



AVRIO



Natura Impact Statement

Knockbeg West, Collooney, Co. Sligo

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AVRIO Quality Information:

	Name	Date
Edited by:	Noreen Mc Loughlin	13 th September 2021
Edited & Checked by:	Fergal Maguire	13 th September 2021
	Name	Signature
Approved by:	Mark McQuaid	

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Contents

PROJECT DETAILS:	2
AVRIO QUALITY INFORMATION:	2
LIMITATIONS	3
CONTENTS	4
1. INTRODUCTION	6
1.1 Background.....	6
1.2 Requirement for an Appropriate Assessment	6
1.3 The Aim of the Report	6
1.4 Regulatory Context	7
1.4.1 Relevant Legislation	7
1.4.2 Appropriate Assessment and the Habitats Directive	7
2. METHODOLOGY	10
2.1 Appropriate Assessment.....	10
2.2 Statement of Competency	11
2.3 Desk Studies & Consultation.....	12
2.4 Assessment Methodology.....	12
3. SCREENING	13
3.1 Development Description	13
3.2 SITE LOCATION & SURROUNDING ENVIRONMENT	15
3.3 Identification of Potential Impacts	24
3.4 Assessment of Significance	24
3.5 Screening Conclusions	25
4. STAGE II – APPROPRIATE ASSESSMENT	26
4.1 Introduction	26
4.2 Natura 2000 Sites Identified	27
4.3 Summary of Potential Impacts.....	42
5. MITIGATION MEASURES	45
6. APPROPRIATE ASSESSMENT CONCLUSION	49

APPENDIX I – REFERENCES & FURTHER READING 51

1. Introduction

1.1 Background

AVRIO Environmental Management Limited, hereafter "AVRIO", has been appointed by Carty Group to undertake a Natura Impact Statement for a proposed development located at Knockbeg West, Collooney, Co. Sligo. A planning application was submitted to Sligo County Council planning department on the 3rd June 2021 under Planning Ref: 21/211. Planning permission is being sought here for the following:

- *“The completion of an unfinished housing estate (previously granted under PL041502) including the construction of 59 no. new two-storey dwelling houses (18 no. 2-bedroom semi-detached houses, 4 no. 3 bedroom semi-detached houses, 11 no 3-bedroom detached houses, 15 no. 3 bedroom detached houses with integral internal garages, 11 no. 4-bedroom detached houses) together with connection to the existing sewer system, works to the site boundaries, completion of all associated site development works including lighting, along with hard and soft landscaping.”*

1.2 Requirement for an Appropriate Assessment

This Natura Impact Assessment was prepared for a proposed development at Knockbeg West, Collooney, Co. Sligo. Having regard to the location of the proposed development site and its proximity to sites designated under the Natura 2000 network, an Appropriate Assessment of the proposed development was prepared in accordance with Article 6 of the Habitats Directive. This NIS will allow the Competent Authority, in this case Sligo County Council, to undertake an Appropriate Assessment of the proposed development, as required under Article 6(3) of the Habitats Directive. This NIS followed on from a Request for Further Information made by Sligo County Council with regards this proposed development (Planning Reference No: 21/211).

The purpose of the assessment is to determine the appropriateness of the proposed project in the context of the conservation status of the site or sites. In Ireland, an Appropriate Assessment takes the form of a Natura Impact Statement (NIS), which is a statement of the likely impacts of the plan or project on a Natura 2000 site. The NIS comprises a comprehensive assessment of the plan or project, and it examines the direct and indirect impacts that the plan or project might have on its own or in combination with other plans or projects on one or more Natura 2000 sites in view of the sites' conservation objectives.

1.3 The Aim of the Report

This Natura Impact Statement (NIS) has been prepared in accordance with the current guidance (DoEHLG, 2009, Revised February 2010), and it provides an assessment of the potential effects of a proposed development at Knockbeg West, Collooney, Co. Sligo on certain European sites.

An NIS should provide the information required in order to establish whether or not a proposed development is likely to have a significant impact on certain Natura sites in the context of their conservation objectives and specifically on the habitats and species for which the Natura 2000 conservation sites have been designated.

Accordingly, a comprehensive assessment of the potential impacts of this application was carried out in September 2021 by Noreen McLoughlin, MSc, MCIEEM. This assessment allowed areas of potential ecological value and potential ecological constraints associated with this proposed development to be identified and it also enabled potential ecological impacts associated with the proposed development to be assessed and mitigated for.

1.4 Regulatory Context

1.4.1 Relevant Legislation

The Birds Directive (Council Directive 2009/147/EC) recognises that certain species of birds should be subject to special conservation measures concerning their habitats. The Directive requires that Member States take measures to classify the most suitable areas as Special Protection Areas (SPAs) for the conservation of bird species listed in Annex 1 of the Directive. SPAs are selected for bird species (listed in Annex I of the Birds Directive), that are regularly occurring populations of migratory bird species, and the SPA areas are of international importance for these migratory birds.

The EU Habitats Directive (92/43/EEC) requires that Member States designate and ensure that particular protection is given to sites (Special Areas of Conservation) which are made up of or support particular habitats and species listed in annexes to this Directive

Articles 6(3) and 6(4) of this Directive also call for the undertaking of an Appropriate Assessment for plans and projects not directly connected with or necessary to the management of, but which are likely to have a significant effect on any European designated sites (i.e. SACs and SPAs).

The Water Framework Directive (WFD) (2000/60/EC), which came into force in December 2000, establishes a framework for community action in the field of water policy. The WFD was transposed into Irish law by the European Communities (Water Policy) Regulations 2003 (S.I. 722 of 2003). The WFD rationalises and updates existing legislation and provides for water management on the basis of River Basin Districts (RBDs). RBDs are essentially administrative areas for coordinated water management and are comprised of multiple river basins (or catchments), with cross-border basins (i.e. those covering the territory of more than one Member State) assigned to an international RBD. The aim of the WFD is to ensure that waters achieve at least good status by 2021 and that status does not deteriorate in any waters.

1.4.2 Appropriate Assessment and the Habitats Directive

Directive 92/43/EEC on the Conservation of Natural Habitats and Wild Fauna and Flora – the ‘Habitats Directive’ - provides legal protection for habitats and species of European importance. Article 2 of the Directive requires the maintenance or restoration of habitats and species of European Community interest at a favourable conservation status. Articles 3 - 9 provide the legislative means to protect habitats and species of Community interest through the establishment and conservation of an EU-wide network of sites known as Natura 2000. Natura 2000 sites are Special Areas of Conservation (SACs) designated under the Habitats Directive and Special Protection Areas (SPAs) designated under the Conservation of Wild Birds Directive (79/409/EEC).

Articles 6(3) and 6(4) of the Habitats Directive sets out the decision-making tests for plans or projects affecting Natura 2000 sites. Article 6(3) establishes the requirement for Appropriate Assessment:

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

Article 6(4) deals with the steps that should be taken when it is determined, as a result of appropriate assessment, that a plan/project will adversely affect a European site. Issues dealing with alternative solutions, imperative reasons of overriding public interest and compensatory measures need to be addressed in this case.

Article 6(4) states:

“If, in spite of a negative assessment of the implications for the site and in the absence of alternative solutions, a plan or project must nevertheless be carried out for imperative reasons of overriding public interest, including those of a social or economic nature, the Member States shall take all compensatory measures necessary to ensure that the overall coherence of Natura 2000 is protected. It shall inform the Commission of the compensatory measures adopted.

Where the site concerned hosts a priority natural habitat type and/or a priority species, the only considerations which may be raised are those relating to human health or public safety, to beneficial consequences of primary importance for the environment or, further to an opinion from the Commission, to other imperative reasons of overriding public interest.”

The Appropriate Assessment Process

The aim of Appropriate Assessment is to assess the implications of a proposal in respect of a designated site's conservation objectives.

The 'Appropriate Assessment' itself is an assessment that must be carried out by the competent authority, which confirms whether the plan or project in combination with other plans and projects will have an adverse impact on the integrity of a European site.

Screening for Appropriate Assessment shall be carried out by the competent authority as set out in Section 177U(1) and (2) of the Planning and Development Act 2000 (as amended) as follows:

(1) A screening for appropriate assessment of a draft Land use plan or application for consent for the proposed development shall be carried out by the competent authority to assess, in view of best scientific knowledge, if that Land use plan or proposed development, individually or in combination with another plan or project is likely to have a significant effect on the European site.

(2) A competent authority shall carry out a screening for appropriate assessment under subsection (1) before—

(a) a Land use plan is made including, where appropriate, before a decision on appeal in relation to a draft strategic development zone is made, or

(b) consent for a proposed development is given.’

The competent authority shall determine that an Appropriate Assessment is not required if it can be excluded, that the proposed development, individually or in combination with other plans or projects, will have a significant effect on a European site.

Where the competent authority cannot exclude the potential for a significant effect on a European site, an Appropriate Assessment shall be deemed required.

Where an Appropriate Assessment is required, the conclusions of the Appropriate Assessment Report (Natura Impact Statement (NIS)) should enable the competent authority to ascertain whether the plan or proposed development would adversely affect the integrity of the European site. If adverse impacts on the integrity of a European site cannot be avoided, then mitigation measures should be applied during the appropriate assessment process to the point where no adverse impacts on the site remain. Under the terms of the Habitats Directive consent can only be granted for a project if, as a result of the appropriate assessment, either (a) it is concluded that the integrity of any European sites will not be adversely affected, or (b) after mitigation, where adverse impacts cannot be excluded, there is shown to be an absence of alternative solutions, and there exists imperative reasons of overriding public interest for the project should go ahead.

Section 177(V) of the Planning and Development Act 2000 (as amended) outlines that the competent authority shall carry out the Appropriate Assessment, taking into account the Natura Impact Statement (amongst any other additional or supplemental information). A determination shall then be made by the competent authority in line with the requirements of Article 6(3) of the Habitats Directive as to whether the plan or proposed development would adversely affect the integrity of a European site prior to consent being given.

2. Methodology

2.1 Appropriate Assessment

This NIS has been prepared with reference to the following:

- European Commission (2018). Managing Natura 2000 Sites: The Provisions of Article 6 of the ‘Habitats’ Directive 92/43/EEC.
- European Commission (2001). Assessment of Plans and Projects Significantly Affecting Natura 2000 sites: Methodological Guidance on the Provisions of Article 6(3) and (4) of the Habitats Directive 92/43/EEC.
- European Commission (2006). Nature and Biodiversity Cases: Ruling of the European Court of Justice.
- European Commission (2007). Clarification of the Concepts of: Alternative Solution, Imperative Reasons of Overriding Public Interest, Compensatory Measures, Overall Coherence, Opinion of the Commission.
- Department of Environment, Heritage and Local Government (2009). Appropriate Assessment of Plans and Projects in Ireland: Guidance for Planning Authorities.

The EC Guidance sets out a number of principles as to how to approach decision making during the process. The primary one is ‘the precautionary principle’, which requires that the conservation objectives of Natura 2000 should prevail where there is uncertainty.

When considering the precautionary principle, the emphasis for assessment should be on objectively demonstrating with supporting evidence that:

- There will be no significant effects on a Natura 2000 site;
- There will be no adverse effects on the integrity of a Natura 2000 site;
- There is an absence of alternatives to the project or plan that is likely to have an adverse effect to the integrity of a Natura 2000 site; and
- There are compensation measures that maintain or enhance the overall coherence of Natura 2000.

This translates into a four-stage process to assess the impacts, on a designated site or species, of a policy or proposal.

The EC Guidance states that “each stage determines whether a further stage in the process is required”. Consequently, the Council may not need to proceed through all four stages in undertaking the Appropriate Assessment.

The four-stage process is:

Stage 1: Screening – The process which identifies the likely impacts upon a Natura 2000 site of a project or plan, either alone or in combination with other projects or plans, and considers whether or not these impacts are likely to be significant;

Stage 2: Appropriate Assessment – The consideration of the impact on the integrity of the Natura 2000 site of the project or plan, either alone or in combination with other projects or plans, with respect to the site’s structure and function and its conservation objectives. Additionally, where there are adverse impacts, an assessment of the potential mitigation of those impacts;

Stage 3: Assessment of Alternative Solutions – The process which examines alternative ways of achieving objectives of the project or plan that avoid adverse impacts on the integrity of the Natura 2000 site;

Stage 4: Assessment where no alternative solutions exist and where adverse impacts remain – An assessment of the compensatory measures where, in the light of an assessment of imperative reasons of overriding public interest (IROPI), it is deemed that the project or plan should proceed.

In complying with the obligations set out in Articles 6(3) and following the guidelines described above, this screening statement has been structured as a stage by stage approach as follows:

- Description of the proposed project;
- Identification of the Natura 2000 sites close to the proposed development;
- Identification and description of any individual and cumulative impacts on the Natura 2000 sites likely to result from the project;
- Assessment of the significance of the impacts identified above on-site integrity. Exclusion of sites where it can be objectively concluded that there will be no significant effects;
- Description of proven mitigation measures.

2.2 Statement of Competency

Noreen McLoughlin - This NIS was carried out by Noreen McLoughlin, BA, MSc, MCIEEM. Noreen has an honours degree in Zoology and an MSc in Freshwater Ecology from Trinity College, Dublin, and she has been a full member of the Chartered Institute of Ecology and Environmental Management for over 15 years. Noreen has over 17 years’ experience as a professional ecologist in Ireland.

Fergal Maguire - This NIS was reviewed by Fergal Maguire. Fergal is the General Manager at AVRIO Environmental Management. He holds an NDA and BSc (Hons) in Environmental Science from the Institute of Technology, Sligo and is currently undertaking an MSc in Wildlife Biology & Conservation at Edinburgh Napier University. Fergal is a member of the Institute of Environmental Management & Assessment (IEMA). He has over 8 years experience within the environmental industry. He has

experience contributing to a number of Environmental Impact Assessments, environmental licence and surrender applications, including Industrial Emissions Licences (IEL), Integrated Pollution Control Licences (IPC) and Waste Licences for submission to the Irish Environmental Protection Agency (EPA), Northern Ireland Environment Agency (NIEA), Scottish Environment Protection Agency (SEPA), United Kingdom Environment Agency (EA) and a number of Local Authorities throughout the UK and Ireland. Fergal has extensive experience in the sustainable development and management of a number of IED licenced facilities throughout Ireland, the UK and greater Europe, as well as general consultancy within the waste management, environmental compliance and ecological sectors. Fergal has experience in Ecological Impact Assessments (EclA), Habitat Regulation Assessments (HRA) and production of site-specific mitigation proposals for a range of developments throughout Northern Ireland and the Republic of Ireland.

2.3 Desk Studies & Consultation

Information on the site and the area of the proposed development was studied prior to the completion of this statement. The following data sources were accessed in order to complete a thorough examination of potential impacts:

- National Parks and Wildlife Service - aerial photographs and maps of designated sites, information on habitats and species within these sites and information on protected plant or animal species; conservation objectives, site synopses and standard data forms for relevant designated sites.
- Environmental Protection Agency (EPA)- Information pertaining to water quality.
- National Biodiversity Data Centre (NBDC) – Information pertaining to protected plant and animal species within the study area.
- CST Group Consulting Engineers – Information regarding the proposed development.
- Sligo County Council – Information on planning history in the area.

2.4 Assessment Methodology

The proposed development was assessed to identify its potential ecological impacts, and from this, the Zone of Influence (Zol) of the proposed development was defined. Based on the potential impacts and their Zol, the Natura 2000 sites potentially at risk from direct, indirect or in-combination impacts were identified. The assessment considered all potential impact sources and pathways connecting the proposed development to Natura 2000 sites, in view of the conservation objectives supporting the favourable conservation condition of the site's Qualifying Interests (QIs) or Special Conservation Interests (SCIs).

The conservation objectives relating to each Natura 2000 site and its QIs/SCIs are cited generally for SACs as “to maintain or restore the favourable conservation condition of the Annex I habitat(s) and/or Annex II species for which the SAC has been selected”, and for SPAs “to maintain or restore the favourable conservation condition of the bird species listed as Special Conservation Interests for this SPA”.

As defined in the Habitat's Directive, the favourable conservation status of a habitat is achieved when:

- Its natural range and area it covers within that range is stable or increasing;
- The specific structure and functions which are necessary for its long-term maintenance exist and are likely to continue to exist for the foreseeable future;

The favourable conservation status of a species is achieved when:

- The population dynamics data on the species concerned indicate that it is maintaining itself on a long-term basis as a viable component of its natural habitats;
- The natural range of the species is neither being reduced nor is likely to be reduced for the foreseeable future;
- There is, and will probably continue to be, a sufficiently large habitat to maintain its populations on a long-term basis.

Where site-specific conservation objectives (SSCOs) have been prepared for a European site, these include a series of specific attributes and targets against which effects on conservation condition, or integrity, can be measured. Where potential significant effects are identified, then these SSCO's should be considered in detail.

3. Screening

3.1 Development Description

In June 2021, Carty Contractors Ltd applied to Sligo County Council for planning permission for a residential development on a site in Knockbeg West, Collooney, Co. Sligo. Planning permission is being sought here for the following:

“The completion of an unfinished housing estate (previously granted under PLO41502) including the construction of 59 no. new two-storey dwelling houses (18 no. 2-bedroom semi-detached houses, 4 no. 3 bedroom semi-detached houses, 11 no 3-bedroom detached houses, 15 no. 3 bedroom detached houses with integral internal garages, 11 no. 4-bedroom detached houses) together with connection to the existing sewer system, works to the site boundaries, completion of all associated site development works including lighting, along with hard and soft landscaping.”

An extract from the planning drawings is shown in Figure 3-1.

Wastewater Treatment

Wastewater from the proposed development will connect to the existing infrastructure of the public sewer for treatment in the Collooney Wastewater Treatment plant. This agglomeration is fully licensed by the EPA (D0093-01).

Surface Water Treatment

Surface water from the application site will be treated in accordance with SUDS protocols, and the greenfield run-off rate has been aligned with those in the UK SUDS guidance. The storm routing for the development is divided into two separate systems that join to a single network in the public road and down to the outfall at the river. Storm network 1 caters for the majority of the site and generally caters for the southern element of the lands. The 10 existing houses and the road fronting these houses have an unattenuated discharge, but the remainder of the lands are attenuated to greenfield run-off rates.

There are 2 separate attenuation tanks proposed for the development. No on-site flooding or overflow will result from the 1:30 year return period storm. The 1:100 year storm may flood the network, but no flooding of the houses will result. Any floodwater from the 1:100 year storm will flow overland, down the road and into the river. The analysis includes for a 20% increase in rainfall due to climate change.

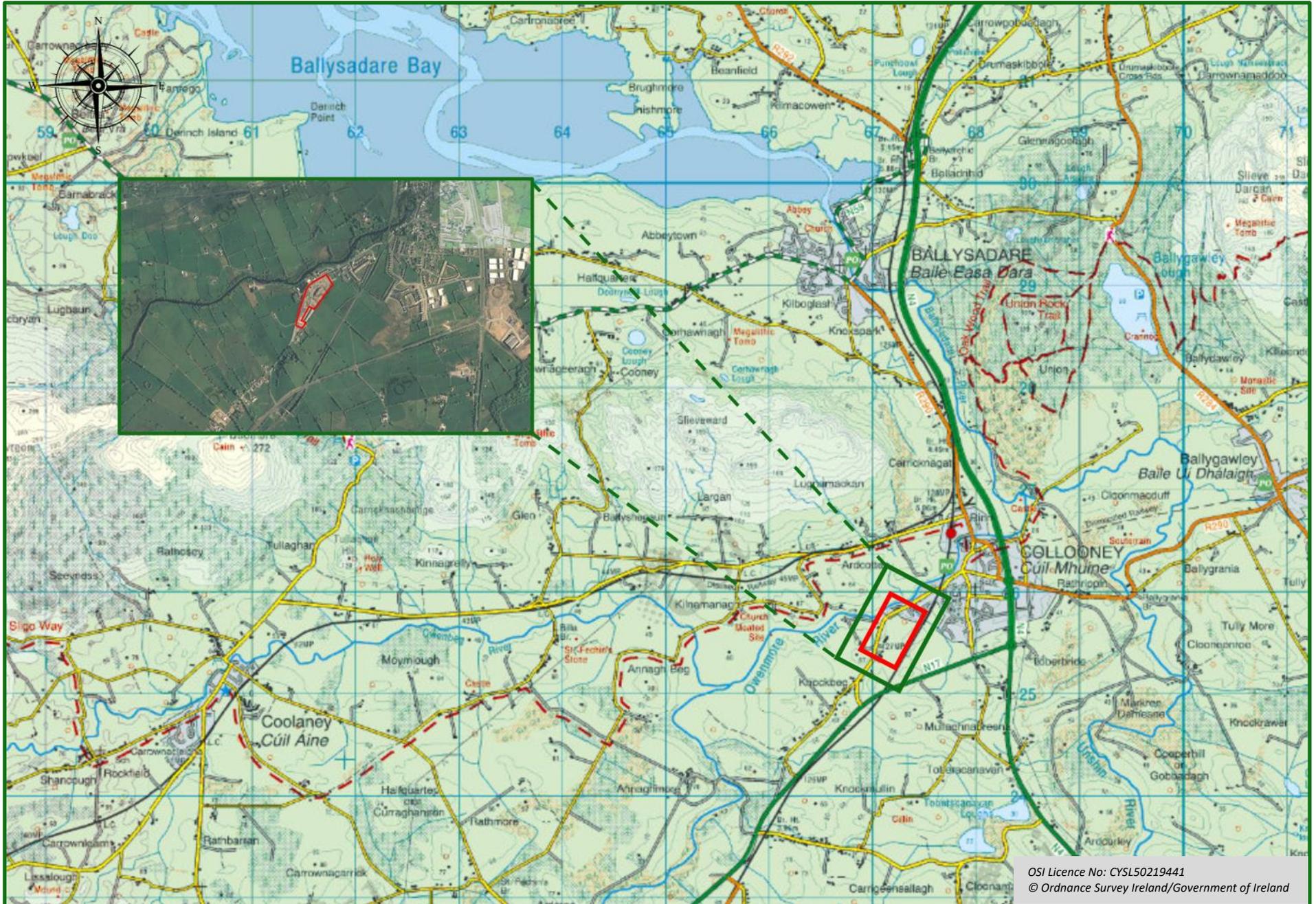
Excess surface water from the site will be attenuated on-site in a 220m² tank (Wavin Aquacell or similar). Water will discharge to the River Unshin at greenfield run-off rates via an existing pipeline that serves the existing residential estate. There is an existing hydrocarbon interceptor on this line prior to its outfall to the river.

3.2 Site Location & Surrounding Environment

The application site is 3.75 hectares, and it is located in the outskirts of Collooney town, approximately 736m south-west of the town centre. The site will be accessed via the existing entrance into the Ivy Grove residential estate, of which ten houses are constructed. This entrance to this is located off a local, third class road. The application site is 402m north of the N17 corridor and 1km west of the N4.

The land-use surrounding the site is mixed. The sub-urban areas of Collooney lie to the north-east of the site, and the main habitats associated with these areas include buildings and artificial surfaces, along with amenity grasslands and gardens. Beyond these areas, agriculture is the dominant land-use, and improved agricultural grassland is the dominant habitat. Other habitats represented locally include unimproved neutral and poorly drained grasslands, hedgerows and treelines. The River Unshin lies approximately 53m north of the site. The main habitat associated with this feature is depositing lowland river whilst its riparian margins largely consist of riparian treelines and grasslands.

Site location map is detailed in Figures 3-2, whilst an aerial photograph of the site and its surrounding habitats is shown in Figure 3-3.



Figures 3-2: Site Location Map

Habitats & Notable Species

The site does not lie within or immediately adjacent to any site that has been designated for nature conservation purposes. The habitats within the application site are largely disturbed and developed on foot of construction ground works that were completed during the previous phase of development on site. The main habitats within the application site include spoil and bare ground, recolonising bare ground and dry meadow and grassy verge type habitats. Prior to the development of any works on the site, the entire area consisted of an agricultural field. The majority of the original field boundaries have been removed, although the original hedgerow along the south-eastern boundary remains.

Records from the National Biodiversity Data Centre revealed the presence of one protected mammal species from within the 1km square (G6725) of this proposed development. This species is the stoat *Mustela erminea subsp. Hibernica* and it is fully protected under the Irish Wildlife Acts. A custom polygon that was generated for the site revealed that these records do not pertain to the application site itself.

Water Features & Quality

The application site is located within the Sligo Bay and Drowse Hydrometric Area and Catchment and the Owenmore Sub-Catchment and Sub-Basin. There are no drains or streams within the application site itself. The closest watercourse to the site is the Owenmore River, and this is 53m north of the application site. The Owenmore River rises in the elevated lands of the Curlew Mountains. It flows north / north-west direction, eventually flowing through Collooney, whereupon it joins the Ballysadare River. The Ballysadare River then flows into Ballysadare Bay.

EPA has defined the ecological status of the Owenmore River as moderate at points upstream and downstream of Collooney. Further upstream of Collooney, this river achieves high status. There is an EPA water quality monitoring point on the Owenmore River across the road from the application site. In 2018, a Q value of 4 was achieved here, which is indicative of good status. Further downstream of Collooney, but upstream of its confluence with the Ballysadare River, a Q3-4 was achieved, which is indicative of moderate status.

The Ballysadare River varies from high status at points upstream of Collooney (a Q4-5 was achieved in 2020) to good status downstream of Collooney. Ballysadare Bay is of moderate ecological status. Under the requirements of the Water Framework Directive, it is required that at least good status is achieved in these waterbodies.



Figures 3-3: Aerial Photograph of the Site

Natura 2000 Sites Identified

In accordance with the guidelines issued by the Department of the Environment and Local Government, a list of Natura 2000 sites within 15km of the proposed development have been identified and described according to their site synopses, qualifying interests and conservation objectives. In addition, any other sites further than this, but potentially within its zone of interest, were also considered. The zone of impact may be determined by an assessment of the connectivity between the application site and the designated areas by virtue of hydrological connectivity, atmospheric emissions, flight paths, ecological corridors etc.

For significant effects to arise, there must be a potential impact facilitated by having a source, i.e., the proposed development and activities arising out of its construction or operation, a receptor, i.e., the European site and its qualifying interests and a subsequent pathway or connectivity between the source and receptor, e.g., a water course. The likelihood for significant effects on the European site will largely depend on the characteristics of the source (e.g., nature and scale of the construction works), the characteristics of the existing pathway and the characteristics of the receptor, e.g., the sensitivities of the Qualifying Interests (habitats or species) to changes in water quality.

There are fourteen Natura 2000 designated sites within 15km of the application site. These designated areas and their closest points to the application site are summarised in Table 1, and a map and an aerial photograph showing their locations relative to the application site are shown in Figures 3-4 and 3-5. A full description of all these sites can be read on the website of the National Parks and Wildlife Service (npws.ie).

Table 3-1: Designated Sites within 15km of the Proposed Development

European Site	Distance	Qualifying Interests	Potential for Impacts
Unshin River SAC 001898	52.7m north-west	<ul style="list-style-type: none"> - Otter (<i>Lutra lutra</i>) - Salmon (<i>Salmo salar</i>) - Water courses of plain to montane levels with the <i>Ranunculus fluitans</i> and <i>Callitriche-Batrachion</i> vegetation - Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> - Semi-natural dry grasslands and scrubland facies on calcareous substrates (<i>Festuco-Brometalia</i>) (* important orchid sites) - <i>Molinia</i> meadows on calcareous, peaty or clayey-silt-laden soils (<i>Molinion caeruleae</i>) 	Having regard to the proximity of this SAC to the application and considering that surface water from the application site is discharged into the Owenmore River, then potential significant effects upon this site cannot be ruled out.

<p>Union Wood SAC 000638</p>	<p>1.8km north-west</p>	<ul style="list-style-type: none"> - Old sessile oak woods with Ilex and Blechnum in the British Isles 	<p>No significant effects upon this SAC are anticipated given the separation distances involved and the fact that there is no direct hydrological connectivity. There will not be significant effects upon the QI of this site.</p>
<p>Ballysadare Bay SAC 000622</p>	<p>3.9km north / 6.3km downstream of discharge</p>	<ul style="list-style-type: none"> - Estuaries - Mudflats and sandflats not covered by seawater at low tide - Embryonic shifting dunes - Shifting dunes along the shoreline with <i>Ammophila arenaria</i> - Fixed coastal dunes with herbaceous vegetation - Humid dune slacks - <i>Vertigo angustior</i> (Narrow-mouthed Whorl Snail) - <i>Phoca vitulina</i> (Common Seal) 	<p>The surface water discharge point from the site is 6.3km upstream of this SAC. Having regard to the connectivity of the site to this SAC, potential significant effects upon this site arising from deteriorations in water quality will be considered further.</p>
<p>Ballysadare Bay SPA 004129</p>	<p>3.9km north</p>	<ul style="list-style-type: none"> - Light-bellied Brent Goose (<i>Branta bernicla hrota</i>) - Grey Plover (<i>Pluvialis squatarola</i>) - Dunlin (<i>Calidris alpina</i>) - Bar-tailed Godwit (<i>Limosa lapponica</i>) - Redshank (<i>Tringa totanus</i>) - Wetland and Waterbirds 	<p>The surface water discharge point from the site is 6.3km upstream of this SPA. Having regard to the connectivity of the site to this SAC, potential significant effects upon this site arising from deteriorations in water quality will be considered further.</p>
<p>Lough Gill SAC 001976</p>	<p>7.3km north-west</p>	<ul style="list-style-type: none"> - Natural eutrophic lakes with Magnopotamion or Hydrocharition - type vegetation - Old sessile oak woods with Ilex and Blechnum in the British Isles - Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> - <i>Austropotamobius pallipes</i> (White-clawed Crayfish) - <i>Petromyzon marinus</i> (Sea Lamprey) - <i>Lampetra planeri</i> (Brook Lamprey) - <i>Lampetra fluviatilis</i> (River Lamprey) - <i>Salmo salar</i> (Salmon) 	<p>This SAC is in a separate catchment to the application site. There is no hydrological connectivity, and therefore significant effects upon this site will not arise.</p>

		<ul style="list-style-type: none"> - Lutra lutra (Otter) 	
Templehouse And Cloonacleigha Loughs SAC 000636	7.8km south	<ul style="list-style-type: none"> - Hard oligo-mesotrophic waters with benthic vegetation of Chara spp. - Water courses of plain to montane levels with the Ranunculus fluitantis and Callitriche-Batrachion vegetation 	This SAC is upstream of the application site. Therefore, it is outside of its Zone of Influence and significant effects will not arise.
Cummeen Strand/Drumcliff Bay SAC 000627	10.7km north	<ul style="list-style-type: none"> - Estuaries - Mudflats and sandflats not covered by seawater at low tide - Embryonic shifting dunes - Shifting dunes along the shoreline with Ammophila arenaria - Fixed coastal dunes with herbaceous vegetation - Juniperus communis formations on heaths or calcareous grasslands - Petrifying springs with tufa formation (Cratoneurion) - Vertigo angustior (Narrow-mouthed Whorl Snail) - Petromyzon marinus (Sea Lamprey) - Lampetra fluviatilis (River Lamprey) - Phoca vitulina (Common Seal) 	This SAC is in a separate catchment to the application site. There is no hydrological connectivity and therefore significant effects upon this site will not arise.
Cummeen Strand SPA 004035	10.7km north	<ul style="list-style-type: none"> - Light-bellied Brent Goose (Branta bernicla hrota) - Oystercatcher (Haematopus ostralegus) - Redshank (Tringa totanus) - Wetland and Waterbirds 	This SPA is in a separate catchment to the application site. There is no hydrological connectivity and therefore significant effects upon this site will not arise.
Bricklieve Mountains & Keishcorran SAC 001656	12.7km south	<ul style="list-style-type: none"> - Turloughs - Semi-natural dry grasslands and scrubland facies on calcareous substrates (Festuco-Brometalia) - Lowland hay meadows (Alopecurus pratensis, Sanguisorba officinalis) - Calcareous and calc-shist screes of the montane to alpine levels (Thlaspietea rotundifolii) - Marsh Fritillary Euphydryas aurinia - White-clawed Crayfish Austropotamobius pallipes 	There is no hydrological or ecological connectivity between the application site and this SAC, therefore significant effects upon this site or its QIs will not arise

<p>Ox Mountains Bog SAC 002006</p>	<p>13km west</p>	<ul style="list-style-type: none"> - Oligotrophic waters containing very few minerals of sandy plains (<i>Littorelletalia uniflorae</i>) - Natural dystrophic lakes and ponds - Northern Atlantic wet heaths with <i>Erica tetralix</i> - Blanket bogs (* if active bog) - Depressions on peat substrates of the Rhynchosporion - <i>Vertigo geyeri</i> (Geyer's Whorl Snail) 	<p>There is no hydrological or ecological connectivity between the application site and this SAC, therefore significant effects upon this site or its QIs will not arise.</p>
<p>Lough Arrow SAC 001673</p>	<p>13.8km south-east</p>	<ul style="list-style-type: none"> - Hard oligo-mesotrophic waters with benthic vegetation of <i>Chara</i> spp. 	<p>This SAC is in a separate catchment to the application site. There is no hydrological connectivity and therefore significant effects upon this site will not arise.</p>
<p>Lough Arrow SPA 004050</p>	<p>13.8km south-east</p>	<ul style="list-style-type: none"> - Little grebe (<i>Tachybaptus ruficollis</i>) - Tufted duck <i>Aythya fuligula</i> - Wetlands & Waterbirds 	<p>This SAC is in a separate catchment to the application site. There is no hydrological connectivity and therefore significant effects upon this site will not arise.</p>
<p>River Moy SAC 002298</p>	<p>13.9km south-west</p>	<ul style="list-style-type: none"> - Active raised bogs - Degraded raised bogs still capable of natural regeneration - Depressions on peat substrates of the Rhynchosporion - Alkaline fens - Old sessile oak woods with <i>Ilex</i> and <i>Blechnum</i> in the British Isles - Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> (<i>Alno-Padion</i>, <i>Alnion incanae</i>, <i>Salicion albae</i>) - <i>Austropotamobius pallipes</i> (White-clawed Crayfish) - <i>Petromyzon marinus</i> (Sea Lamprey) - <i>Lampetra planeri</i> (Brook Lamprey) - <i>Salmo salar</i> (Salmon) - <i>Lutra lutra</i> (Otter) 	<p>This SAC is in a separate catchment to the application site. There is no hydrological connectivity and therefore significant effects upon this site will not arise.</p>

Knockalongy and Knockachree Cliffs SAC 001669	14.8km west	- Trichomanes speciosum (Killarney Fern)	There is no hydrological or ecological connectivity between the application site and this SAC, therefore significant effects upon this site or its QI will not arise.
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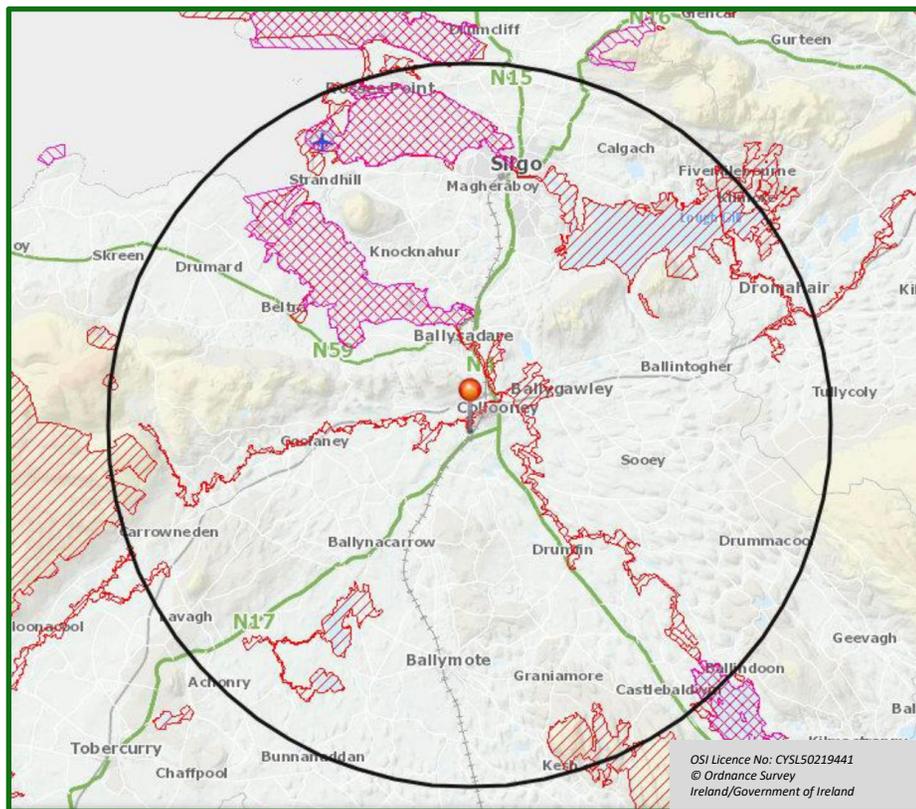


Figure 3-4: Application Site in Relation to Natura 2000 Sites within 15km



Figure 3-5: Application Site in Relation to River Unshin SAC

Note: Surface water pipe connectivity is detailed with a black dashed line

3.3 Identification of Potential Impacts

The application site is directly hydrologically connected to the Unshin River SAC, the Ballysadare Bay SAC and the Ballysadare Bay SPA, as surface water from the site will be directed to the Owenmore River during operation. The construction works on the site are also in close proximity to the Owenmore River / River Unshin SAC. Taking a conservative approach, in a worst-case scenario and in the absence of mitigation, an accidental pollution event of a sufficient magnitude during construction or operation, either alone or in combination with other pollution sources, could potentially affect the water quality in the Owenmore River to the extent that subsequently undermines the conservation objectives of the Unshin River SAC, the Ballysadare Bay SAC and the Ballysadare Bay SPA. A reduction in either surface or groundwater quality locally has the potential to affect the aquatic habitats and natural conditions that are required to maintain or achieve the specific attributes and targets of the qualifying interests and the conservation objectives that have been defined for these qualifying interests.

Therefore, following an evaluation of the relevant information, including the characteristics of the proposed development and the likelihood of significant effects on the sites and with regards to the tenets of the precautionary principal, it is considered in the opinion of this author that it is not possible to exclude, on the basis of objective information, that the proposed development, either individually or in combination with other plans or projects, will have a likely significant effect on the above European sites.

Only those features of the development that have the potential to affect the integrity and conservation objectives of the identified Natura sites and protected species have been considered. A number of factors were examined at this stage and dismissed or carried forward for Appropriate Assessment as relevant. The following areas were examined in relation to potential impacts from the proposed development on the Natura 2000 sites identified:

1. Deterioration of water quality in designated areas identified arising from pollution to surface or groundwater during construction and operation.
2. Deterioration in water quality in designated areas arising from pollution during the operation of the proposed development.
3. Cumulative impacts with other proposed/existing developments.

3.4 Assessment of Significance

This section considers the list of sites identified in Section 3.3. It can be considered that all sites, with the exception of the Unshin River SAC, the Ballysadare Bay SAC and the Ballysadare Bay SPA, can be excluded from the remainder of the Appropriate Assessment process. This is based on their distance from the proposed development and the fact that they are outside of the zone of influence of these sites, and that no direct or indirect significant effects are likely to arise. The remaining concerns will therefore focus upon the protected habitats and species of the Unshin River SAC, the Ballysadare Bay SAC and the Ballysadare Bay SPA.

3.5 Screening Conclusions

The proposed development is not directly connected with or necessary to the nature conservation management of the Unshin River SAC, the Ballysadare Bay SAC and the Ballysadare Bay SPA. Therefore, following consideration of the location of these Natura 2000 sites in relation to the proposed development at Knockbeg West and the potential impacts that may occur, this project must proceed to the next stage of Appropriate Assessment, namely the Natura Impact Assessment.

4. Stage II – Appropriate Assessment

4.1 Introduction

The main objective of this stage (Stage 2, Natura Impact Statement) in the Appropriate Assessment process is to determine whether the proposed development at Knockbeg West (either alone or in combination with other plans, programmes and projects) will result in significant adverse impacts to the integrity of the Unshin River SAC, the Ballysadare Bay SAC and the Ballysadare Bay SPA with respect to these site's structures, species, functions and/or conservation objectives. This stage also outlines the mitigation measures that should be taken in order to avoid any negative impacts of this application, should it receive consent.

In this section, the Natura 2000s site identified in the previous section will be described in greater detail in terms of their site characteristics and conservation objectives.

Site Specific Conservation Objectives

For the Natura 2000 sites that were screened in, if Site Specific Conservation Objectives were available, these were reviewed in light of the proposed development and the potential impacts that might occur. These Site Specific Conservation Objectives (SSCOs) aim to define the favourable conservation condition for the particular habitats or species at that site. They outline certain attributes (e.g., distribution, population structure, water quality) for different species and habitats with targets, which define favourable conditions for a habitat or species at a particular site. The maintenance of habitats and species within the Natura 2000 sites at favourable conservation condition will contribute to the overall maintenance of favourable conservation status of those habitats and species at national level. Where available, these SSCOs can be downloaded on the NPWS website. Any potential threats to the attributes and targets as defined in these SSCOs were assessed and, where necessary, mitigated for. Where SSCOS were not available, then the SSCOs of other Natura 2000 sites with comparable QIs were referred to.

For each Qualifying Interest of the SAC, the specific conservation objective is either to maintain or restore the favourable conservation condition of that interest by defining a list of attributes and targets which are indicative of the conservation status of that interest. For habitats, the main attributes include habitat area; habitat and community distribution; vegetation structure/composition and physical structure. The main target is to ensure that the habitats are stable or increasing in area and that the other attributes are maintained or restored. For the Annex II species of the SAC, the main attributes are population trend and distribution, whilst the targets aim to ensure that the long term population trends of the species are stable or increasing and that there is no significant decrease in the numbers or range of areas used by the species, other than that occurring from natural patterns of variation.

4.2 Natura 2000 Sites Identified

River Unshin SAC 001898

NPWS Site Synopsis

The Unshin River runs from Lough Arrow north to Ballysadare Bay, Co. Sligo. The river is largely undrained and unaltered along much of its course. The marginal vegetation associated with the river is also included in the site, along with other semi-natural habitats adjacent to the river (included in order to enhance its protection). Many of these habitat types are interesting and of conservation value in their own right. Other watercourses included within the site are the Owenboy/Owenbeg and a number of smaller tributaries. The Unshin River flows across a number of geological boundaries between sandstone, shales and limestone. This results in unusual physico-chemical qualities, which in turn are reflected in the rich and varied plant and animal populations.

The Unshin River supports an excellent example of floating river vegetation. The diversity of aquatic macrophytes is exceptional, and to a certain extent the unusual combinations and richness of species can be accounted for by the good quality water being discharged from Lough Arrow upstream. The lake also imparts a stabilising influence on the flow regime and provides a source of lacustrine species – for example, Long-stalked Pondweed (*Potamogeton praelongus*). Plant species present which indicates base-rich conditions include Lesser Water-parsnip (*Berula erecta*), Blunt-fruited Water-starwort (*Callitriche obtusangula*), Fan-leaved Water-crowfoot (*Ranunculus circinatus*) and the internationally rare River Water-dropwort (*Oenanthe fluviatilis*). Species such as Lesser Marshwort (*Apium inundatum*), normally associated with more acidic peat pools, also occur. Fen and floating mire communities are represented by Bogbean (*Menyanthes trifoliata*), Cowbane (*Cicuta virosa*), Yellow Loosestrife (*Lysimachia vulgaris*) and Water Avens (*Geum rivale*). A rare and unusual alga, *Nostoc parmelioides*, is also present.

There are a number of areas of woodland, many of which flood, included within the site. These wet alluvial woodlands are found on water-logged soils, and species such as Alder (*Alnus glutinosa*), Ash (*Fraxinus excelsior*), willows (*Salix* spp.), Pedunculate Oak (*Quercus robur*) and birch (*Betula* spp.) are common. Occasionally, Lime (*Tilia* sp.) and Horse-chestnut (*Aesculus hippocastanum*) are found also. The ground flora is diverse in places, and species such as Meadowsweet (*Filipendula ulmaria*), Wild Angelica (*Angelica sylvestris*), Lesser Celandine (*Ranunculus ficaria*), Wood Anemone (*Anemone nemorosa*), Yellow Iris (*Iris pseudacorus*), Bracken (*Pteridium aquilinum*), Reed Canary-grass (*Phalaris arundinacea*), Soft Rush (*Juncus effusus*), Common Valerian (*Valeriana officinalis*), Bramble (*Rubus fruticosus* agg.), Enchanter's-nightshade (*Circaea lutetiana*), Purple Loosestrife (*Lythrum salicaria*), Golden Saxifrage (*Chrysosplenium oppositifolium*), Greater Tussock-sedge (*Carex paniculata*), Remote Sedge (*Carex remota*), Bottle Sedge (*C. rostrata*), Common Nettle (*Urtica dioica*), Hart's-tongue (*Phyllitis scolopendrium*), Broad Buckler-fern (*Dryopteris dilatata*) and Lady-fern (*Athyrium filix-femina*) are all found. A number of non-native shrub species, some of which are invasive, are found: Snowberry

(*Symphoricarpos albus*), *Rhododendron* (*Rhododendron ponticum*) and Cherry Laurel (*Prunus laurocerasus*). The non-native herbs Japanese Knotweed (*Reynoutria japonica*) and Giant Hogweed (*Heracleum mantegazzianum*) have also been recorded.

Areas of grassland, ascribable to the E.U. Habitats Directive Annex I types: Orchid-rich Calcareous Grassland and Molinia Meadows, have been reported at Cloonmacduff, according to the Irish Semi-natural Grasslands Survey, 2010. There are also extensive wetlands within this site, and one area contains the Red Data Book plant Swamp Meadow-grass (*Poa palustris*).

The Unshin and its tributaries form a very important system for Atlantic Salmon, a species that is listed on Annex II of the E.U. Habitats Directive. The Owenboy/Owenbeg river is the principle spawning and nursery tributary for the system’s salmon fishery. The Unshin and its tributaries are the most important salmon producing river in Co. Sligo. The system also supports a good population of Trout.

The Annex II species Otter has been recorded in and near this site. Two notable bird species which occur along the river are Whooper Swan, which feeds in the wet grasslands that flank the river, and Kingfisher. Both are listed on Annex I of the E.U. Birds Directive. The trophic status of the river increases downstream, indicating that some enrichment is taking place. However, the quality of the Unshin River and particularly its aquatic macrophyte communities make it rare in both an Irish and European context, and it is considered one of the most pristine rivers in the country.

Qualifying Interests of this SAC

The Qualifying Interests (QIs) of the River Unshin SAC and the potential effects that may occur on these QIs are assessed below in Table 2. The NPWS has not yet published Site-Specific Conservation Objectives (SSCOs) for the River Unshin SAC. However, in cases like this, then the SSCO of Natura 2000 sites with the same qualifying interests as the River Unshin SAC can be referred to and considered when assessing any potential impacts upon habitats and species. The most recent Article 17 Reports on the status of protected habitats and species in Ireland were also consulted. (NPWS, 2019).

Table 4-1: QIs of the River Unshin SAC and Potential Impacts that may Arise.

Qualifying Interest	Ecology	Potential Impacts	Mitigation Required
Otter (<i>Lutra lutra</i>)	The presence of this species is positively correlated with good water quality, and deterioration of same will lead to impacts upon this species. Otters have two basic requirements – aquatic prey and safe refuges, where they can rest. In freshwater areas, the diet of the otter consists of a variety of fish from sticklebacks to salmon and eels, whilst crayfish and frogs availability can also be important. Impacts that reduce the or quality of or cause	Yes - Potential impacts and subsequent effects upon this species could arise due to a decrease in water quality in the Owenmore River, which is within the River Unshin SAC. These could arise due to pollution of surface or groundwater during construction. Run-off from the site could be contaminated with	Yes

	<p>disturbance to their terrestrial or aquatic habitats are likely to affect otters. The main threats to otters in Ireland are thought to be: (1) habitat destruction, including river drainage and the clearance of bank-side vegetation; (2) pollution, particularly organic pollution resulting in fish kills; (3) disturbance of habitat due to recreational activities, and (4) accidental deaths (NPWS, 2009).</p> <p>Records for this species exist from the Unshin Catchment (NBDC, 2020) and from the Owenmore River near Collooney. In Ireland, the territory of female otters in mesotrophic rivers is approximately 7.5 +/- 1.5km in length (Ó Néill, L., 2008), whilst the territories of male otters in mesotrophic and oligotrophic rivers are approximately 13.2 +/- 5.3km in length, with a high degree of variability as territorial males respond quickly to social perturbation. Therefore, as records for the otter exist from within the zone of influence of the application site, mitigation measures will be included as part of this assessment to protect the overall status of the otter within this SAC.</p>	<p>silt, cement, hydrocarbons or other chemicals.</p> <p>Inadequate treatment of surface water run-off during operation could also lead to deteriorations in water quality during the operation of the site.</p>	
Salmon (<i>Salmo salar</i>)	<p>The River Unshin and its tributaries are an important habitat for the salmon. The requirements of salmon depend on their life stage, but clean, unpolluted water is a requirement throughout the life cycle. They are very sensitive to changes in water quality and increases in sedimentation (<25 mg/L annual average). The main pressures and threats to this species come from agricultural intensification, run-off from agriculture, forestry and household waste waters and poaching. The presence of the salmon in the Owenmore River/Ballysadare River must be assumed, and impacts upon this species must be mitigated against.</p>	<p>Yes - Potential impacts and subsequent effects upon this species could arise due to a decrease in water quality in the Owenmore River, which is within the River Unshin SAC. These could arise due to pollution of surface or groundwater during construction. Run-off from the site could be contaminated with silt, cement, hydrocarbons or other chemicals.</p> <p>Inadequate treatment of surface water run-off during operation could also lead to deteriorations in water quality during the operation of the site.</p>	Yes
Water courses of plain to montane levels with the <i>Ranunculus fluitantis</i> and	<p>This habitat is also commonly known as floating river vegetation. Its definition is wide, and <i>Ranunculus</i>, <i>Callitriche</i>, <i>Potamogeton</i> and <i>Myriophyllum</i> species are</p>	<p>Possible direct / indirect impacts on this habitat include the loss or decrease in the quality or area of this habitat due to</p>	Yes

Callitricho-Batrachion vegetation	often present. Pressures on this habitat include eutrophication, overgrazing and alien species. River connectivity with the floodplain is essential for the functioning of this habitat. Suitable conditions for this habitat along the Owenmore River are likely therefore impacts upon this habitat arising from the proposed development are possible, and in keeping with the precautionary principle, mitigation measures will be required.	pollution or a decrease in water quality arising from run-off from the construction and operation of the proposed development. Run-off may contain cement, hydrocarbons and silt, which could all lead to negative impacts upon this qualifying feature.	
Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i>	This Annex I Priority habitat is likely to occur at many locations within the River Unshin SAC.. Some of the main threats to this habitat include under-grazing and invasive species. Areas of alluvial forests occur along the Owenmore River upstream of Collooney.	This habitat can be sensitive to enrichment or pollution of groundwater. Enrichment could lead to changes in the ground flora of this habitat. Therefore, potential effects upon this QI cannot be ruled out.	Yes
Semi-natural dry grasslands and scrubland facies on calcareous substrates (<i>Festuco-Brometalia</i>) (* important orchid sites)	This is a terrestrial habitat which does not occur within the Zone of Influence of the application site.	Significant effects upon this habitat QI will not arise.	No
<i>Molinia</i> meadows on calcareous, peaty or clayey-silt-laden soils (<i>Molinion caeruleae</i>)	This is a terrestrial habitat which does not occur within the Zone of Influence of the application site	Significant effects upon this habitat QI will not arise.	No

Ballysadare Bay SAC 000622

NPWS Site Synopsis

Ballysadare Bay extends for about 10 km westwards from the town of Ballysadare, Co. Sligo, and is the most southerly of three inlets of the larger Sligo Bay. The estuarine channel of the Ballysadare River winds its way through the bay, finally reaching the open sea near the spit at Strandhill dunes. The bay is underlain by sedimentary rocks of limestones, sandstones and shales, which are exposed as low cliffs and small sections of bedrock shore at several locations. Knocknarea Mountain overlooks the site.

Ballysadare Bay contains extensive intertidal sand and mudflats, approximately 1,500 ha in extent overall. The mud provides an abundance of food for wildfowl, in the form of colonising plants such as Eelgrass (*Zostera marina*) and Tasselweed (*Ruppia maritima*), as well as numerous species of invertebrates on which both wildfowl and waders feed. Well-developed salt marshes occur at several locations around the bay. Typical species of these areas are Sea Rush (*Juncus maritimus*), Saltmarsh Rush (*Juncus gerardi*), Creeping Bent (*Agrostis stolonifera*) and Parsley Water-dropwort (*Oenanthe lachenalii*). In hollows and ditches, Sea Arrowgrass (*Triglochin maritima*), Sea Club-rush (*Scirpus maritimus*), Sea Milkwort (*Glaux maritima*), Thrift (*Armeria maritima*), Sea Plantain (*Plantago maritima*), Sea Aster (*Aster tripolium*) and Red Fescue (*Festuca rubra*) occur. Particularly interesting species found on the salt marshes are Flowering Rush (*Butomus umbellatus*), Slender Spike-rush (*Eleocharis uniglumis*) and Hard Grass (*Parapholis strigosa*).

There is a large sand dune system at Strandhill, which has been relatively undisturbed by grazers. The dune system is highly dynamic, with the tip of the peninsula actively growing and displaying a good, though limited, example of embryonic shifting dunes. The characteristic species found in this habitat type include Sand Couch (*Elymus farctus*), Spear-leaved Orache (*Atriplex prostrata*) and Sea Rocket (*Cakile maritima*). Shifting marram dunes are fairly extensive in the area also, occurring along the entire seaward side of the spit, and they are especially active towards the tip. While Marram (*Ammophila Arenaria*) is the dominant species, Colt's-foot (*Tussilago farfara*), Red Goosefoot (*Chenopodium rubrum*) and Cat's-ear (*Hypochoeris radicata*) can also be found. The seaward dunes reach considerable heights (up to 20 m). They are very steep on the seaward edge, but to the east of this, there is an undulating expanse of dune hills.

The largest proportion of the dune system is made up of fixed dunes, a priority habitat listed on Annex I of the E.U. Habitats Directive. Once one moves landward, in from the Marram dunes, there is a low-growing, closed sward which is particularly species-rich, with Field Wood-rush (*Luzula campestris*), Kidney Vetch (*Anthyllis vulneraria*), Bee Orchid (*Ophrys apifera*), Oxeye Daisy (*Leucanthemum vulgare*), Common Centaury (*Centaurea erythraea*), Wild Thyme (*Thymus praecox*), Harebell (*Campanula rotundifolia*), Burnet Rose (*Rosa pimpinellifolia*), Carlina Thistle (*Carlina vulgaris*) and Fairy Flax (*Linum catharticum*). The fixed dune areas are also rich in bryophytes and lichens. Moss species include *Tortula ruraliformis*, *Homalothecium lutescens*, *Ditrichum flexicaule* and *Hypnum cupressiforme*, while lichens (*Peltigera* spp. and *Cladonia* spp.) are also present. Some humid dune slacks occur amongst the fixed dunes. Characteristic species include Creeping Willow (*Salix repens*), Carnation Sedge (*Carex panicea*), Jointed Rush (*Juncus articulatus*) and the relatively uncommon Marsh Helleborine (*Epipactis palustris*).

A range of habitats fringe the bay, adding diversity to the site as a whole. Some of these areas have particular features of interest, e.g. the old oyster farm at Tanrego is important for waterfowl, while the uncommon plant species Ivy Broomrape (*Orobanche hederaceae*) occurs in scrubland adjacent to the bay.

Two animals listed on Annex II of the E.U. Habitats Directive occur within the site: The Bay supports a colony of Common Seal (maximum count of 257 in the all-Ireland survey of 2003), and the rare snail, *Vertigo angustior*, occurs in dune slacks and hollows in the dunes at Strandhill.

Ballysadare Bay is important for a range of waterfowl species in autumn and winter and is part of the larger Sligo Bay complex. Brent Goose occur in internationally important numbers, while a further seven species have populations of national importance. These are as follows, with numbers referring to the average peaks over winters 1994/95 - 1997/98: Brent Goose (259), Red-breasted Merganser (48), Oystercatcher (796), Grey Plover (231), Dunlin (1129), Bar-tailed Godwit (431), Redshank (481) and Greenshank (24). The presence of Bar-tailed Godwit, and also smaller numbers of Golden Plover (66), is of particular note as these species are listed on Annex I of the E.U. Birds Directive.

The bay is little-used for fishing or boating, but marsh shooting is common in the upper reaches. Aquaculture is little-developed in this bay compared to nearby Sligo and Drumcliff Bays. Dune systems are sensitive to developments which alter their structure. Grazing is also a critical factor; the correct level of grazing maintains an open, species-rich sward, but the presence of too many grazers causes damage to the vegetation and may exacerbate dune erosion. Agricultural improvement, and particularly the application of fertilisers, threatens dune vegetation, leading to the eventual loss of species diversity.

Ballysadare Bay is of high ecological value for its range of good quality coastal habitats. Actively developing dune systems are rare on the west coast and the sand dune system at Strandhill is of particular interest as a large and intact example of a habitat type which is under general threat from development. The rarity of intact dune systems is recognised in the listing of fixed dunes as a priority habitat on Annex I of the E.U. Habitats Directive. The salt marshes at Ballysadare Bay are relatively good examples for the west coast, and that at Abbeytown is unusual as it is forming on quarry waste. The presence of two Annex II species within the site adds further importance. Furthermore, the bay supports nationally important numbers of waterfowl.

Qualifying Interests and SSCOs of this SAC

In 2013, the NPWS published Site-Specific Conservation Objectives (SSCOs) for this SAC. These are outlined below in are described below in Tables 3 - 10. Each individual QI has been considered in terms of the attributes, measures and targets that have been set out in the SSCOs that are needed to either restore or maintain the favourable conservation condition of that interest in the SAC. Potential impacts upon these targets were then assessed.

Estuaries 1130

The SSCO for this habitat is to maintain its favourable conservation condition which is defined by the following list of attributes and targets:

Table 4-2: SSCOs for Estuaries

Attribute	Measure	Target	Potential Impact Upon Target
Habitat Area	Hectares	The permanent habitat area is stable or increasing, subject to natural processes.	No
Community Extent	Hectares	Maintain the extent of the Zostera-dominated community, subject to natural processes.	No
Community Structure: Zostera Density	Shoots / m ²	Conserve the high quality of the Zostera-dominated community, subject to natural processes	No
Community Distribution	Hectares	Conserve the following community types in a natural condition: Intertidal sand with <i>Angulus tenuis</i> community complex; Muddy sand to sand with <i>Hediste diversicolor</i> , <i>Corophium volutator</i> and <i>Peringia ulvae</i> community complex; Fine sand with polychaetes community complex; Sand with bivalves, nematodes and crustaceans community complex; Intertidal reef community complex; Subtidal reef community complex.	No

Mudflats and sandflats not covered by seawater at low tide

The SSCO for this habitat is to maintain its favourable conservation condition, which is defined by the following list of attributes and targets:

Table 4-3: SSCOs for Mudflats and Sandflats not Covered by Seawater at Low Tide

Attribute	Measure	Target	Potential Impacts Upon Targets
Habitat Area	Hectares	The permanent habitat area is stable or increasing, subject to natural processes.	No
Community Extent	Hectares	Maintain the extent of the Zostera-dominated community, subject to natural processes.	No
Community Structure: Zostera Density	Shoots / m ²	Conserve the high quality of the Zostera-dominated community, subject to natural processes.	No

Community Distribution	Hectares	Conserve the following community types in a natural condition: Intertidal sand with <i>Angulus tenuis</i> community complex; Muddy sand to sand with <i>Hediste diversicolor</i> , <i>Corophium volutator</i> and <i>Peringia ulvae</i> community complex.	No
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Embryonic shifting dunes

The SSCO for this habitat is to maintain its favourable conservation condition, which is defined by the following list of attributes and targets:

Table 4-4: SSCOs for Embryonic Shifting Dunes

Attribute	Measure	Target	Potential Impacts Upon Targets
Habitat Area	Hectares	Area stable or increasing, subject to natural processes, including erosion and succession.	No
Habitat Distribution	Occurrence	No decline or change in habitat distribution, subject to natural processes.	No
Physical Structure: Functionality and Sediment Supply	Presence / Absence of Physical Barriers	Maintain the Natural Circulation of Sediment and Organic Matter without any physical obstructions.	No
Vegetation Structure: Zonation	Occurrence	Maintain the range of coastal habitats, including transitional zones, subject to natural processes including erosion and succession	No
Vegetation Composition: Plant health of foredune grasses	% Cover	More than 95% of sand couch (<i>Elytrigia juncea</i>) and/or lyme grass <i>Leymus arenarius</i> should be healthy (i.e., green plant parts above ground and flowering heads present)	No
Vegetation Composition: Typical Species and Sub-Species Communities	Percentage Cover at a Representative Sample of Monitoring Stops	Maintain the presence of species-poor communities with typical species: sand couch (<i>Elytrigia juncea</i>) and/or lyme-grass (<i>Leymus arenarius</i>).	No
Vegetation Composition: Negative Indicator Species	Percentage Cover	Negative indicator species (including non-native species) to represent less than 5% cover.	No

Shifting dunes along the shoreline with *Ammophila Arenaria*

The SSCO for this habitat is to *restore* its favourable conservation condition, which is defined by the following list of attributes and targets:

Table 4-5: SSCOs for Shifting Dunes along the shoreline with *Ammophila Arenaria*

Attribute	Measure	Target	Potential Impacts Upon Targets
Habitat Area	Hectares	Area stable or increasing, subject to natural processes, including erosion and succession.	No
Habitat Distribution	Occurrence	No decline or change in habitat distribution, subject to natural processes.	No
Physical Structure: Functionality and Sediment Supply	Presence / Absence of Physical Barriers	Maintain the Natural Circulation of Sediment and Organic Matter without any physical obstructions	No
Vegetation Structure: Zonation	Occurrence	Maintain the range of coastal habitats, including transitional zones, subject to natural processes including erosion and succession	No
Vegetation Composition: Plant health of dune grasses	Percentage Cover	95% of marram grass (<i>Ammophila arenaria</i>) and/or lyme-grass (<i>Leymus arenarius</i>) should be healthy (i.e. green plant parts above ground and flowering heads present).	No
Vegetation Composition: Typical Species and Sub-Species Communities	Percentage Cover at a Representative Sample of Monitoring Stops	Maintain the presence of species-poor communities dominated by marram grass (<i>Ammophila arenaria</i>) and/or lyme-grass (<i>Leymus arenarius</i>).	No
Vegetation Composition: Negative Indicator Species	Percentage Cover	Negative indicator species (including non-natives) to represent less than 5% cover.	No

Fixed coastal dunes with herbaceous vegetation

The SSCO for this habitat is to *restore* its favourable conservation condition, which is defined by the following list of attributes and targets:

Table 4-6: SSCOs for Fixed Coastal Dunes with Herbaceous Vegetation

Attribute	Measure	Target	Potential Impacts Upon Targets
Habitat Area	Hectares	Area stable or increasing, subject to natural processes, including erosion and succession.	No
Habitat Distribution	Occurrence	No decline or change in habitat distribution, subject to natural processes.	No
Physical Structure: Functionality and Sediment Supply	Presence / Absence of Physical Barriers	Maintain the Natural Circulation of Sediment and Organic Matter without and physical obstructions.	No
Vegetation Structure: Zonation	Occurrence	Maintain the range of coastal habitats, including transitional zones, subject to natural processes including erosion and succession.	No
Vegetation Structure: Bare Ground	Percentage cover	Bare ground should not exceed 10% of fixed dune habitat, subject to natural processes.	No
Vegetation Structure: Sward Height	Centimetres	Maintain structural variation within sward.	No
Vegetation Composition: Typical Species and Sub-Species Communities	Percentage Cover at a Representative Sample of Monitoring Stops	Maintain range of subcommunities with typical species listed in Delaney et al. (2013).	No
Vegetation Composition: Negative Indicator Species- including <i>Hippophae rhamnoides</i>	Percentage Cover	Negative indicator species (including non-natives) to represent less than 5% cover.	No
Vegetation Composition: Scrub and trees	Percentage Cover	No more than 5% cover or under control.	No

Humid Dune Slacks

The SSCO for this habitat is to restore its favourable conservation condition, which is defined by the following list of attributes and targets:

Table 4-7: SSCOs for Humid Dune Slacks

Attribute	Measure	Target	Potential Impacts Upon Targets
Habitat Area	Hectares	Area stable or increasing, subject to natural processes, including erosion and succession.	No
Habitat Distribution	Occurrence	No decline or change in habitat distribution, subject to natural processes.	No
Physical Structure: Functionality and Sediment Supply	Presence / Absence of Physical Barriers	Maintain the Natural Circulation of Sediment and Organic Matter without and physical obstructions.	No
Physical Structure: hydrological and flooding regime	Water table levels, groundwater fluctuations	Maintain natural hydrological regime	No
Vegetation Structure: Zonation	Occurrence	Maintain the range of coastal habitats, including transitional zones, subject to natural processes including erosion and succession.	No
Vegetation Structure: Bare Ground	Percentage cover	Bare ground should not exceed 5% of dune slack habitat, with the exception of pioneer stacks which can have up to 20% bare ground.	No
Vegetation Structure: Sward Height	Centimetres	Maintain structural variation within sward.	No
Vegetation Composition: Typical Species and Sub-Species Communities	Percentage Cover at a Representative Sample of Monitoring Stops	Maintain range of subcommunities with typical species listed in Delaney et al. (2013)	No
Vegetation composition: cover of <i>Salix repens</i>	Percentage cover; centimetres	Maintain less than 40% cover of creeping willow (<i>Salix repens</i>)	
Vegetation Composition: Negative Indicator Species	Percentage Cover	Negative indicator species (including non-natives) to represent less than 5% cover	No

Vegetation Composition: Scrub and trees	Percentage Cover	No more than 5% cover or under control	No
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Vertigo angustior (Marsh Snail)

The SSCO for this habitat is to maintain its favourable conservation condition, which is defined by the following list of attributes and targets:

Table 4-8: SSCOs for Vertigo angustior

Attribute	Measure	Target	Potential Impacts Upon Targets
Distribution: Occupied Sites	Number	No decline. There is one known location for this species in this SAC (which overlaps two 1km squares).	No
Presence on transect	Occurrence	Adult or sub-adult snails are present in all three of the habitat zones on the transect (minimum four samples).	No
Presence	Occurrence	Adult or sub-adult snails are present in at least six other places at the site with a wide geographical spread (minimum of eight sites sampled).	No
Transect habitat quality	Metres	At least 50m of habitat along the transect is classed as optimal and the remainder as at least sub-optimal.	No
Transect optimal wetness	Metres	Soils, at time of sampling, are damp (optimal wetness) and covered with a layer of humid thatch for at least 50m along the transect.	No
Habitat extent	Hectares	At least 45ha of the site in at least optimal/sub-optimal condition. Optimal habitat is defined as fixed dune, species-rich grassland dominated by red fescue (<i>Festuca rubra</i>) and marram (<i>Ammophila arenaria</i>), with sparse oxeye daisy (<i>Leucanthemum vulgare</i>), dandelion (<i>Taraxacum</i> sp.), ribwort plantain (<i>Plantago lanceolata</i>) and other low growing herbs. Vegetation height 20-50cm. Habitat growing on damp, friable soil covered with a layer of humid, open structured thatch. Sub-optimal habitat is defined as above, but either	No

		vegetation height is less than 10cm or above 50cm, or the soil is dry and sandy, or the thatch is wetter with a denser structure.	
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Phoca vitulina (Harbour Seal)

The SSCO for this habitat is to maintain its favourable conservation condition, which is defined by the following list of attributes and targets:

Table 4-9: SSCOs for Harbour Seal

Attribute	Measure	Target	Potential Impacts Upon Targets
Access to Suitable Habitat	Number of Artificial Barriers	Species range within the site should not be restricted by artificial barriers to site use.	No
Breeding Behaviour	Breeding Sites	Conserve breeding sites in a natural condition	No
Moulting Behaviour	Mould Haul-Out Sites	Conserve moult haul-out sites in a natural condition	No
Resting Behaviour	Resting Haul-Out Sites	Conserve resting haul-out sites in a natural condition	No
Disturbance	Level of Impact	Human activities should occur at levels at do not adversely affect the harbour seal populations at this site.	No

Potential Impacts upon the QIs of Ballysadare Bay SAC

It is considered that potential significant effects upon the QIs of the Ballysadare Bay SAC will not arise. The site is over 6km upstream of this SAC. There will be no loss or fragmentation of the habitats within this SAC. There will be no changes to the area or distribution of the habitats within this SAC. There will be no direct or indirect disturbance to the two species listed as QIs of the SAC. Whilst water quality has not been listed as a target for either maintaining or achieving favourable conservation status, it is nonetheless important that water quality is maintained in this SAC and the Unshin River SAC, which flows into this SAC. Therefore, mitigation measures to protect water quality are recommended to protect water quality in this SAC.

Ballysadare Bay SPA 004129

NPWS Site Synopsis

Ballysadare Bay SPA support good populations of macro-invertebrates which are important food items for wintering waterfowl. Common species present include the polychaete worms *Hediste diversicolor*, *Arenicola marina*, *Lanice conchilega* and *Nephtys hombergii*, and the bivalves *Cerastoderma edule*, *Macoma balthica* and *Scrobicularia plana*. Also, present on the intertidal flats are the vascular plants Eelgrass (*Zostera marina*) and Beaked Tasselweed (*Ruppia maritima*), which provide food for herbivorous wildfowl. Well-developed salt marshes, which provide roosting sites for birds at high tide, occur at several locations around the bay. The sandy beaches around the Strandhill peninsula are used by roosting birds.

The site is a Special Protection Area (SPA) under the E.U. Birds Directive, of special conservation interest for the following species: Light-bellied Brent Goose, Grey Plover, Dunlin, Bar-tailed Godwit and Redshank. 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.

Ballysadare Bay is important for a range of waterfowl species in autumn and winter. The population of Light-bellied Brent Goose (188) is of international importance (all figures are mean peak counts for four winters in the period 1995/96 to 1999/2000). The populations of four other species are of national importance, i.e. Grey Plover (70), Dunlin (1,420), Bar-tailed Godwit (251) and Redshank (435). A range of other species occurs, including Whooper Swan (15), Shelduck (55), Wigeon (617), Teal (179), Mallard (304), Goldeneye (17), Red-breasted Merganser (26), Cormorant (43), Oystercatcher (518), Ringed Plover (96), Golden Plover (301), Lapwing (467), Curlew (508), Greenshank (22), Turnstone (40), Black-headed Gull (261) and Common Gull (203). Ballysadare Bay SPA is of high ornithological importance - it supports a Light-bellied Brent Goose population of international importance as well as nationally important populations of four other wintering waterfowl species. The presence of Bar-tailed Godwit, Golden Plover and Whooper Swan is of particular note as these species are listed on Annex I of the E.U. Birds Directive. The site forms an important component of the larger Sligo Bay complex.

Special Conservation Interests (SCI) and SSCOs of Ballysadare Bay SPA

In 2013, SSCOs were produced for this site (NPWS, 2013). The SCI species for the Ballysadare Bay SPA are described below in Table 4-10, along with their SSCO. The current site conservation condition for each bird for this SPA is also included (NPWS, 2013). The objectives are described in Table 4-1, 4-12 and 4-13.

Table 4-10: Special Conservation Interests of Ballysadare Bay SPA

Species SSCO Site Conservation Condition	SSCO	Site Conservation Condition
Light-bellied Brent Goose (<i>Branta bernicla hrota</i>)	Maintain	Favourable
Grey Plover (<i>Pluvialis squatarola</i>)	Maintain	Highly Unfavourable
Dunlin (<i>Calidris ariti</i>)	Maintain	Intermediate (Unfavourable)
Bar-tailed Godwit (<i>Limosa lapponica</i>)	Maintain	Intermediate (Unfavourable)
Redshank (<i>Tringa aritim</i>)	Maintain	Intermediate (Unfavourable)
Wetlands	Maintain	N/A

The objectives for all these bird species are the same, i.e.,

Table 4-11: Conservation Objectives for Ballysadare Bay SPA (Species)

Attribute	Measure	Target
Population trend	Percentage Change	Long term population trend stable or increasing
Distribution	Range, timing and intensity of use of areas	No significant decrease in the range, timing or intensity of use of areas by the QI, other than that occurring from natural patterns of variation

For wetlands, the conservation objectives are:

Table 4-12: Conservation Objectives for Ballysadare Bay SPA (Wetlands)

Attribute	Measure	Target
Habitat Area	Hectares	The permanent area occupied by the wetland habitat should be stable and not significantly less than the area of 2130 hectares, other than that occurring from natural patterns of variation

Potential Impacts upon this Bird Qis of the Ballysadare Bay SPA

The proposed development will not occur in an area used by the bird species listed above. The habitats within the application site are not suitable for these wading bird species. The proposed development will not lead to decreases in the population trend of any bird species. The proposed development will not lead to any decrease in the range, timing or intensity of use of any areas within the SPA by the QI bird species. The proposed development will not lead to the loss of any wetland habitat area, and the 2130 hectare target of wetland habitat within the SPA will be maintained.

However, it is important that water quality is maintained in this SPA. Therefore, mitigation measures to protect water quality are recommended to protect water quality in this site.

4.3 Summary of Potential Impacts

Introduction

The identification of potential impacts and the assessment of their significance typically requires the identification of the type and magnitude of the impacts. For example, will the impacts be short term or long term, direct, indirect or cumulative, and will they occur during construction or operation. This section will establish whether the impacts of the proposed development at Knockbeg West that were identified in the previous section, are likely to occur and whether or not they are significant. These potential impacts will be examined with respect to the conservation objectives of the Natura 2000 site identified.

In the screening section of this report, the following possible future impacts on the Unshin River SAC, the Ballysadare Bay SAC and the Ballysadare Bay SPA were listed. These concerns are again listed below, and they will be dealt with in more detail in this section.

1. Deterioration of water quality in designated areas identified arising from pollution to surface or groundwater during construction and operation.
2. Deterioration in water quality in designated areas arising from pollution during the operation of the proposed development.
3. Cumulative impacts with other proposed/existing developments.

Construction Impacts

Deterioration in Water Quality in Natura 2000 Sites During Site Preparation/Construction

Site preparation and the construction of the proposed development will involve the excavation of soil, the movement of extensive volumes of earth and the pouring of concrete for foundations and other hard surfaces. These works will take place on a site that is 52m from the River Unshin SAC. If appropriate mitigation measures are not taken during construction of the proposed development, then there is the possibility that both surface water quality and groundwater quality could be

impacted upon. Groundwater quality can impact upon surface water quality as these two resources mix at the hyporheic zone, which is the region just under a river or stream bed where there is a mixing of shallow ground water and surface water. The site is located in an area of moderate groundwater vulnerability.

Therefore, as there is a potential risk of direct and indirect impacts arising from the site preparation and construction of the proposed application, appropriate mitigation will be required to maintain the water quality within the Unshin River SAC, the Ballysadare Bay SAC and the Ballysadare Bay SPA.

Operational Impacts

Deterioration in Water Quality in the Natura 2000 sites Post Construction / Operation

Negative impacts upon local water quality arising from the operation of this proposed development have also been considered. During site operation, excess surface water shall be attenuated on site and discharged to the Owenmore River via existing infrastructure, including an existing hydrocarbon interceptor. It will be vital that this interreceptor has the capacity to deal with the potential extra volumes of water that will arise on foot of the proposed development. Any pollution of the Owenmore River with hydrocarbons or silt could give rise to significant and ongoing long-term effects upon the QIs of the River Unshin SAC.

Potential In-combination Effects

This section of the NIS examines whether any other plans or projects have the potential to act cumulatively or in-combination with the proposed development to adversely affect the integrity of the Natura 2000 sites identified, i.e., Unshin River SAC, the Ballysadare Bay SAC and the Ballysadare Bay SPA.

The proposed development site is situated within the Owenmore sub-catchment. Therefore, any national, regional or local land use plans, along with any existing or proposed projects, further upstream in the catchment, or in the same groundwater body, have the potential to affect water quality in the Owenmore catchment and therefore also have the potential to act in-combination with the proposed development to affect the above European sites.

Any plan or existing/proposed project that could potentially affect the Natura 2000 sites above in-combination with the proposed development must adhere to the overarching environmental protective policies and objectives of the relevant land use plan. These policies and objectives will ensure the protection of Natura 2000 sites and will include the requirement for any future project to undergo Screening for Appropriate Assessment and/or Appropriate Assessment.

Sligo County Development Plan

Planning policy at the local level is provided by the Sligo County Development Plan 2013–2019. This plan contains a number of objectives and policies relevant to ecology, biodiversity and nature conservation. It also sets out the requirement for proposed developments to be subjected to Appropriate Assessment.

Future Plans / Other Projects

The Sligo County Council planning map tool was used to identify any current or future or projects which may potentially impact on Natura 2000 sites when considered in combination with the proposed development. In the preceding five years, many planning applications have been granted planning permission in the Collooney area. Where necessary, these applications were screened for AA, or else full AA was deemed necessary and an NIS was submitted. The proposed development will have no significant effects upon any designated site when considered in combination with other developments that have been properly screened or where mitigation is required following AA.

Any future application in the area that has the potential to impact upon Lough Gill SAC will be subjected to Appropriate Assessment as required under Articles 6(3) of the Habitats Directive. This current development will have no cumulative impacts upon the SACs / SPAs identified when considered in combination with any other development that has been screened for no impacts themselves (Stage 1) or where potential impacts have been mitigated against (Stage 2 AA / NIS).

5. Mitigation Measures

In order to avoid any reductions in water quality in the area surrounding the proposed development, a number of mitigation measures must be implemented and followed. These measures will protect the water quality and overall integrity of the Owenmore River / River Unshin SAC and Ballysadare SAC / SPA. Measures have also been suggested that will help to protect the local biodiversity of the surrounding area and to ensure the protection of local wildlife. These are site specific measures, and their implementation will ensure the protection of Natura 2000 habitats and species, and the local non-designated ecological receptors. The primary parties responsible for the implementation of these measures include the applicants and the construction team (site manager, site workers). It is also recommended that these measures are incorporated into a Construction and Environmental Management Plan which should be submitted to the Local Authority prior to the commencement of site works.

Pre-Construction and Construction

- Site preparation and construction must be confined to the development site only and should adhere to all standard best practice measures and the measures outlined in this NIS. Work areas should be kept to the minimum area required to carry out the proposed works and the area should be clearly marked out in advance of the proposed works.
- All works associated with the development should be confined to the proposed development site. No disturbances to any area of the River Unshin SAC should occur during the construction or operation of the development.
- Prior to the commencement of developments on site, the site engineer and the contractors should be made aware of the ecological sensitivity of the site and its surrounding habitats. They must be made familiar with the mitigation measures outlined in this NIS, and if possible, a statement signed by them acknowledging these mitigation measures should be presented to the Local Authority along with the Notice of Commencement.
- Efficient construction practices and sequences should be employed on site, and this will minimise soil erosion and potential pollution of the Owenmore River with soil and sediment. Unnecessary clearance of vegetation should be avoided, and only areas necessary for building works should be cleared. Supplemental planting and careful management of these areas will increase the biodiversity value of the site in the future. The retention of these areas will also help retain storm water run-off from the site during construction and operation. Works within the site should be avoided during periods of heavy rainfall.

Pollution Control

- There should be no discharges of contaminated waters to ground or surface waters from these developments, either during the construction or operation of the development. The control and management of hydrocarbons on site will be vital to prevent deteriorations in surface and groundwater quality locally. The following measures must be employed on site:
 - All fuels, lubricants and hydraulic fluids should be kept in secure bunded areas remotely from any watercourse. The bunded area should accommodate 110% of the total capacity of the containers within it. Containers should be properly secured to prevent unauthorised access and misuse.
 - On-site refuelling must be carried out at designated refuelling stations within the site. Only designated trained and competent operatives should be authorised to refuel plant on site. Drip trays must be used when refuelling all machinery. Absorbent material and pads should be available in the event of any accidental spillages.
 - Alternatively, mobile double skinned fuel bowsers may be used. Fuel bowsers should be parked on a level area in the site when not in use. They should be bunded at 110%.
 - There must be minimal maintenance of construction vehicles or plant on site.
 - On-site diesel tanks should be double skinned to 110% of their capacity.
 - Containment stores should be used for refuelling of small plant such as consaws etc.
 - Fuel volumes stored on site should be minimised. Any fuel storage areas should be bunded appropriately for the fuel storage volume for the time period of the construction.
 - Machines used should be regularly inspected for leaks and fitness for purpose.
 - Any hazardous materials should be stored in secure bunded areas.
 - An effective spillage procedure should be put in place with all staff properly briefed.
 - Spill kits should be present in all plant machinery.
 - Oil booms and oil soakage pads should be kept on site to deal with any accidental spillage.
 - An emergency plan for the construction phase to deal with accidental spillages should be contained within an Environmental Management Plan.
 - Waste oils and hydraulic fluids should be collected in leak-proof containers and removed from site for disposal and recycling
- Best practice concrete / aggregate management measures should be employed on site. These should include:

- Best practice in bulk-liquid concrete management must be employed on site addressing pouring and handling, secure shuttering, adequate curing times etc.
- Stockpile areas for sands and gravel should be kept to a minimum size, well away from the drains and watercourses (minimum 50m).
- Where concrete shuttering is used, measures should be put in place to prevent against shutter failure and control storage, handling and disposal of shutter oils.
- Wash down water from concrete trucks will be appropriately controlled on-site. Such controls may include collection to allow sediment to settle out and reach neutral pH before clarified water is released to the local watercourse or allowed to percolate into the ground.
- Activities which result in the creation of cement dust should be controlled by dampening down the areas.
- Raw and uncured waste concrete should be disposed of by removal from the site or by burial on the site in a location and manner which will not impact upon local watercourses.
- Stockpile areas for sands and gravel should be kept to a minimum size, well away from any drain or watercourse.
- During construction, surface water on the site must be controlled and management to avoid any impacts upon local ground or surface water receptors. Construction water should not be discharged directly into any watercourse. Good construction practices such as wheel washers and dust suppression measures must be undertaken. There must be no discharges of silt laden surface water into the public sewer.
- Guidelines within The Construction Industry Research and Information Association (CIRIA) provides guidance on the control and management of water pollution from construction sites ('Control of Water Pollution from Construction Sites, guidance for consultants and contractors', CIRIA, 2001). Guidelines within this document must be followed.
- The techniques of SUDs (Sustainable urban Drainage Systems) should be applied to all hydrological engineering aspects of this proposed development.
- All waste associated with the development should be disposed of in an environmentally friendly manner. Registered contractors should only be used. This includes any excavated soil. There must be no placement of soil or waste within any area designated as an SAC or SPA.

Site Operation & Landscaping

- Surface water infrastructure must have the capacity to deal with the additional volumes of water that might arise on foot of the proposed development. The existing hydrocarbon interceptor must be fit for purpose and be able to adequately treat run-off from the site. It is recommended that monitoring of the effluent is carried out, and hydrocarbon testing of the discharge should be done pre and post construction

- It is also recommended that silt interceptors are used to ensure that minimal silt is discharged to the Ownemore River from surface water run-off. Effluent into the river must be tested for silt (suspended solids) pre and post construction.
- The mature hedgerow along the north-eastern boundary of the site should be retained as it provides suitable nesting and foraging habitats for birds and small mammals.
- During operation, only low intensity lighting should be used on the development. This will reduce the impact of any new lighting scheme on local bat populations. Lights should not be directed on known bat roosts or south towards the mature vegetation of the Owenmore River.
- Bare soil should be seeded as soon as possible with grass seed. This will minimise erosion into local drains and watercourses.
- The removal of vegetation with herbicides should be avoided.
- Any landscaping should involve the planting of native Irish species that are indigenous to the site. Suitable species would include birch, oak, willow and alder.
- Site verges and garden should be managed at a low intensity level to provide maximum habitat availability for pollinators.

6. Appropriate Assessment Conclusion

This current NIS has been undertaken to evaluate the potential impacts of the proposed development with regard to the effects upon the conservation objectives and qualifying interests (including the habitats and species) of the River Unshin SAC and the Ballysadare SAC /SPA. It is considered that following mitigation, that the proposed project does not have the potential to significantly affect the conservation objectives of these aforementioned Natura 2000 sites, and the integrity of these sites as a whole will not be adversely impacted.

The qualifying interests of the site and their potential to be impacted upon from the potential development were listed in Section 4.2. It is considered that these potential impacts can be successfully mitigated against. With implementation of the mitigation measures there will be no deterioration in water quality or impacts upon any designated habitat or any species dependent on these designated habitats. The attributes and targets which have been set out in order to maintain or restore the favourable conservation condition of these interests in the SAC will not be impacted upon.

In light of the above, it is considered that with the implementation of the mitigation measures, that the proposed works do not have the potential to significantly affect the conservation objectives or qualifying interests of the River Unshin SAC and the Ballysadare SAC /SPA. The integrity of the site will not be adversely affected.

Table 6-1 follows the integrity of the SAC / SPA checklist, which shows that the integrity of the site would not be affected by the proposed development.

Table 6-1: Integrity of Site Checklist (From NPWS, Information Checklist for AA, Box 6, EC (2002))

Conservation Objective: Does the project have the potential to:	Yes / No
Cause delays in progress towards achieving the conservation objectives of the site?	N
Interrupt progress towards achieving the conservation objectives of the site?	N
Disrupt those factors that help to maintain the favourable conditions of the site?	N
Interfere with the balance, distribution and density of key species that are the indicators of the favourable condition of the site?	N
Other Objectives: does the project have the potential to:	
Cause changes to the vital defining aspects (e.g. nutrient balance) that determine how the site functions as a habitat or ecosystem?	N

Change the dynamics of the relationships (between, for example, soil and water or plants and animals) that define the structure and/or function of the site?	N
Interfere with predicted or expected natural changes to the site (such as water dynamics or chemical composition)?	N
Reduce the area of key habitats?	N
Reduce the population of key species?	N
Change the balance between key species?	N
Reduce diversity of the site?	N
Result in disturbance that could affect population size or density or the balance between key species?	N
Result in fragmentation?	N
Result in loss or reduction of key features (e.g. tree cover, tidal exposure, annual flooding, etc.)	N

Appendix I – References & Further Reading

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