuttings, so care should also be taken to ensure material is disposed of in a manner to avoid this risk.

As mature plants occur within the proposed works area, the preferred method of treatment is cutting back to a basal stump or grubbing out followed by chemical treatment.^z Herbicide applications will take into account sensitive receptors such as watercourses and locally important habitats such as woodland and must only be applied in line with manufacturers recommendations.

Recommended practice for the application of herbicides requires cutting back of plants to a basal stump during active growth (late spring to early summer) which is then treated (brushed on) immediately with a systemic weed killer mix (Starr *et al*, 2003). Foliar application of triclopyr or glyphosate may be adequate for limited infestations of younger plants but should be followed up at 6 monthly interval until the supervising ecologist can certify that the plant is no longer extant within the works area.

12.5.3. Winter Heliotrope

As noted in above, there is no statutory obligation to remove Winter Heliotrope. Winter heliotrope (*Petasites fragrans*), a member of the Asteraceae family, is a low-growing herbaceous plant originating in North Africa. It is established widely in Ireland being frequent along roadsides, hedgerows, woodland edges and waste ground. As apparently only the male plant that is present in Ireland, its spread is confined to vegetative means.

Physical Control

Due to the extensive rhizome network, physical removal of winter heliotrope is really only practical on a limited scale. Where mechanical means can be employed, it should be possible to deal with larger infestations but due to the potential for regeneration from fragments of roots, it may be best to tackle its control using a combination of excavation with follow-up treatment by herbicides. As with other plants with the potential to spread from small root fragments, disposal of material should be undertaken with due caution to prevent accidental spread of the plant. Other means of disposal include burial of material at a depth of at least 2m, incineration or disposal to licensed landfill. There is no evidence that the material would withstand composting though this approach would probably only be suitable for limited infestations.

Chemical Control

An application of a glyphosate-based herbicide after flowering in February to March is recommended by Cornwall Nature Reserves (2008), though the Royal Horticultural Society (2008b) recommends spraying in mid- summer or later but before the foliage begins to die back.

13. Cumulative Impacts

Cumulative impacts on fauna chiefly relate to increased noise and activity levels and potential impacts on water quality. A planning search of Cork City Council planning portal and An Bord Pleanála was conducted to identify permitted projects in the vicinity of the proposed

development site. Projects which, due to their nature or scale were unlikely to result in an in-combination impact, or to which there was no pathway, were excluded.

The following developments were granted planning in the vicinity of the proposed development site in the previous 24-month period (from January 2024). As well as number of small-scale developments i.e. one-off houses, extensions to existing dwellings etc, the following larger developments were noted.

- 224349. Vicars Glebe, Glebe (Townland), Coachford, Co. Cork. The construction of 45 no. houses comprising 36 no. 3 -bedroom houses and 9 no. 4-bedroom houses. The proposed development is a change to the site layout and house types previously permitted under planning reg. ref. 07/13376 (extended by 13/4965 and 17/7049). Access to the proposed development will be via the existing estate entrance to the public roadway and the permitted internal road network. Permission granted by CCC in August 2022 and construction has begun.
- 224344. (Extension of duration). Glebe, Coachford, Co Cork, Residential development of 69 no. dwelling houses comprising of 30 no. four bed semi-detached dwellings, 16 no. three bed semi-detached dwelling house and 15 no. townhouses and 8 no. single storey semi-detached and all associated site works. Extension of Duration to Permission granted under Planning Ref. No. 07/13376 and extended under PI.Reg.No.s 13/4965 and 17/7049. Permission granted by CCC for Extension of permission granted April 2022 and construction has begun.
- 234312. Coachford College, Glebe, Coachford, Co.Cork. The demolition of the existing school buildings, the removal of existing pre-fabricated temporary accommodation and the construction of a new split level, part single storey, part two storey and part three storey 1000 pupil secondary school comprising a four classroom special education unit, a single storey multi purpose hall, general purpose room, general classrooms, specialist classrooms, social areas, library, administration areas, service yards, external stores, covered storage areas for construction studies, toilet and changing facilities and associated ancillary accommodation. The development also includes the provision of new site entrances, car parking area, drop-off areas, new site boundary, new ball courts, playing pitch, landscaped external areas and all associated site works. The proposed building is within the curtilage of the protected structure (RPS no. 00444) as recorded in Cork County Development Plan 2022: Volume 2. Permission granted by CCC in December 2023.

Should construction works for these projects (in particular the Vicars Glebe area) run concurrently with the proposed development, there could be slight, short-term, cumulative disturbance effects on local fauna.

A range of mitigation measures will be implemented during construction to effectively prevent adverse effects on water quality during construction. The measures to be implemented will effectively prevent any significant discharges of hydrocarbons or excess levels of silt from the individual elements of the project thus ensuring that no in-combination impacts will occur. Furthermore, operational design measures, including SuDS measures will ensure there are no impacts on local water quality or flooding risk and therefore no in-combination impacts from operational surface water discharges will occur.

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

14. Conclusions

Overall, the development will impact on habitats of low local value. There will be a loss of grassland and scrub habitats as well a small area of hedgerow which have limited use as foraging grounds for common bird and mammal species. Trees are largely located outside the site boundary and will not be directly impacted. However, in the event that tree removal/crown reduction is required, mitigation measures will be implemented during works to ensure there is no direct injury/mortality impacts on bats.

The increase in lighting along the site boundaries may reduce the value of retained habitats for local wildlife, in particular bats. However, operational lighting alongside additional landscape planting has been designed to reduce impacts on foraging bats (and other nocturnal wildlife). There will be no significant light spillage onto retained treelines/hedgerow (including a riparian corridor along the Knockaneowen Stream) or along the proposed biodiversity attenuation area. As newly landscaped habitats mature, they are likely to create additional foraging areas for bats.

During construction, there will be increased noise and disturbance which could potentially impact on birds and non-volant mammals. However, the impact will short term and will not be significant. Given the availability of alternative habitat in the vicinity, the impact on birds, non-volant mammals and other wildlife is likely to be slight and short-term.

No difficulties in the effective implementation of the prescribed mitigation measures have been identified. No impact from the spread of invasive species will occur. No significant impacts (SACs, SPAs or pNHAs) on designed sites will occur (in the absence of mitigation).

Following proposed landscaping at the proposed development site, which includes planting of native tree and shrub species, there will be a nett gain of trees and shrubs at the site. As trees and shrubs mature these will provide nesting and foraging habitats for common bird species and well as shelter for small mammal species.

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Appendices

Appendix 1. NRA 2009 Guidelines

Table 1: Examples of valuation at different geographical scales

Ecological valuation: Examples
<p>International Importance:</p> <ul style="list-style-type: none"> • ‘European Site’ including Special Area of Conservation (SAC), Site of Community Importance (SCI), Special Protection Area (SPA) or proposed Special Area of Conservation. • Proposed Special Protection Area (pSPA). • Site that fulfills the criteria for designation as a ‘European Site’ (see Annex III of the Habitats Directive, as amended). • Features essential to maintaining the coherence of the Natura 2000 Network.⁴ • Site containing ‘best examples’ of the habitat types listed in Annex I of the Habitats Directive. • Resident or regularly occurring populations (assessed to be important at the national level)⁵ of the following: <ul style="list-style-type: none"> ○ Species of bird, listed in Annex I and/or referred to in Article 4(2) of the Birds Directive; and/or ○ Species of animal and plants listed in Annex II and/or IV of the Habitats Directive. • Ramsar Site (Convention on Wetlands of International Importance Especially Waterfowl Habitat 1971). • World Heritage Site (Convention for the Protection of World Cultural & Natural Heritage, 1972). • Biosphere Reserve (UNESCO Man & The Biosphere Programme). • Site hosting significant species populations under the Bonn Convention (Convention on the Conservation of Migratory Species of Wild Animals, 1979). • Site hosting significant populations under the Berne Convention (Convention on the Conservation of European Wildlife and Natural Habitats, 1979). • Biogenetic Reserve under the Council of Europe. • European Diploma Site under the Council of Europe. • Salmonid water designated pursuant to the European Communities (Quality of Salmonid Waters) Regulations, 1988, (S.I. No. 293 of 1988).⁶
<p>National Importance:</p> <ul style="list-style-type: none"> • Site designated or proposed as a Natural Heritage Area (NHA). • Statutory Nature Reserve. • Refuge for Fauna and Flora protected under the Wildlife Acts. • National Park. • Undesignated site fulfilling the criteria for designation as a Natural Heritage Area (NHA); Statutory Nature Reserve; Refuge for Fauna and Flora protected under the Wildlife Act; and/or a National Park. • Resident or regularly occurring populations (assessed to be important at the national level)⁷ of the following: <ul style="list-style-type: none"> ○ Species protected under the Wildlife Acts; and/or ○ Species listed on the relevant Red Data list. • Site containing ‘viable areas’⁸ of the habitat types listed in Annex I of the Habitats Directive.
<p>County Importance:</p> <ul style="list-style-type: none"> • Area of Special Amenity.⁹ • Area subject to a Tree Preservation Order. • Area of High Amenity, or equivalent, designated under the County Development Plan. • Resident or regularly occurring populations (assessed to be important at the County level)¹⁰ of the following: <ul style="list-style-type: none"> ○ Species of bird, listed in Annex I and/or referred to in Article 4(2) of the Birds Directive; ○ Species of animal and plants listed in Annex II and/or IV of the Habitats Directive; ○ Species protected under the Wildlife Acts; and/or ○ Species listed on the relevant Red Data list. • Site containing area or areas of the habitat types listed in Annex I of the Habitats Directive that do not fulfil the criteria for valuation as of International or National importance. • County important populations of species, or viable areas of semi-natural habitats or natural heritage features identified in the National or Local BAP, 11 if this has been prepared.

- Sites containing semi-natural habitat types with high biodiversity in a county context and a high degree of naturalness, or populations of species that are uncommon within the county.
- Sites containing habitats and species that are rare or are undergoing a decline in quality or extent at a national level.

Local Importance (higher value):

- Locally important populations of priority species or habitats or natural heritage features identified in the Local BAP, if this has been prepared;
- Resident or regularly occurring populations (assessed to be important at the Local level)¹² of the following:
 - Species of bird, listed in Annex I and/or referred to in Article 4(2) of the Birds Directive;
 - Species of animal and plants listed in Annex II and/or IV of the Habitats Directive;
 - Species protected under the Wildlife Acts; and/or
 - Species listed on the relevant Red Data list.
- Sites containing semi-natural habitat types with high biodiversity in a local context and a high degree of naturalness, or populations of species that are uncommon in the locality;
- Sites or features containing common or lower value habitats, including naturalised species that are nevertheless essential in maintaining links and ecological corridors between features of higher ecological value.

Local Importance (lower value):

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

4 See Articles 3 and 10 of the Habitats Directive.

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

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

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

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

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

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

11 BAP: Biodiversity Action Plan

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

