



**AVRIO**



Appropriate Assessment  
Screening & Natura Impact  
Statement

Caltragh Lane, Sligo, Co. Sligo

## Project Details

Project Reference:	AEMP-123 (AH—T3)
Date of Issue:	30 <sup>th</sup> June 2022
Client:	Caltragh Construction Ltd.
Company Address:	Dublin Road, Ballisodare, Co. Sligo
Site Address	Caltragh Lane, Sligo, Co. Sligo
Services Provided:	Preparation of an 'Article 6 (3) Appropriate Assessment Screening & Natura Impact Statement

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## AVRIO Quality Information

Prepared by:	Amy Gallagher (Ecological Consultant) AVRIO Environmental Management	Signed: 
Reviewed by:	Fergal Maguire (Environmental & Ecological Consultant) AVRIO Environmental Management	Signed: 

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# 1. Introduction

## 1.1 Background

AVRIO Environmental Management Limited, hereafter "AVRIO", has been appointed by Caltragh Construction Ltd. to undertake an Appropriate Assessment Screening and, if required, a Natura Impact Statement for a proposed development located at Caltragh Lane, Sligo, Co. Sligo (Grid Reference: G 68894 34602). The proposed development includes the construction of 65 unit dwellings, with accommodation over two levels. The proposed development includes access to the local road located to the west of Caltragh Road. Permission is also sought for hard and soft landscaping and all associated development works.

## 1.2 Requirement for an Appropriate Assessment

This Appropriate Assessment Screening and Natura Impact Assessment was prepared for a proposed development at Caltragh Lane, Sligo, 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 report 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.

The purpose of the assessment is to determine the appropriateness of the proposed project in the context of the conservation status of a European protected 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 Appropriate Assessment Screening and Natura Impact Statement has been prepared in accordance with the European Commission's Assessment of Plans and Projects Significantly affecting Natura 2000 Sites: Methodological Guidance on the provisions of Article 6(3) and 6(4) of the Habitats Directive 92/43/EEC (EC, 2001) and Managing Natura 2000 Sites: the provisions of Article 6 of the 'Habitats' Directive 92/43/EEC (EC, 2018) as well as the Department of the Environment's Appropriate Assessment of Plans and Projects in Ireland - Guidance for Planning Authorities (DoEHLG, 2010), and it provides an assessment of the potential effects of a proposed development at Caltragh Lane, Sligo, Co. Sligo.

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 2000 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 June 2022 by AVRIO. 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

#### 1.4.1.1 *The Birds Directive*

- 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.

#### 1.4.1.2 *The EU Habitats Directive*

- 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).

#### 1.4.1.3 *The Water Framework Directive*

- 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 & 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.”*

### 1.4.3 Screening for Appropriate Assessment

Screening is the process of determining whether an Appropriate Assessment is required for a plan or project. Under Part XAB of the Planning and Development Act, 2000, as amended, screening must be carried out by the Competent Authority. Section 177U of the Planning and Development Act, 2000, as amended, states

‘A screening for appropriate assessment 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’.

The Competent Authority’s determination as to whether an Appropriate Assessment is required must be made on the basis of objective information and should be recorded.

The Competent Authority may request information to be supplied to enable it to carry out a screening.

Consultants or project proponents may provide for the competent Authority with the information necessary for them to determine whether an Appropriate Assessment is required and provide advice to assist them in the Article 6(3) Appropriate Assessment Screening decision.

Where it cannot be excluded beyond reasonable scientific doubt at the Screening stage, that a proposed plan or project, individually or in combination with other plans and projects, would have a significant effect on the conservation objectives of a European site, an Appropriate Assessment is required.

#### 1.4.4 Natura Impact Statement

Where an Appropriate Assessment is required, the Competent Authority may require the applicant to prepare a Natura Impact Statement. The term Natura Impact Statement (NIS) is defined in legislation. A NIS, where required, should present the data, information and analysis necessary to reach a definitive determination as to 1) the implications of the plan or project, alone or in combination with other plans and projects, for a European site in view of its conservation objectives, and 2) whether there will be adverse effects on the integrity of a European site. The NIS should be underpinned by the best scientific knowledge, objective information and by the precautionary principle. This Appropriate Assessment Screening and Natura Impact Statement has been prepared in compliance with the provision of section 177U of the Planning & Development Act 2010 as amended.

#### 1.5 Statement of Authority

Amy Gallagher BSc (Hons), MSc, QCIEEM: This report has been prepared by Amy Gallagher. Amy is an Ecologist at AVRIO Environmental Management. She holds a BSc (Hons) in Ecological Management and an MSc in Ecological Management and Conservation Biology from Queens University Belfast. Amy is an ecologist with over 3 years of experience within the environmental industry Amy is a qualifying member of the Chartered Institute of Ecology and Environmental Management (CIEEM), an organisation requiring peer review and a high standard of professional conduct. Amy has experience contributing to Ecological Impact Assessments (EclA) including assessments for priority species such as Bats, Badger, Otter, Marsh Fritillary, Dragonfly and Damselfly, and habitats assessments including Phase I and Fossitt Habitat Surveys. Amy has experience in Habitat Regulation Assessment (HRA/AASR/NIS), Invasive Species Surveys and Management and production of site-specific mitigation proposals for a range of developments throughout Northern Ireland and the Republic of Ireland.

Fergal Maguire NDA, BSc (Hons), PIEMA: This report has been 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. Fergal is a member of the Institute of Environmental Management & Assessment (IEMA), an organisation requiring peer review and a high standard of professional conduct. He has over 8 years of 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 (E.A.) and a number of Local Authorities throughout the U.K. and Ireland. Fergal has extensive experience in the sustainable development and management of a number of IED licenced facilities throughout Ireland, the U.K. and greater Europe, as well as general

consultancy within the waste management, environmental compliance and ecological sectors. Fergal has extensive experience in Ecological Impact Assessments (EclA), including priority species such as Bats, Badger, Otter, Red Squirrel, Pine martin and breeding birds, and habitats assessments, including Phase I and Fossitt Habitat Surveys. Fergal has extensive experience in Habitat Regulation Assessments (HRA/AASR/NIS), Ecological Clerk of Works (ECoW), Invasive Species Surveys and Management and production of site-specific mitigation proposals for a range of developments throughout Northern Ireland and the Republic of Ireland.

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## 2. Methodology

### 2.1 Appropriate Assessment

In addition to the guidelines referenced above, the following relevant documents were also considered in the preparation of this report:

1. Council of the European Commission (1992) Council Directive 92/43/EEC of 21<sup>st</sup> May 1992 on the conservation of natural habitats and of wild fauna and flora. Official Journal of the European Communities. Series L 20, pp. 7-49.<sup>1</sup>
2. EC (2000) Managing Natura 2000 Sites: the provisions of Article 6 of the 'Habitats' Directive 92/43/EEC, Office for Official Publications of the European Communities, Luxembourg.<sup>2</sup>
3. 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.<sup>3</sup>
4. European Commission (2006). Nature and Biodiversity Cases: Ruling of the European Court of Justice.<sup>4</sup>
5. EC (2007) Guidance document on Article 6(4) of the 'Habitats Directive' 92/43/EEC – Clarification of the concepts of alternative solutions, imperative reasons of overriding public interest, compensatory measures, overall coherence. Opinion of the commission.<sup>5</sup>
6. EC (2013) Interpretation Manual of European Union Habitats. Version EUR 28. European Commission.<sup>6</sup>
7. European Commission (2018). Managing Natura 2000 Sites: The Provisions of Article 6 of the 'Habitats' Directive 92/43/EEC.<sup>7</sup>
8. Department of Environment, Heritage and Local Government (2009). Appropriate Assessment of Plans and Projects in Ireland: Guidance for Planning Authorities.<sup>8</sup>
9. National Parks and Wildlife Service (2019). Article 17: The Status of EU Protected Habitats and Species in Ireland. <sup>9</sup>
10. European Communities (Natural Habitats) (Amendment) Regulations 2005<sup>10</sup>;

<sup>1</sup> EC (2002) Assessment of Plans and Projects Significantly Affecting Natura 2000 Sites: Methodological guidance on the provisions of Article 6(3) and (4) of the Habitats Directive 92/43/EEC, Office for Official Publications of the European Communities, Luxembourg. European Commission;

<sup>2</sup> EC (2002) Assessment of Plans and Projects Significantly Affecting Natura 2000 Sites: Methodological guidance on the provisions of Article 6(3) and (4) of the Habitats Directive 92/43/EEC, Office for Official Publications of the European Communities, Luxembourg. European Commission;

<sup>3</sup> EC (2001) Assessment of plans and projects significantly affecting Natura 2000 sites: Methodological guidance on the provisions of Articles 6(3) and (4) of the Habitats Directive 92/43/EEC;

<sup>4</sup> EC (2006) Nature and Biodiversity Cases: Ruling of the European Court of Justice, Office for Official Publications of the European Communities, Luxembourg. European Commission;

<sup>5</sup> EC (2007a) Guidance document on Article 6(4) of the 'Habitats Directive' 92/43/EEC – Clarification of the concepts of: alternative solutions, imperative reasons of overriding public interest, compensatory measures, overall coherence, opinion of the commission. Office for Official Publications of the European Communities, Luxembourg. European Commission;

<sup>6</sup> EC (2013) Interpretation Manual of European Union Habitats. Version EUR 28. Office for Official Publications of the European Communities, Luxembourg. European Commission.

<sup>7</sup> EC (2018). Managing Natura 2000 Sites: The Provisions of Article 6 of the 'Habitats' Directive 92/43/EEC. . Office for Official Publications of the European Communities, Luxembourg. European Commission.

<sup>8</sup> DoEHLG (2010). Appropriate Assessment of Plans and Projects in Ireland. Guidance for Planning Authorities. Revision, February 2010. Department of the Environment, Heritage and Local Government

<sup>9</sup> NPWS (2019). The Status of EU Protected Habitats and Species in Ireland. Volume 1: Summary Overview. Unpublished NPWS report.

<sup>10</sup> EC (1997) 2006. The European Communities (Natural Habitats) (Amendment) Regulations 2005.

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.<sup>11</sup>

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 on 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.<sup>12</sup>

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.

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<sup>11</sup> DEHLG (2009) Appropriate Assessment of Plans and Projects in Ireland: Guidance for Planning Authorities. DEHLG, Dublin;

<sup>12</sup> DoEHLG (2010). Appropriate Assessment of Plans and Projects in Ireland. Guidance for Planning Authorities. Revision, February 2010. Department of the Environment, Heritage and Local Government;

In complying with the obligations set out in Articles 6(3) and following the guidelines described above, this Natura Impact 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.

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## 2.2 Desk Study

Information pertaining to the proposed site and the surrounding environment was studied and assessed prior to the completion of this assessment. The following data sources were accessed in order to complete a thorough examination of potential impacts:

- National Parks and Wildlife Service (NPWS) online map viewer<sup>13</sup>;
- Mammals, Amphibians and Reptiles website<sup>14</sup>;
- Ordnance Survey Ireland Map Viewer: Geohive<sup>15</sup>;
- Environmental Protection Agency Geographic Information System (EPAGIS)<sup>16</sup>;
- National Biodiversity Data Centre (NBDC)<sup>17</sup>;
- NPWS Article 17 Metadata and GIS Database<sup>18</sup>;
- Geological Survey Ireland, Department of the Environment, Climate and Communications Map Viewer<sup>19</sup>
- Caltragh Construction Ltd.<sup>20</sup>.

<sup>13</sup> National Parks and Wildlife Service: National Parks & Wildlife Service (npws.ie)

<sup>14</sup> Mammals, Amphibians and Reptiles: <http://www.habitas.org.uk/nimars/>

<sup>15</sup> Ordnance Survey Ireland Map Viewer - GeoHive: <https://webapps.geohive.ie/mapviewer/index.html>

<sup>16</sup> Environmental Protection Agency Geographic Information System : <https://gis.epa.ie/EPAMaps/>

<sup>17</sup> National Biodiversity Data Centre: [www.biodiversityireland.ie](http://www.biodiversityireland.ie)

<sup>18</sup> NPWS Article 17 Metadata and GIS Database: <https://www.npws.ie/maps-and-data/habitat-and-species-data/article-17>

<sup>19</sup> Geological Survey Ireland Map Viewer: <https://dce.nr.maps.arcgis.com/apps/MapSeries/index>

<sup>20</sup> Caltragh Construction Ltd. - Development Information

## 2.3 Site Location & Current Use

The proposed development site is located along Caltragh Road, Co. Sligo (Grid Reference: G 68894 34602).

The site is located approximately 1.3km south of Sligo town centre, 8.5km north of Collooney town centre and 56km southwest of Enniskillen town centre. The area surrounding the site consists of Caltragh lane and associated residential properties to the north, Caltragh road, residential dwellings and commercial properties to the east, agricultural grassland and a single residential dwelling to the south and the N4 Collooney to Castlebaldwin road to the west.

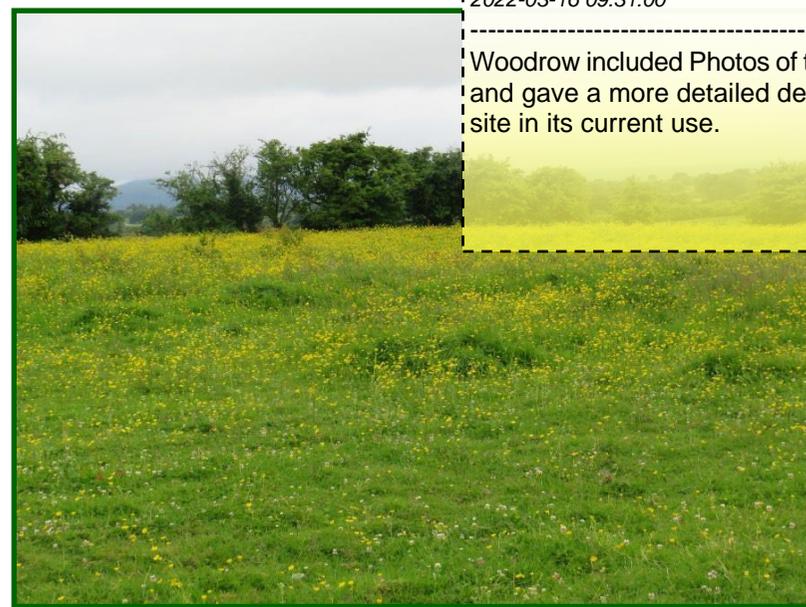
The wider environs include interspersed areas of road, agricultural grassland, single dwellings, hedgerows and treelines to the south and west and residential dwellings, commercial buildings and public open spaces associated with Sligo town to the north and east.

There are several SACs and SPAs in the wider environs. These Designated sites include Lough Gill SAC and Cummeen Strand/Drumcliff Bay (Sligo Bay) SAC are 1.36km and 1.45km north of the site respectively, Cummeen Strand SPA is 1.6km north of the site, Ballysadare SPA and SAC are 4.4km south of the site and Union Wood SAC is 5km south of the site.

The current site consists of agricultural grassland, scrub, treelines and hedgerows. Picture 1- 6 below illustrates the proposed development



Picture 1: Hawthorn Hedgerow On-site



Picture 2: Grassland Meadow On-site

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**Amy Gallagher**  
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Woodrow included Photos of the development and gave a more detailed description of the site in its current use.



Picture 3: Scrub On-site



Picture 4: Creeping Buttercup Grassland Transitioning to Yorkshire Fog Dominant Grassland



Picture 5: Grassland On-site



Picture 6: Grass-like starwort (*Stellaria graminea*) on-site

Figure 2-1: details the site location within the environs of Sligo, Co. Sligo and additionally details the site boundary location within the immediate environs.



Figure 2-1: Site Location

## 2.4 Characteristics of the Proposed Development

### 2.4.1 Description of the Project

Permission is sought for:

1. Construction of 65 dwellings with accommodation over two levels;
2. Permission is also sought for hard and soft landscaping and all associated development works.

Appendix A attached details the Site Layout Plan.

### 2.4.2 Description of the Baseline Ecological Environment

Assessing the impacts of any project and associated activities requires an understanding of the ecological baseline conditions prior to and at the time of the project proceeding. Ecological baseline conditions are those existing in the absence of proposed activities<sup>22</sup>.

A walkover of the site was undertaken on 22<sup>nd</sup> June 2022 by a qualified ecologist, and habitats present were identified in accordance with the Heritage Council's 'Guide to Habitats in Ireland'<sup>23</sup>. Plant nomenclature for vascular plants follows 'New Flora of the British Isles, while mosses and liverworts nomenclature follows 'Mosses and Liverworts of Britain and Ireland - a field guide'.

The walkover survey was designed to detect the presence, or likely presence, of a range of protected species and habitats. The walkover survey comprehensively covered the entire study area of the subject development and surrounding habitats.

#### 2.4.2.1 Habitats

Habitats located within the site boundary include:

- BL1: Stone walls and other stonework;
- GA1: Improved agricultural grassland;
- GS2: Dry meadows and grassy verges;
- WL1: Hedgerow;
- WL2: Treeline; and
- WS1: Scrub.

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<sup>22</sup> CIEEM, 2018, Guidelines for Ecological Impact Assessment in the UK and Ireland. Terrestrial, Freshwater, Coastal and Marine;

<sup>23</sup> Fossitt, J. A. (2000). A Guide to Habitats in Ireland. Dublin: The Heritage Council;

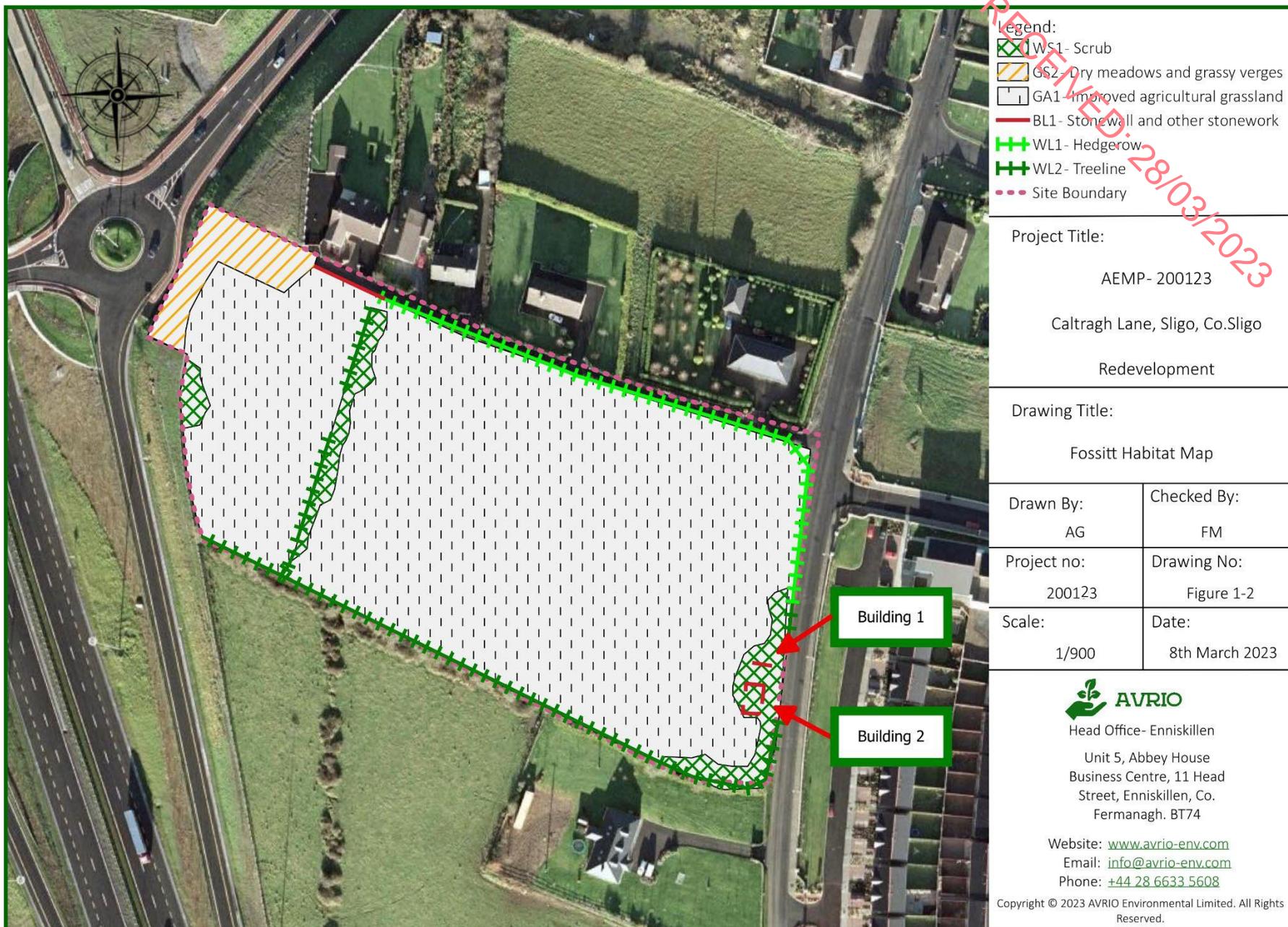


Figure 2-2: Fossitt Habitat Map

### 2.4.2.2 Assessment for Annex I Habitats

GS2 Dry meadows and grassy verges (Semi-natural grassland) can in some cases have possible links to annex I habitats such as lowland hay meadows (*Alopecurus pratensis*, *Sanguisorba officinalis*) (6510). However, in all cases concerning this site, there was insufficient biodiversity, insufficient presence of indicator species, and insufficient structural characteristics such as high herb cover for such a classification.

### 2.4.2.3 Invasive Species (Flora) Survey

Throughout the habitat survey, the site was searched for invasive weed species, focusing on those species listed on the Third Schedule of Regulations 49 and 50 of the European Communities (Birds and Natural Habitats) Regulations 2011<sup>24</sup>. Invasive species included in this list include Japanese Knotweed (*Fallopia japonica*), Giant Hogweed (*Heracleum mantegazzianum*), Giant Knotweed (*Fallopia sachalinensis*), Giant Rhubarb (*Gunnera manicata*), Himalayan Balsam (*Impatiens glandulifera*), Himalayan Knotweed (*Polygonum polystachyum*), Bohemian Knotweed (*Fallopia bohemica*) and Rhododendron (*Rhododendron ponticum*).

The invasive species survey carried out by AVRIO did not identify invasive species on-site.

### 2.4.2.4 Protected Species (Fauna) Survey

#### Bat Roost Assessment for Trees

The trees on-site did not comprise of suitable cavities/crevices that bats may utilise for roosting. All trees on-site have been assessed as having negligible roosting potential due to insufficient roosting features. The site is deemed optimal for commuting and foraging bats.

#### Bat Roost Assessment for Stone Walls

The stone wall on the northwest boundary of the site did not comprise of any suitable cavities/crevices that bats may utilise for roosting. The stone wall of the collapsed building (Building 1) (Fig 2-2) on the right-hand side of the gate did not comprise of any suitable cavities/crevices that individual bats may utilise for roosting. A second collapsed building (Building 2) (Fig 2-2) on the left-hand side of the gate did not comprise of any suitable cavities/crevices that bats may utilise for roosting.

The walls on site are classified as Negligible Suitability and will not require any further surveys.

#### Otter (*Lutra lutra*) Survey

No Otter Spraints, Footprints, Paths/slides, Holts or Urination 'green spots' were identified within the immediate vicinity of the site. No field drains were present on-site. The site is considered sub-optimal for commuting and foraging otters.

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<sup>24</sup> Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora [Habitats Directive] and Directive 2009/147/EC [codified version of Directive 79/409/EEC as amended] [Birds Directive] transposed into Irish law as European Communities [Birds and Natural Habitats] Regulations 2011 [SI 477/2011].

### Badger (*Meles meles*) Survey

No Badger setts, latrines or snuffle holes were identified within the site's boundary or within a 30m buffer of the site.

The N4 National Road is just outwith the western boundary while the Caltragh Road is just outwith the eastern boundary. The location of the site between these two very well used roads and within the semirural setting, may render the site sub-optimal for this species to create setts within, however, the wider area to the south and west (beyond the N4), given the rural location is optimal for this species. Badgers may access the site for commuting and foraging from time to time as the areas are formed of drier habitats that are favourable for badgers including; GA1 Improved agricultural grassland, GS2 Dry meadow and grassy verges and WS1 Scrub.

### Breeding Birds Survey

Three nests were identified on-site. The first nest was observed in a hawthorn tree on the southern boundary of the site (G 68863 34559), the second was above an archway of Building 1 (G 68991 34546) and the third was in an ash tree on the western boundary (G 68997 34565).

Treelines, hedgerows and areas of scrub are considered optimal locations for breeding birds.

Any removal or facing of tree lines will need to be undertaken outside of the breeding season (March-August inclusive).

### Smooth Newt (*Lissotriton vulgaris*)

A survey of the site and the immediate environs did not reveal evidence of this species. Assessments conclude there was no evidence noted during the survey, and the habitat is sub-optimal for smooth newt.

### Common Frog (*Rana temporaria*)

A survey of the site and the immediate environs did not reveal evidence of this species. Assessments conclude there was no evidence noted during the survey, and the habitat is sub-optimal for common frog.

### Red Squirrel (*Sciurus vulgaris*)

No specific evidence of this species was noted within the application boundary itself or in the immediate environs. That habitat on-site and within the surrounding environment was deemed sub-optimal for Red Squirrel.

### Pine Marten (*Martes martes*)

No specific evidence of this species was noted within the application boundary itself or in the immediate environs. That habitat on-site and within the surrounding environment was deemed sub-optimal for Pine Marten.

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## 2.4.3 Description of the Baseline Geological Environment

### 2.4.3.1 Bedrock Geology

Bedrock under the site is known as the 'Dartry Limestone Formation' consisting of dark fine-grained cherty limestone. The dominant facies is massive to thick-bedded, mostly very fine-grained and dark wackestone, locally rich in sponge spicules. Bedding is picked out by lines of chert nodules. Bedrock depth in this region is believed to be at 3-5 meters<sup>25</sup>.

### 2.4.3.2 Aquifer Classification

The aquifer classification at the site is classed as a 'Regionally Important Aquifer – Karstified (conduit)'. A description of this aquifer is detailed below:

'Karstification' is the process whereby limestone is slowly dissolved away by percolating waters. It most often occurs in the upper bedrock layers and along certain fractures, fissures and joints, at the expense of others. Karstification frequently results in the uneven distribution of permeability through the rock, and the development of distinctive karst landforms at the surface (e.g. swallow holes, caves, dry valleys), some of which provide direct access for recharge/surface water to enter the aquifer. The landscape is characterised by largely underground drainage, with most flow occurring through the more permeable, solutionally-enlarged, interconnected fissure/conduit zones, which may be several kilometres long. Groundwater velocities through fissures/conduits may be high and aquifer storage is frequently low. Groundwater often discharges as large springs (>2,000 m<sup>3</sup>/d), which range from regular and dependable to highly variable ('flashy'). There is strong interconnection between surface water and groundwater<sup>26</sup>.

The degree of karstification ranges from slight to intense. Geological Survey of Ireland recognises two types of karst aquifer: those dominated by diffuse flow (Rkd) and those like the aquifer classified above dominated by conduit flow (Rkc)<sup>27</sup>. Conduit flow relates to nonlinear turbulent ground-water flow through an integrated system of conduits which behave hydraulically as a system of pipes. Conduit flow is typical of ground-water flow through thick, massive soluble rock such as limestone, where ground water is concentrated, flow is rapid and specific discharges are high. Turbulent conduit flow can be initiated in fractures as thin as 5 to 10 millimetres<sup>28</sup>.

### 2.4.3.3 Groundwater Vulnerability

Groundwater Vulnerability is a term used to represent the natural ground characteristics that determine the ease with which groundwater may be contaminated by human activities. More scientifically, groundwater vulnerability embodies the characteristics of the intrinsic geological and hydrogeological features at a site that determine the ease of contamination of groundwater. The vulnerability category assigned to a site or an area is thus based on the relative ease with which infiltrating water and potential contaminants may reach groundwater in a vertical or sub-vertical direction. As all groundwater is hydrologically connected to the land surface, it is the effectiveness of this

<sup>25</sup> Geological Survey Ireland Map Viewer: <https://dcenr.maps.arcgis.com/apps/MapSeries/index>

<sup>26</sup> Lbid

<sup>27</sup> Lbid

<sup>28</sup> Law Insider: <https://www.lawinsider.com/dictionary/conduit-flow>

connection that determines the relative vulnerability to contamination. Groundwater that readily and quickly receives water (and contaminants) from the land surface is considered to be more vulnerable than groundwater that receives water (and contaminants) more slowly, and consequently in lower quantities. Additionally, the slower the movement and the longer the pathway, the greater is the potential for attenuation of many contaminants<sup>29</sup>.

The Geological Survey Ireland classifies the groundwater vulnerability at the site to be 'High' category<sup>30</sup>.

#### 2.4.3.4 Groundwater Flow Direction

Exact directions of groundwater flow have not been established for the site in question, however, for the purposes of this assessment the precautionary principle is implemented and a worst case scenario is used.

The direction of groundwater flow follows a path through an aquifer from areas of high-water levels to areas where water levels are low. Water flows through aquifers to discharge points some distance down-gradient at a spring or offshore into the sea<sup>31</sup>.

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<sup>29</sup> Geological Survey Ireland - Groundwater Vulnerability: <https://www.gsi.ie/en-ie/programmes-and-projects/groundwater/activities/understanding-ireland-groundwater/groundwater-vulnerability/Pages/default.aspx>

<sup>30</sup> Geological Survey Ireland Map Viewer: <https://dcenr.maps.arcgis.com/apps/MapSeries/index>

<sup>31</sup> UK Groundwater Forum (Groundwater Flow): [http://www.groundwateruk.org/downloads/groundwater\\_flow\\_and\\_quality.pdf](http://www.groundwateruk.org/downloads/groundwater_flow_and_quality.pdf)

## 3. Identification of Relevant European Sites

### 3.1 Identification of the European Sites within the Likely Zone of Impact

The following methodology was used to establish which European Sites are within the Likely Zone of Impact of the proposed development:

- The most up to date GIS spatial datasets for European designated sites and water catchments were downloaded from the NPWS website<sup>32</sup> and the EPA website<sup>33</sup> on the 23<sup>rd</sup> June 2022. These datasets were utilised to identify European Sites that could feasibly be affected by the proposed development;
- All European Sites within a distance of 15km surrounding the development site were identified and are detailed in Figure 3-1 below. In addition, the potential for connectivity with European Sites at distances greater than 15km from the proposed development was also considered. In this case, the proposed project does not give rise to the potential for likely significant effects on European Sites located beyond the 15km zone;
- In relation to Special Protection Areas, in the absence of any specific European or Irish guidance in relation to such sites, the Scottish Natural Heritage (SNH) Guidance, 'Assessing Connectivity with Special Protection Areas (SPA)' (2016) was consulted<sup>34</sup>. This document provides guidance in relation to the identification of connectivity between proposed developments and Special Protection Areas. The guidance considers the distances species may travel beyond the boundary of their SPAs and provides information on dispersal and foraging ranges of bird species that are frequently encountered when considering plans and projects;
- Table 3-1 provides details of all relevant European Sites identified in the preceding steps and assesses which are within the likely Zone of Impact. The assessment considers any likely direct or indirect impacts of the proposed development, both alone and in combination with other plans and projects, on European Sites by virtue of the following criteria: size and scale, land-take, distance from the European Site or key features of the site, resource requirements, emissions, excavation requirements, transportation requirements and duration of construction, operation and decommissioning were considered in this screening assessment;
- The site synopses and conservation objectives, as per the appropriate datasets, were consulted and reviewed when preparing this report (23<sup>rd</sup> June 2022). Figure 3-1 details the location of the proposed development in relation to all European sites within 15km in the Republic of Ireland;

Where potential pathways for Significant Effect are identified, the site is included within the Likely Zone of Impact, and further assessment is required.

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<sup>32</sup>NPWS Protected Site Synopses and maps available on <http://www.npws.ie/en/ProtectedSites/>;

<sup>33</sup> EPA maps available on [EPA Maps](#)

<sup>34</sup> Scottish Natural Heritage (SNH) (July 2013) Assessing Connectivity with Special Protection Areas (SPA);

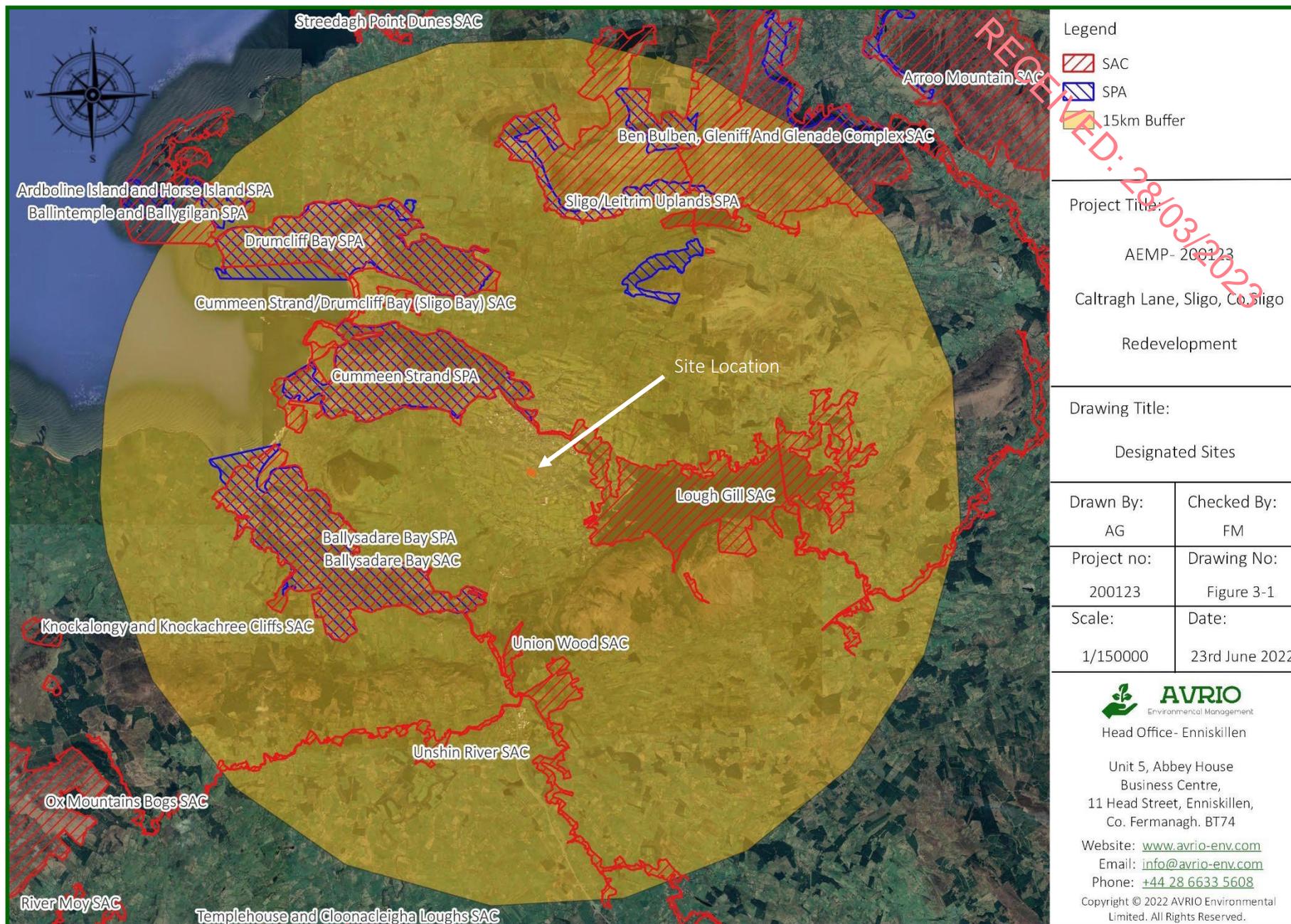


Figure 3-1: Natura 2000 Sites within a 15km Buffer

Table 3-1: Identification of designated sites within 15km

European Sites and distance from subject development	Qualify Interests/Special Conservation Interests for which the European site has been designated (Sourced from NPWS & DAERA online Conservation Objectives, www.npws.ie on the 22/02/2022	Conservation Objectives	Likely Zone of Impact Determination
<b>Special Areas of Conservation (SAC)</b>			
Lough Gill SAC [001976] Distance: 1.4km	<ul style="list-style-type: none"> <li>➤ [3150] Natural Eutrophic Lakes</li> <li>➤ [6210] Orchid-rich Calcareous Grassland*</li> <li>➤ [91A0] Old Oak Woodlands</li> <li>➤ [91E0] Alluvial Forests*</li> <li>➤ [1092] White-clawed Crayfish (<i>Austropotamobius pallipes</i>)</li> <li>➤ [1095] Sea Lamprey (<i>Petromyzon marinus</i>)</li> <li>➤ [1096] Brook Lamprey (<i>Lampetra planeri</i>)</li> <li>➤ [1099] River Lamprey (<i>Lampetra fluviatilis</i>)</li> <li>➤ [1106] Atlantic Salmon (<i>Salmo salar</i>)</li> <li>➤ [1355] Otter (<i>Lutra lutra</i>)</li> </ul>	Detailed conservation objectives for this site (Version 1, October 2016) were reviewed as part of the assessment and are available at <a href="http://www.npws.ie">www.npws.ie</a>	This development site is located 1.4km to the south of this SAC. There is no spatial overlap or no direct land take from this SAC. No direct impacts are anticipated. No hydrological connection exists between the site of the proposed development and this SAC. The proposed development site is hydrogeologically connected to this SAC via a Karstified Regionally Important Aquifer with a high groundwater vulnerability status (See Appendix F). This feature is a potential pollutant pathway from the development site to Lough Gill SAC. Indirect impacts are anticipated. This SAC is within the likely zone of impact, and further assessment is required.
Cummeen Strand/Drumcliff Bay (Sligo Bay) SAC [000627] Distance: 1.5km	<ul style="list-style-type: none"> <li>➤ [1130] Estuaries</li> <li>➤ [1140] Tidal Mudflats and Sandflats</li> <li>➤ [2110] Embryonic Shifting Dunes</li> <li>➤ [2120] Marram Dunes (White Dunes)</li> <li>➤ [2130] Fixed Dunes (Grey Dunes)*</li> <li>➤ [5130] Juniper Scrub</li> <li>➤ [6210] Orchid-rich Calcareous Grassland*</li> <li>➤ [7220] Petrifying Springs*</li> <li>➤ [1014] Narrow-mouthed Whorl Snail (<i>Vertigo angustior</i>)</li> <li>➤ [1095] Sea Lamprey (<i>Petromyzon marinus</i>)</li> <li>➤ [1099] River Lamprey (<i>Lampetra fluviatilis</i>)</li> <li>➤ [1365] Common (Harbour) Seal (<i>Phoca vitulina</i>)</li> </ul>	Detailed conservation objectives for this site (Version 1, October 2016) were reviewed as part of the assessment and are available at <a href="http://www.npws.ie">www.npws.ie</a>	This development site is located 1.5km to the south of this SAC. There is no spatial overlap or no direct land take from this SAC. No direct impacts are anticipated. The proposed development site is hydrologically connected to this SAC via surface water runoff into local drainage networks within the Sligo Bay_35) Catchment which flows into Cummeen Strand/Drumcliff Bay (Sligo Bay) SAC. Additionally, the percolation of water through a Karstified Regionally Important Aquifer with a high groundwater vulnerability status provides additional pathways to this sensitive receptor (See Appendix F). These features are potential pollutant pathways from the development site to Cummeen Strand/Drumcliff Bay (Sligo Bay) SAC. Indirect impacts are anticipated.

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			This SAC is within the likely zone of impact, and further assessment is required.
<p>Ballysadare Bay SAC [000622] Distance: 4.4km</p>	<ul style="list-style-type: none"> <li>➤ [1130] Estuaries</li> <li>➤ [1140] Tidal Mudflats and Sandflats</li> <li>➤ [2110] Embryonic Shifting Dunes</li> <li>➤ [2120] Marram Dunes (White Dunes)</li> <li>➤ [2130] Fixed Dunes (Grey Dunes)*</li> <li>➤ [2190] Humid Dune Slacks</li> <li>➤ [1014] Narrow-mouthed Whorl Snail (<i>Vertigo angustior</i>)</li> <li>➤ [1365] Common (Harbour) Seal (<i>Phoca vitulina</i>)</li> </ul>	<p>Detailed conservation objectives for this site (Version 1, October 2016) were reviewed as part of the assessment and are available at <a href="http://www.npws.ie">www.npws.ie</a></p>	<p>This development site is located 4.4km to the north of this SAC. There is no spatial overlap or no direct land take from this SAC. No direct impacts are anticipated.</p> <p>No hydrological connection exists between the site of the proposed development and this SAC.</p> <p>The proposed development site is hydrogeologically connected to this SAC via a Karstified Regionally Important Aquifer with a high groundwater vulnerability status (See Appendix F).</p> <p>This feature is a potential pollutant pathway from the development site to Ballysadare Bay SAC. Indirect impacts are anticipated.</p> <p>This SAC is within the likely zone of impact, and further assessment is required.</p>
<p>Union Wood SAC [000638] Distance: 5.1km</p>	<ul style="list-style-type: none"> <li>➤ [91A0] Old Oak Woodlands</li> </ul>	<p>Detailed conservation objectives for this site (Version 1, October 2016) were reviewed as part of the assessment and are available at <a href="http://www.npws.ie">www.npws.ie</a></p>	<p>This development is located 5.1km to the north of this SAC. There is no spatial overlap or no direct land take from this SAC. No direct impacts are anticipated.</p> <p>No hydrological or hydrogeological connection exists between the site of the proposed development and this SAC, therefore, there is no pathway for significant effects via direct or indirect impacts.</p> <p>This site is not within the Likely Zone of Impact, and no further assessment is required.</p>
<p>Unshin River SAC [001898] Distance: 5.7km</p>	<ul style="list-style-type: none"> <li>➤ [3260] Floating River Vegetation</li> <li>➤ [6210] Orchid-rich Calcareous Grassland*</li> <li>➤ [6410] Molinia Meadows</li> <li>➤ [91E0] Alluvial Forests*</li> <li>➤ [1106] Atlantic Salmon (<i>Salmo salar</i>)</li> <li>➤ [1355] Otter (<i>Lutra lutra</i>)</li> </ul>	<p>Detailed conservation objectives for this site (Version 1, October 2016) were reviewed as part of the assessment and are available at <a href="http://www.npws.ie">www.npws.ie</a></p>	<p>This development is located 5.7km to the north of this SAC. There is no spatial overlap or no direct land take from this SAC. No direct impacts are anticipated.</p> <p>No hydrological or hydrogeological connection exists between the site of the proposed development and this SAC, therefore, there is no pathway for significant effects via direct or indirect impacts.</p> <p>This site is not within the Likely Zone of Impact, and no further assessment is required.</p>

<p>Benbulbin, Gleniff and Glenade Complex SAC [000623] Distance: 9.7km</p>	<ul style="list-style-type: none"> <li>➤ [3260] Floating River Vegetation</li> <li>➤ [4010] Wet Heath</li> <li>➤ [4030] Dry Heath</li> <li>➤ [4060] Alpine and Subalpine Heaths</li> <li>➤ [5130] Juniper Scrub</li> <li>➤ [6210] Orchid-rich Calcareous Grassland*</li> <li>➤ [6230] Species-rich Nardus Grassland*</li> <li>➤ [6430] Hydrophilous Tall Herb Communities</li> <li>➤ [7220] Petrifying Springs*</li> <li>➤ [7130] Blanket Bogs (Active)*</li> <li>➤ [7140] Transition Mires</li> <li>➤ [7230] Alkaline Fens</li> <li>➤ [8110] Siliceous Scree</li> <li>➤ [8120] Calcareous Scree</li> <li>➤ [8210] Calcareous Rocky Slopes</li> <li>➤ [1013] Geyer's Whorl Snail (<i>Vertigo geyeri</i>)</li> <li>➤ [1355] Otter (<i>Lutra lutra</i>)</li> </ul>	<p>Detailed conservation objectives for this site (Version 1, October 2016) were reviewed as part of the assessment and are available at <a href="http://www.npws.ie">www.npws.ie</a></p>	<p>This development site is located 9.7km to the south of this SAC. There is no spatial overlap or no direct land take from this SAC. No direct impacts are anticipated.</p> <p>No hydrological or hydrogeological connection exists between the site of the proposed development and the SAC, therefore, there is no pathway for significant effects via direct or indirect impacts.</p> <p>This site is not within the Likely Zone of Impact, and no further assessment is required.</p>
<p>Special Protected Areas (SPA)</p>			
<p>Cummeen Strand SPA [004035] Distance: 1.6km</p>	<ul style="list-style-type: none"> <li>➤ [A046] Light-bellied Brent Goose (<i>Branta bernicla hrota</i>)</li> <li>➤ [A130] Oystercatcher (<i>Haematopus ostralegus</i>)</li> <li>➤ [A162] Redshank (<i>Tringa totanus</i>)</li> <li>➤ [A999] Wetland and Waterbirds</li> </ul>	<p>Detailed conservation objectives for this site (Version 1, October 2016) were reviewed as part of the assessment and are available at <a href="http://www.npws.ie">www.npws.ie</a></p>	<p>This development site is located 1.6km to the south of this SPA. There is no spatial overlap or no direct land take from this SPA. No direct impacts are anticipated.</p> <p>The proposed development site is hydrologically connected to this SPA via surface water runoff into local drainage networks within the Sligo Bay_35 Catchment which flows into Cummeen Strand SPA. Additionally, the percolation of water through a Karstified Regionally Important Aquifer with a high groundwater vulnerability status provides additional pathways to this sensitive receptor (See Appendix F).</p> <p>These features are a potential pollutant pathway from the development site to Cummeen Strand SPA. Indirect impacts are anticipated.</p> <p>This SPA is within the likely zone of impact, and further assessment is required.</p>

<p>Ballysadare Bay SPA [004129] Distance: 4.4km</p>	<ul style="list-style-type: none"> <li>➤ [A046] Light-bellied Brent Goose (<i>Branta bernicla hrota</i>)</li> <li>➤ [A141] Grey Plover (<i>Pluvialis squatarola</i>)</li> <li>➤ [A149] Dunlin (<i>Calidris alpina</i>)</li> <li>➤ [A157] Bar-tailed Godwit (<i>Limosa lapponica</i>)</li> <li>➤ [A162] Redshank (<i>Tringa totanus</i>)</li> <li>➤ [A999] Wetland and Waterbirds</li> </ul>	<p>Detailed conservation objectives for this site (Version 1, October 2016) were reviewed as part of the assessment and are available at <a href="http://www.npws.ie">www.npws.ie</a></p>	<p>This development site is located 4.4km to the north of this SPA. There is no spatial overlap or no direct land take from this SPA. No direct impacts are anticipated.</p> <p>No hydrological connection exists between the site of the proposed development and this SPA.</p> <p>The proposed development site is hydrogeologically connected to this SPA via a Karstified Regionally Important Aquifer with a high groundwater vulnerability status (See Appendix F).</p> <p>This feature is a potential pollutant pathway from the development site to Ballysadare Bay SPA. Indirect impacts are anticipated.</p> <p>This SPA is within the likely zone of impact, and further assessment is required.</p>
<p>Drumcliff Bay SPA [004013] Distance: 6.4km</p>	<ul style="list-style-type: none"> <li>➤ [A144] Sanderling (<i>Calidris alba</i>)</li> <li>➤ [A157] Bar-tailed Godwit (<i>Limosa lapponica</i>)</li> <li>➤ [A999] Wetland and Waterbirds</li> </ul>	<p>Detailed conservation objectives for this site (Version 1, October 2016) were reviewed as part of the assessment and are available at <a href="http://www.npws.ie">www.npws.ie</a></p>	<p>This development site is located 6.4km to the southeast of this SPA. There is no spatial overlap or no direct land take from this SPA. No direct impacts are anticipated.</p> <p>The proposed development site is hydrologically connected to this SAC via surface water runoff into local drainage networks within the Sligo Bay_35) Catchment which flows into Cummeen Strand/Drumcliff Bay (Sligo Bay) SAC and furthermore into Drumcliff Bay SPA.</p> <p>No hydrogeologically connection exists between the site of the proposed development and the SPA.</p> <p>These features are potential pollutant pathways from the development site to Drumcliff Bay SPA. Indirect impacts are anticipated.</p> <p>This SPA is within the likely zone of impact, and further assessment is required.</p>
<p>Sligo/Leitrim Upland SPA [004187] Distance: 7km</p>	<ul style="list-style-type: none"> <li>➤ [A103] Peregrine (<i>Falco peregrinus</i>)</li> <li>➤ [A346] Chough (<i>Pyrrhocorax pyrrhocorax</i>)</li> </ul>	<p>Detailed conservation objectives for this site (Version 1, October 2016) were reviewed as part of the assessment and are</p>	<p>This development site is located 7km to the south of this SPA. There is no spatial overlap or no direct land take from this SPA. No direct impacts are anticipated.</p> <p>No hydrological or hydrogeological connection exists between the site of the proposed development and the</p>

		available at <a href="http://www.npws.ie">www.npws.ie</a>	SPA, therefore, there is no pathway for significant effects via direct or indirect impacts. This SPA is not within the Likely Zone of Impact, and no further assessment is required.
Ballintemple and Ballygilgan SPA [004234] Distance: 13.3km	➤ [A045] Barnacle Goose ( <i>Branta leucopsis</i> )	Detailed conservation objectives for this site (Version 1, October 2016) were reviewed as part of the assessment and are available at <a href="http://www.npws.ie">www.npws.ie</a>	This development site is located 13.3km to the southeast of this SPA. There is no spatial overlap or no direct land take from this SPA. No direct impacts are anticipated. No hydrological or hydrogeological connection exists between the site of the proposed development and this SPA, therefore, there is no pathway for significant effects via direct or indirect impacts. This SPA is not within the Likely Zone of Impact, and no further assessment is required.

## 4. Article 6(3) Appropriate Assessment Screening Statement & Conclusions

The findings of this Screening Assessment are presented following the European Commission's Assessment of Plans and Projects Significantly affecting Natura 2000 Sites: Methodological Guidance on the provisions of Article 6(3) and 6(4) of the Habitats Directive 92/43/EEC (EC, 2001) and Managing Natura 2000 Sites: the provisions of Article 6 of the 'Habitats' Directive 92/43/EEC (EC, 2018) as well as the Department of the Environment's Appropriate Assessment of Plans and Projects in Ireland - Guidance for Planning Authorities (DoEHLG, 2010).

The following sites have been identified as within the likely zone of impact, and further appropriate assessment is required<sup>35</sup>:

1. Lough Gill SAC [001976] located 1.4km to the north of the proposed development;

- [3150] Natural Eutrophic Lakes
- [6210] Orchid-rich Calcareous Grassland\*
- [91A0] Old Oak Woodlands
- [91E0] Alluvial Forests\*
- [1092] White-clawed Crayfish (*Austropotamobius pallipes*)
- [1095] Sea Lamprey (*Petromyzon marinus*)
- [1096] Brook Lamprey (*Lampetra planeri*)
- [1099] River Lamprey (*Lampetra fluviatilis*)
- [1106] Atlantic Salmon (*Salmo salar*)
- [1355] Otter (*Lutra lutra*)

2. Cummeen Strand/Drumcliff Bay (Sligo Bay) SAC [000627] located 1.5km to the north of the proposed development;

- [1130] Estuaries
- [1140] Tidal Mudflats and Sandflats
- [2110] Embryonic Shifting Dunes
- [2120] Marram Dunes (White Dunes)
- [2130] Fixed Dunes (Grey Dunes)\*

<sup>35</sup> NPWS Protected Site Synopses and maps available on <http://www.npws.ie/en/ProtectedSites/>;

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- [5130] Juniper Scrub
- [6210] Orchid-rich Calcareous Grassland\*
- [7220] Petrifying Springs\*
- [1014] Narrow-mouthed Whorl Snail (*Vertigo angustior*)
- [1095] Sea Lamprey (*Petromyzon marinus*)
- [1099] River Lamprey (*Lampetra fluviatilis*)
- [1365] Common (Harbour) Seal (*Phoca vitulina*)

3. Ballysadare Bay SAC [000622] located 4.4km to the south of the proposed development:

- [1130] Estuaries
- [1140] Tidal Mudflats and Sandflats
- [2110] Embryonic Shifting Dunes
- [2120] Marram Dunes (White Dunes)
- [2130] Fixed Dunes (Grey Dunes)\*
- [2190] Humid Dune Slacks
- [1014] Narrow-mouthed Whorl Snail (*Vertigo angustior*)
- [1365] Common (Harbour) Seal (*Phoca vitulina*)

4. Cummeen Strand SPA [004035] located 1.6km to the north of the proposed development:

- [A046] Light-bellied Brent Goose (*Branta bernicla hrota*)
- [A130] Oystercatcher (*Haematopus ostralegus*)
- [A162] Redshank (*Tringa totanus*)
- [A999] Wetland and Waterbirds

5. Ballysadare Bay SPA [004129] located 4.4km to the south of the proposed development:

- [A046] Light-bellied Brent Goose (*Branta bernicla hrota*)
- [A141] Grey Plover (*Pluvialis squatarola*)
- [A149] Dunlin (*Calidris alpina*)
- [A157] Bar-tailed Godwit (*Limosa lapponica*)

➤ [A162] Redshank (*Tringa totanus*)

➤ [A999] Wetland and Waterbirds

6. Drumcliff Bay SPA [004013] located 6.4km to the northwest of the proposed development:

➤ [A144] Sanderling (*Calidris alba*)

➤ [A157] Bar-tailed Godwit (*Limosa lapponica*)

➤ [A999] Wetland and Waterbirds

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## 5. Site Identification & Screening

This section provides the background information of the Natura 2000 sites screened to require assessment and the underlying reasoning behind this assessment. In total, 11 designations have been identified within 15km of the site. Several of these designations, due to the benign nature of the development, can be screened out due to distance from the site, no hydrological or connection and no direct land-take or disturbance to qualifying species.

The application site is not located within any Natura 2000 site; however, six designations are located within proximity. They are, of Lough Gill SAC, Cummeen Strand/Drumcliff Bay (Sligo Bay) SAC, Ballysadare Bay SAC, Cummeen Strand SPA, Ballysadare Bay SPA and Drumcliff Bay SPA. These designations have been identified in terms of the potential for indirect adverse impacts to arise as a result of the proposed development of the site.

### 5.1 Designated Sites

#### Lough Gill SAC [001976]

Distance: 1.4km North

#### Site Synopsis Overview

This site includes Lough Gill, Doon Lough to the north-east, the Bonet River (as far as, but not including, Glenade Lough), and a stretch of the Owenmore River near Manorhamilton in Co. Leitrim. Lough Gill itself, 2 km east of Sligo town, lies at a geological junction of ancient metamorphic rocks which produce acid groundwater, and limestone which dissolves in the groundwater.

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

- [3150] Natural Eutrophic Lakes
- [6210] Orchid-rich Calcareous Grassland\*
- [91A0] Old Oak Woodlands
- [91E0] Alluvial Forests\*
- [1092] White-clawed Crayfish (*Austropotamobius pallipes*)
- [1095] Sea Lamprey (*Petromyzon marinus*)
- [1096] Brook Lamprey (*Lampetra planeri*)

- [1099] River Lamprey (*Lampetra fluviatilis*)
- [1106] Atlantic Salmon (*Salmo salar*)
- [1355] Otter (*Lutra lutra*)

Lough Gill is a large lake, being 8 km long, and has steep limestone shores and underwater cliffs. It is over 20 m deep in places. The lake appears to be naturally eutrophic. The aquatic macrophyte flora is very limited, probably due to the rapid increase in depth around most of the margin. Species such as pondweeds (*Potamogeton* spp.) are present, as well as Shoreweed (*Littorella uniflora*). Where the lake shore has a shallow gradient, some swamp vegetation occurs, mainly dominated by Common Reed (*Phragmites australis*), with Common Club-rush (*Scirpus lacustris*) and sedges (*Carex* spp.).

Lough Gill supports low numbers of wintering waterfowl, mostly Mallard (<150), Tufted Duck (20-30) and Goldeneye (<20). A small colony of Common Tern breed on the islands (20 pairs in 1993), while Kingfisher are found on the lake and rivers. Both of these species are listed on Annex I of the E.U. Birds Directive. A colony of Blackheaded Gulls (63 pairs in 1992) occurs with the terns. The woods support a good diversity of bird species including Jay, Woodcock and Blackcap.

The site is of importance for four habitats listed on Annex I of the E.U. Habitats Directive, including two with priority status. It is also noted for the high number of rare or scarce animal and plant species.

#### Conservation Objectives

- To restore the favourable conservation condition of Natural eutrophic lakes with Magnopotamion or Hydrocharition - type vegetation in Lough Gill SAC;
- To restore the favourable conservation condition of Semi-natural dry grasslands and scrubland facies on calcareous substrates (Festuco-Brometalia) (\* important orchid sites) in Lough Gill SAC;
- To restore the favourable conservation condition of Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles in Lough Gill SAC;
- To restore the favourable conservation condition of Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (Alno-Padion, Alnion incanae, Salicion albae)\* in Lough Gill SAC;
- To maintain the favourable conservation condition of White-clawed Crayfish (*Austropotamobius pallipes*) in Lough Gill SAC;
- To restore the favourable conservation condition of Sea Lamprey (*Petromyzon marinus*) in Lough Gill SAC;
- To restore the favourable conservation condition of Brook Lamprey (*Lampetra planeri*) in Lough Gill SAC;
- To restore the favourable conservation condition of River Lamprey (*Lampetra fluviatilis*) in Lough Gill SAC;
- To restore the favourable conservation condition of Atlantic Salmon (*Salmo salar*) in Lough Gill SAC; and

- To maintain the favourable conservation condition of Otter (*Lutra lutra*) in Lough Gill SAC.

### Cummeen Strand/Drumcliff Bay (Sligo Bay) SAC [000627]

Distance: 1.5km North

#### Site Synopsis Overview

This large coastal site extends from Cullamore in the north-west to Killaspug in the south-west, and from Sligo town in the south-east to Drumcliff village in the northeast. It encompasses two large, shallow bays, Drumcliff Bay and Sligo Harbour, and both Ardboline and Horse Island. Sand dunes and sand hills at Rosses Point, Killaspug, Yellow Strand and Coney Island are included, as are grasslands at Ballintemple and Ballygilgan (Lissadell), along with a variety of other habitats such as woodland, saltmarsh, sandy beaches, boulder beaches, shingle, fen, freshwater marshes, rocky sea cliffs and lakes. The site is largely underlain by Carboniferous limestone, but acidic rocks are also found on the Rosses Point peninsula. At Serpent Rock in the north-western section of the site the most complete section of the northwestern Carboniferous strata is exposed. Here are found an excellent series of fossilised corals which, in some strata, stand out from the rock matrix.

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

- [1130] Estuaries
- [1140] Tidal Mudflats and Sandflats
- [2110] Embryonic Shifting Dunes
- [2120] Marram Dunes (White Dunes)
- [2130] Fixed Dunes (Grey Dunes)\*
- [5130] Juniper Scrub
- [6210] Orchid-rich Calcareous Grassland\*
- [7220] Petrifying Springs\*
- [1014] Narrow-mouthed Whorl Snail (*Vertigo angustior*)
- [1095] Sea Lamprey (*Petromyzon marinus*)
- [1099] River Lamprey (*Lampetra fluviatilis*)
- [1365] Common (Harbour) Seal (*Phoca vitulina*)

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The dominant habitats on the site are estuaries and intertidal sand and mud flats. Sligo Harbour receives the waters of the Garavogue River, which flows from Lough Gill, while Drumcliff Bay receives the Drumcliff River which flows from Glencar Lough. At low tide extensive areas of intertidal flats are exposed in both of these sheltered estuarine bays.

At least five species listed on Annex II of the E.U. Habitats Directive are found within this site. Drumcliff Bay is important for the presence of a breeding population of Common Seal. Ardboline and Horse Islands on the western side of the site are also important as haul-out areas for this species. A minimum population of 12–15 individuals was estimated from counts made in various months in 2007 and 2008. Sea Lamprey and River Lamprey have been recorded in the Garavogue River, and River Lamprey are also known from further upstream in the tributaries of Lough Gill. The Marsh Fritillary butterfly is found at Rosses Point, while the rare snail *Vertigo angustior* has recently been recorded from sand dunes at Killaspugbrone.

Cummeen Strand/Drumcliff Bay (Sligo Bay) is an important site of high conservation significance, which includes a wide variety of habitat types, including several listed on Annex I of the E.U. Habitats Directive, several species listed on Annex II of this Directive, large and important populations of waterfowl and seabirds, and several rare plant species.

#### Conservation Objectives

- To maintain the favourable conservation condition of Estuaries in Cummeen Strand/Drumcliff Bay (Sligo Bay) SAC;
- To maintain the favourable conservation condition of Mudflats and sandflats not covered by seawater at low tide in Cummeen Strand/Drumcliff Bay (Sligo Bay) SAC;
- To maintain the favourable conservation condition of Embryonic shifting dunes in Cummeen Strand/Drumcliff Bay (Sligo Bay) SAC;
- To restore the favourable conservation condition of Shifting dunes along the shoreline with *Ammophila arenaria* ('white dunes') in Cummeen Strand/Drumcliff Bay (Sligo Bay) SAC;
- To restore the favourable conservation condition of Fixed coastal dunes with herbaceous vegetation ('grey dunes') in Cummeen Strand/Drumcliff Bay (Sligo Bay) SAC;
- To restore the favourable conservation condition of *Juniperus communis* formations on heaths or calcareous grasslands in Cummeen Strand/Drumcliff Bay (Sligo Bay) SAC;
- To maintain the favourable conservation condition of Petrifying springs with tufa formation (*Cratoneurion*) in Cummeen Strand/Drumcliff Bay (Sligo Bay) SAC;
- To maintain the favourable conservation condition of Narrow-mouthed Whorl Snail in Cummeen Strand/Drumcliff Bay (Sligo Bay) SAC;
- To restore the favourable conservation condition of Sea Lamprey in Cummeen Strand/Drumcliff Bay (Sligo Bay) SAC;
- To maintain the favourable conservation condition of River Lamprey in Cummeen Strand/Drumcliff Bay (Sligo Bay) SAC; and
- To maintain the favourable conservation condition of Harbour Seal in Cummeen Strand/Drumcliff Bay (Sligo Bay) SAC.

#### Ballysadare Bay SAC [000622]

### Site Synopsis Overview

Ballysadare Bay extends for about 10km 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.

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

- [1130] Estuaries
- [1140] Tidal Mudflats and Sandflats
- [2110] Embryonic Shifting Dunes
- [2120] Marram Dunes (White Dunes)
- [2130] Fixed Dunes (Grey Dunes)\*
- [2190] Humid Dune Slacks
- [1014] Narrow-mouthed Whorl Snail (*Vertigo angustior*)
- [1365] Common (Harbour) Seal (*Phoca vitulina*)

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 that 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

### Conservation Objectives:

- To maintain the favourable conservation condition of Mudflats and sandflats not covered by seawater at low tide in Ballysadare Bay SAC;
- To maintain the favourable conservation condition of Embryonic shifting dunes in Ballysadare Bay SAC;
- To restore the favourable conservation condition of Shifting dunes along the shoreline with *Ammophila arenaria* ('white dunes') in Ballysadare Bay SAC;

- To restore the favourable conservation condition of Fixed coastal dunes with herbaceous vegetation ('grey dunes') in Ballysadare Bay SAC;
- To restore the favourable conservation condition of Humid dune slacks in Ballysadare Bay SAC;
- To maintain the favourable conservation condition of Narrow-mouthed Whorl Snail in Ballysadare Bay SAC;
- To maintain the favourable conservation condition of Harbour Seal in Ballysadare Bay SAC.

### Cummeen Strand SPA [004035]

Distance: 1.6km North

### Site Synopsis Overview

Cummeen Strand is a large shallow bay stretching from Sligo Town westwards to Coney Island. It is one of three estuarine bays within Sligo Bay and is situated between Drumcliff Bay to the north and Ballysadare Bay to the south. The Garavogue River flows into the bay and forms a permanent channel.

At low tide, extensive sand and mud flats are exposed. These support a diverse macro-invertebrate fauna which provides the main food supply for the wintering waterfowl. Invertebrate species such as Lugworm (*Arenicola marina*), Ragworm (*Hediste diversicolor*), Cockles (*Cerastoderma edule*), Sand Mason (*Lanice conchilega*), Baltic Tellin (*Macoma balthica*), Spire Shell (*Hydrobia ulvae*) and Mussels (*Mytilus edulis*) are frequent. Of particular note is the presence of eelgrass (*Zostera noltii* and *Z. angustifolia*) beds, which provide a valuable food stock for herbivorous wildfowl. The estuarine and intertidal flat habitats are of conservation significance and are listed on Annex I of the E.U. Habitats Directive. Areas of salt marsh fringe the bay in places and provide roosting sites for birds during the high tide periods. Sand dunes occur at Killaspug Point and Coney Island, with a shingle spit at Standalone Point near Sligo Town.

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, Oystercatcher 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.

Cummeen Strand supports important concentrations of wintering waterfowl, including an internationally important Light-bellied Brent Goose flock (223) and nationally important populations of Oystercatcher (680) and Redshank (408). Other species occurring include Shelduck (86), Wigeon (149), Teal (54), Mallard (145), Redbreasted Merganser (15), Golden Plover (428), Lapwing (695), Knot (165), Sanderling (14), Dunlin (539), Bar-tailed Godwit (85), Curlew (430), Greenshank (13) and Turnstone (62) - all figures are mean peak counts for 4 of the 5 winters between 1995/96 and 1999/2000. Whooper Swan (7) also uses the site, though not regularly.

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Cummeen Strand SPA is of high ornithological importance with one species, Lightbellied Brent Goose, occurring in numbers of international importance. In addition, the site supports nationally important populations of a further two species. The regular presence of Golden Plover and Bar-tailed Godwit is of particular note as these species are listed on Annex I of the E.U. Birds Directive. The site is also important as a component of the much larger Sligo Bay complex. Cummeen Strand is a Ramsar Convention site.

#### Conservation Objectives

- To maintain the favourable conservation condition of Light-bellied Brent Goose in Cummeen Strand SPA;
- To maintain the favourable conservation condition of Oystercatcher in Cummeen Strand SPA;
- To maintain the favourable conservation condition of Redshank in Cummeen Strand SPA; and
- To maintain the favourable conservation condition of wetland habitat in Cummeen Strand SPA as a resource for the regularly occurring migratory waterbirds that utilise it.

#### Ballysadare Bay SPA [004129]

Distance: 4.4km South

#### Site Synopsis

Ballysadare Bay extends for approximately 10 km westwards from the town of Ballysadare, County Sligo. It is the most southerly of three inlets that form the eastern part of the larger Sligo Bay complex. The estuarine channel of the Ballysadare River winds its way through the bay, finally reaching the open sea near the Strandhill Dunes sand spit. 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.

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;
- 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 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.

#### Conservation Objectives:

- To maintain the favourable conservation condition of Light-bellied Brent Goose in Ballysadare Bay SPA;
- To maintain the favourable conservation condition of Grey Plover in Ballysadare Bay SPA
- To maintain the favourable conservation condition of Dunlin in Ballysadare Bay SPA;
- To maintain the favourable conservation condition of Bar-tailed Godwit in Ballysadare Bay SPA;
- To maintain the favourable conservation condition of Redshank in Ballysadare Bay SPA;
- To maintain the favourable conservation condition of the wetland habitat in Ballysadare Bay SPA as a resource for the regularly-occurring migratory waterbirds that utilise it.

#### Drumcliff Bay SPA [004013]

Distance: 6.4km Northwest

#### Site Synopsis Overview

Drumcliff Bay, Co. Sligo is the most northerly of Sligo Bay's three estuarine inlets. The bay comprises an inner area of sheltered estuarine habitat and an outer area of shallow seawater. It extends 9 km east to west from Drumcliff village to Raghly Point. Drumcliff Bay is the estuary of the Drumcliff River, a substantial river flowing from Glencar Lough to the east. The inner part of Drumcliff Bay is sheltered by a sandy/grassy peninsula extending north from Rosses Point. The northern part of the bay is fringed by fine sandy beaches - Ballygilgan Strand, Lissadell Strand and Ardtermon Strand. Salt marsh occurs in the most sheltered areas and at low tide, extensive inter-tidal flats are exposed. A bed of Dwarf Eelgrass (*Zostera noltii*) occurs near the south-eastern corner of the bay.

The site is a Special Protection Area (SPA) under the E.U. Birds Directive, of special conservation interest for the following species:

- Sanderling; and
- Bar-tailed Godwit.

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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.

Drumcliff Bay SPA is of importance as it supports nationally important populations of two species of wintering waterfowl: Sanderling (237) and Bar-tailed Godwit (336) – all figures are four year mean peaks for four of the five winters between 1995/96 and 1999/2000. Other species that occur regularly include Whooper Swan (45), Light-bellied Brent Goose (74), Shelduck (75), Wigeon (138), Teal (57), Long-tailed Duck (14), Redbreasted Merganser (20), Great Northern Diver (13), Oystercatcher (356), Ringed Plover (139), Lapwing (155), Knot (107), Dunlin (559), Curlew (177) and Redshank (138).

Drumcliff Bay SPA is of national importance for its winter populations of Sanderling and Bar-tailed Godwit, and the site supports a good diversity of other waterfowl species. Of note is that three of the species which occur regularly (Whooper Swan, Great Northern Diver and Bar-tailed Godwit) are listed on Annex I of the E.U. Birds Directive. Part of Drumcliff Bay SPA is a Wildfowl Sanctuary.

### Conservation Objectives

- To maintain the favourable conservation condition of Sanderling in Drumcliff Bay SPA;
- To maintain the favourable conservation condition of Bar-tailed Godwit in Drumcliff Bay SPA; and
- To maintain the favourable conservation condition of wetland habitat in Drumcliff Bay SPA as a resource for the regularly occurring migratory waterbirds that utilise it.

## 5.2 Favourable Conservation Status

The purpose of designating and managing Natura 2000 sites is to maintain at, or restore to 'favourable conservation status' the habitats and species listed within the Directives for which the sites are notified; individual conservation objectives encapsulate an overall aim of maintaining or achieving favourable conservation status for each feature and maintaining the integrity of the site as a whole.

Favourable conservation status of a habitat is achieved when:

- Its natural range, and area it covers within that range, are stable or increasing, and 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, and the conservation status of its typical species is favourable.

The favourable conservation status of a species is achieved when:

- o 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, and the natural range of the species is neither being reduced nor is likely to be reduced for the foreseeable future, and there is, and will probably continue to be, a sufficiently large habitat to maintain its populations on a long-term basis.

Article 6(3) of the Habitats Directive requires that prior assessment be conducted regarding the established conservation objectives for each designated site. A general conservation objective encapsulating an overall aim of maintaining ‘favourable conservation status’ has been applied in relation to each Natura 2000 site and in relation to each site feature for the purposes of initial analysis.<sup>36</sup>

### 5.3 Screening Matrix

No direct impacts to Lough Gill SAC, Cummeen Strand/Drumcliff Bay (Sligo Bay) SAC, Ballysadare Bay SAC, Cummeen Strand SPA, Ballysadare Bay SPA and Drumcliff Bay SPA are anticipated due to the scale and nature of the development and upon the existing habitats and species on-site. However, the site is hydrologically or hydrogeologically connected to protected areas via surface water run-off and groundwater bodies which flow into the European designated sites detailed above; therefore, a screening matrix has been applied to assess the following potential impacts of the proposed development.

#### Potential Pathways:

- o Surface water runoff from the construction phase via local drainage networks within the Sligo Bay\_35 Catchment causing degradation of overall environmental and ecological quality of Lough Gill SAC, Cummeen Strand/Drumcliff Bay (Sligo Bay) SAC, Ballysadare Bay SAC, Cummeen Strand SPA, Ballysadare Bay SPA and Drumcliff Bay SPA;
- o Discharge of unrestricted flowing surface water runoff from the operational phase via local drainage networks within the Sligo Bay\_35 Catchment causing degradation of overall environmental and ecological quality of Lough Gill SAC, Cummeen Strand/Drumcliff Bay (Sligo Bay) SAC, Ballysadare Bay SAC, Cummeen Strand SPA, Ballysadare Bay SPA and Drumcliff Bay SPA;
- o Discharge of untreated surface water runoff from the operational phase via local drainage networks within the Sligo Bay\_35 Catchment causing degradation of overall environmental and ecological quality of Lough Gill SAC, Cummeen Strand/Drumcliff Bay (Sligo Bay) SAC, Ballysadare Bay SAC, Cummeen Strand SPA, Ballysadare Bay SPA and Drumcliff Bay SPA;

<sup>36</sup> EC (2002) Assessment of Plans and Projects Significantly Affecting Natura 2000 Sites: Methodological guidance on the provisions of Article 6(3) and (4) of the Habitats Directive 92/43/EEC, Office for Official Publications of the European Communities, Luxembourg. European Commission

- Percolation discharge of untreated surface water from the operational phase to a Karstified Regionally Important Aquifer with a high groundwater vulnerability status hydrogeologically connected to protected sites causing degradation of overall environmental and ecological quality of Lough Gill SAC, Cummeen Strand/Drumcliff Bay (Sligo Bay) SAC, Ballysadare Bay SAC, Cummeen Strand SPA, Ballysadare Bay SPA and Drumcliff Bay SPA;
- Discharge of untreated foul wastewater runoff from the operational phase via local drainage networks within the Sligo Bay\_35 Catchment causing degradation of overall environmental and ecological quality of Lough Gill SAC, Cummeen Strand/Drumcliff Bay (Sligo Bay) SAC, Ballysadare Bay SAC, Cummeen Strand SPA, Ballysadare Bay SPA and Drumcliff Bay SPA; and
- Percolation discharge of untreated foul wastewater from the operational phase to a Karstified Regionally Important Aquifer with a high groundwater vulnerability status hydrogeologically connected to protected sites causing degradation of overall environmental and ecological quality of Lough Gill SAC, Cummeen Strand/Drumcliff Bay (Sligo Bay) SAC, Ballysadare Bay SAC, Cummeen Strand SPA, Ballysadare Bay SPA and Drumcliff Bay SPA.

Although there are no field drains on-site, the prevention of contaminants, silts, sediments, unrestricted flowing surface water and unrestricted flowing foul water from entering minor watercourses/field drains hydrologically or hydrogeologically connected to Lough Gill SAC, Cummeen Strand/Drumcliff Bay (Sligo Bay) SAC, Ballysadare Bay SAC, Cummeen Strand SPA, Ballysadare Bay SPA and Drumcliff Bay SPA during construction and throughout the operational phase of the development is vital. Where this pathway can be eliminated, this will significantly reduce the potential impacts on the integrity of these sites, ensuring no detrimental impacts are likely to occur.

#### Potential Pathway - Mitigation Proposals:

- Surface water runoff from the construction phase via local drainage networks within the Sligo Bay\_35 Catchment causing degradation of overall environmental and ecological quality of Lough Gill SAC, Cummeen Strand/Drumcliff Bay (Sligo Bay) SAC, Ballysadare Bay SAC, Cummeen Strand SPA, Ballysadare Bay SPA and Drumcliff Bay SPA can be managed through an effective and robust Construction Environmental Management Plan (CEMP), ensuring that best practice is applied to all aspects of the construction phase;
- Discharge of unrestricted flowing surface water runoff from the operational phase via local drainage networks within the Sligo Bay\_35 Catchment causing degradation of overall environmental and ecological quality of Lough Gill SAC, Cummeen Strand/Drumcliff Bay (Sligo Bay) SAC, Ballysadare Bay SAC, Cummeen Strand SPA, Ballysadare Bay SPA and Drumcliff Bay SPA can be managed through the implementation of appropriate Sustainable Drainage Systems (SUDS) to align on-site drainage with natural water processes;
- Discharge of untreated surface water runoff from the operational phase via local drainage networks within the Sligo Bay\_35 Catchment and percolation into a Karstified Regionally Important Aquifer with a high groundwater vulnerability status causing degradation of overall environmental and ecological quality of Lough Gill SAC,

Cummeen Strand/Drumcliff Bay (Sligo Bay) SAC, Ballysadare Bay SAC, Cummeen Strand SPA, Ballysadare Bay SPA and Drumcliff Bay SPA can be managed through the implementation of an appropriate surface water treatment in the form of a Class 1 interceptor or suitable alternative.

- o Discharge of untreated foul wastewater runoff from the operational phase via local drainage networks within the Sligo Bay\_35 Catchment and percolation into a Karstified Regionally Important Aquifer with a high groundwater vulnerability status causing degradation of overall environmental and ecological quality of Lough Gill SAC, Cummeen Strand/Drumcliff Bay (Sligo Bay) SAC, Ballysadare Bay SAC, Cummeen Strand SPA, Ballysadare Bay SPA and Drumcliff Bay SPA can be managed by discharging foul water into the public sewer system (Sligo Wastewater Treatment Plant), or alternatively an appropriately sized on-site waste water treatment system with a percolation area can be utilised if foul wastewater proposals are not directed to public sewer.

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Table 5-1: Stage 1 Test of Likely Significance (TOLS) of Cummeen Strand/Drumcliff Bay (Sligo Bay) SAC and Cummeen Strand SPA

Description of project/development	<p>The current site consists of the site consists of agricultural grassland, scrub, treelines and hedgerows.</p> <p>The Proposed development includes the following:</p> <ol style="list-style-type: none"> <li>1. Construction of 65 dwellings with accommodation over two levels;</li> <li>2. Permission is also sought for hard and soft landscaping and all associated development works.</li> </ol>
Designated site(s)	<p>Lough Gill SAC, Cummeen Strand/Drumcliff Bay (Sligo Bay) SAC, Ballysadare Bay SAC, Cummeen Strand SPA, Ballysadare Bay SPA and Drumcliff Bay SPA.</p>
Description of likely impacts on designated sites	<ol style="list-style-type: none"> <li>1. Surface water runoff from during the construction phase causing degradation of overall environmental and ecological quality of Lough Gill SAC, Cummeen Strand/Drumcliff Bay (Sligo Bay) SAC, Ballysadare Bay SAC, Cummeen Strand SPA, Ballysadare Bay SPA and Drumcliff Bay SPA;</li> <li>2. Discharge of unrestricted flowing surface water runoff from the operational phase causing degradation of overall environmental and ecological quality of Lough Gill SAC, Cummeen Strand/Drumcliff Bay (Sligo Bay) SAC, Ballysadare Bay SAC, Cummeen Strand SPA, Ballysadare Bay SPA and Drumcliff Bay SPA;</li> <li>3. Discharge of untreated surface water runoff from the operational phase causing degradation of overall environmental and ecological quality of Lough Gill SAC, Cummeen Strand/Drumcliff Bay (Sligo Bay) SAC, Ballysadare Bay SAC, Cummeen Strand SPA, Ballysadare Bay SPA and Drumcliff Bay SPA;</li> <li>4. Percolation discharge of untreated surface water from the operational phase to a Karstified Regionally Important Aquifer with a high groundwater vulnerability status hydrogeologically connected to protected sites causing degradation of overall environmental and ecological quality of Lough Gill SAC, Cummeen Strand/Drumcliff Bay (Sligo Bay) SAC, Ballysadare Bay SAC, Cummeen Strand SPA, Ballysadare Bay SPA and Drumcliff Bay SPA.</li> <li>5. Discharge of untreated foul water runoff from the operational phase causing degradation of overall environmental and ecological quality of Lough Gill SAC, Cummeen Strand/Drumcliff Bay (Sligo Bay) SAC, Ballysadare Bay SAC, Cummeen Strand SPA, Ballysadare Bay SPA and Drumcliff Bay SPA; and</li> <li>6. Percolation discharge of untreated foul wastewater from the operational phase to a Karstified Regionally Important Aquifer with a high groundwater vulnerability status hydrogeologically connected to protected sites causing degradation of overall environmental and ecological quality of Lough Gill SAC, Cummeen Strand/Drumcliff Bay (Sligo Bay) SAC, Ballysadare Bay SAC, Cummeen Strand SPA, Ballysadare Bay SPA and Drumcliff Bay SPA.</li> </ol>
Likely impacts (direct, indirect or secondary impacts) on the designations	
Size and scale	<p>The site is physically separated from Lough Gill SAC by 1.4km, Cummeen Strand/Drumcliff Bay (Sligo Bay) SAC by 1.5km, Ballysadare Bay SAC by 4.4km, Cummeen Strand SPA by 1.6km, Ballysadare Bay SPA by 4.4km and Drumcliff Bay SPA by 6.4km and is relatively small in scale.</p>
Land-take	<p>The proposal does not require any land taken from within any SAC/SPA</p>
Distance from designations or key features of the site	<p>The site is physically separated from Lough Gill SAC by 1.4km, Cummeen Strand/Drumcliff Bay (Sligo Bay) SAC by 1.5km, Ballysadare Bay SAC by 4.4km, Cummeen Strand SPA by 1.6km, Ballysadare Bay SPA by 4.4km and Drumcliff Bay SPA by 6.4km.</p>
Resource requirements	<p>The proposal does not require any resources from within any SAC/SPA.</p>

Excavation requirements	The proposal does not require any excavation from within either SAC/SPA.
Transport requirements	All transportation requirements will be achieved using the existing public road network and will not result in significant effects on the designated sites.
Duration of construction	Estimated 1-2 years
Describe the individual elements of the project (either alone or in combination with other plans or projects) likely to give rise to impacts on the Natura 2000 site as a result of:	
Reduction of Habitat	The proposal will not result in the reduction of habitat within any SAC/SPA or areas of supporting natural and semi-natural habitat.
Disturbance to Key species	No disturbance was predicted due to setback distance.
Habitat Fragmentation	During the construction and operational phase, no habitats are to be fragmented, which could be important for any species for which the designations are held.
Reduction of Species Diversity	During the construction and operational phase, the development is not considered to directly reduce the populations of species for which the designations occur. A multitude of factors can influence the reduction of species; however, this proposed development is considered to have a negligible effect upon them.

The test of likely significance (TOLS) at Stage 1 has indicated that the proposal is likely to have an effect on Lough Gill SAC, Cummeen Strand/Drumcliff Bay (Sligo Bay) SAC, Ballysadare Bay SAC, Cummeen Strand SPA, Ballysadare Bay SPA and Drumcliff Bay SPA, causing degradation to the sensitive selection features as detailed above. Therefore, as indirect impacts are likely to occur and based on the precautionary approach, a Stage 2 Appropriate Assessment must be undertaken.

The following tables 5-2 to 5-6 present mitigation, assessment of mitigation and findings.

Table 5-2: Stage 2 Appropriate Assessment: Construction Phase Surface Water Runoff - Mitigation Measures

Mitigation measures to be introduced?	How will the measures avoid adverse effects on the integrity of the site?	How will the measures reduce the adverse effects on the integrity of the site?	Provide evidence of how they will be implemented and by whom?
<p>Surface water runoff from the construction phase via local drainage networks within the Sligo Bay_35 Catchment causing degradation of overall environmental and ecological quality of Lough Gill SAC, Cummeen Strand/Drumcliff Bay (Sligo Bay) SAC, Ballysadare Bay SAC, Cummeen Strand SPA, Ballysadare Bay SPA and Drumcliff Bay SPA can be managed through an effective and robust Construction Environmental Management Plan (CEMP), ensuring that best practice is applied to all aspects of the construction phase;</p> <p>(See Appendix B for further detail on CEMP requirements).</p>	<p>Source and pathway to receptors have been controlled, managed and/or removed as part of the implementation of the CEMP and measures therein concerning construction activities.</p> <p>No adverse impacts are predicted.</p>	<p>Once a source and pathway to receptors have been controlled, managed and/or removed as part of the implementation of the CEMP. These measures remove the potential for adverse effects on the integrity of the N2K sites.</p>	<p>A CEMP should be required as part of planning approval/conditions and formal approval for the same with the planning authority. The principal contractor will be responsible for the implementation of the CEMP.</p>
	<p>Provide evidence of the degree of confidence in their likely success.</p>	<p>Provide timescale, relative to the project or plan, when they will be implemented.</p>	<p>Explain the proposed monitoring scheme and how any mitigation failure will be addressed.</p>
	<p>If a CEMP is implemented, the pollution source and pathway is controlled, managed and/or removed; therefore, no pollutant can enter pathways, ensuring no adverse effects on N2K sites.</p> <p>Authors are confident in the likely success of these mitigation measures.</p>	<p>Throughout the duration of the construction phase of the development.</p>	<p>Mitigation procedures will be managed by the principal contractor, daily checks shall be undertaken and recorded, and documentation will be retained on a continuous basis to ensure implementation and compliance. Issues raised will be addressed by the principal contractor.</p>

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Table 5-3: Stage 2 Appropriate Assessment: Discharge of Unrestricted Surface Water - Mitigation Measures

Mitigation measures to be Introduced	How will the measures avoid adverse effects on the integrity of the site?	How will the measures reduce the adverse effects on the integrity of the site?	Provide evidence of how they will be implemented and by whom?
<p>Discharge of unrestricted flowing surface water runoff from the operational phase via greenfield runoff into local drainage networks within the Sligo Bay_35 Catchment causing degradation of overall environmental and ecological quality of Lough Gill SAC, Cummeen Strand/Drumcliff Bay (Sligo Bay) SAC, Ballysadare Bay SAC, Cummeen Strand SPA, Ballysadare Bay SPA and Drumcliff Bay SPA can be managed through the implementation of appropriate Sustainable Drainage Systems (SUDS) to align on-site drainage with natural water processes. Proposed equipment must ensure greenfield runoff rates are adhered to.</p> <p>Attenuation and flow break would be recommended.</p> <p>(See Appendix C for further detail on SUD's requirements).</p>	<p>The use of Sustainable Drainage Systems (SUD's) (attenuation and flow break) on-site will align on-site surface water drainage with natural water processes, eliminating unrestricted surface water discharge.</p> <p>The source of pollution (unrestricted flow) is eliminated through the Installation of an appropriately sized Sustainable Drainage System. Such equipment will reduce site runoff rates to that of greenfield levels.</p>	<p>Installation of appropriately sized Sustainable Drainage Systems will reduce potential contaminant source (unrestricted flow) in surface water runoff. Eliminating the pollutant source eliminates potential.</p> <p>These measures remove the potential for adverse effects on the integrity of the N2K sites.</p> <p>No adverse impacts are predicted.</p>	<p>Equipment should be installed and maintained in accordance with the design spec and installation requirements as laid out by the equipment manufacturer. The principal contractor will be responsible for installing equipment.</p>
	<p>Provide evidence of the degree of confidence in their likely success.</p>	<p>Provide timescale, relative to the project or plan, when they will be implemented.</p>	<p>Explain the proposed monitoring scheme and how any mitigation failure will be addressed.</p>
<p>Sustainable Drainage Systems (SUDS) are drainage systems that are considered to be environmentally beneficial, causing minimal or no long-term detrimental damage. They are often regarded as a sequence of management practices, control structures and strategies designed to efficiently and sustainably drain surface water while minimising pollution and managing the impact on water quality of local water bodies.</p> <p>Restricting surface water discharge through implementing a system in line with engineers drainage calculations and best practice ensuring greenfield runoff rates will eliminate downstream effects on designations.</p> <p>Authors are confident in the likely success of these mitigation measures.</p>	<p>This system will be installed during the construction phase and operational throughout the operational phase of the development.</p>	<p>This system will be installed, monitored and serviced as per manufacturers guidelines.</p>	

Table 5-4: Stage 2 Appropriate Assessment: Discharge of Untreated Surface Water - Mitigation Measures

Mitigation measures to be Introduced	How will the measures avoid adverse effects on the integrity of the site?	How will the measures reduce the adverse effects on the integrity of the site?	Provide evidence of how they will be implemented and by whom?
<p>Discharge of untreated surface water runoff from the operational phase via local drainage networks within the Sligo Bay_35 Catchment and percolation into a Karstified Regionally Important Aquifer with a high groundwater vulnerability status causing degradation of overall environmental and ecological quality of Lough Gill SAC, Cummeen Strand/Drumcliff Bay (Sligo Bay) SAC, Ballysadare Bay SAC, Cummeen Strand SPA, Ballysadare Bay SPA and Drumcliff Bay SPA can be managed through the implementation of appropriate surface water treatment in the form of a Class 1 interceptor;</p> <p>(See Appendix D for further details on Interceptor requirements).</p>	<p>Installation of an appropriately sized Class 1 interceptor or suitable alternative will reduce potential contaminant concentrations (silt and hydrocarbons) in surface water discharge runoff to acceptable concentrations throughout the duration of the operational phase.</p> <p>No adverse impacts are predicted.</p>	<p>Installation of an appropriately sized Class 1 interceptor or suitable alternative will reduce potential contaminant concentrations (silt and hydrocarbons) concentrations in surface water runoff.</p> <p>No adverse impacts are predicted.</p>	<p>Equipment should be installed and maintained in accordance with the design spec and installation requirements as laid out by the equipment manufacturer. The principal contractor will be responsible for installing equipment.</p>
	<p>Provide evidence of the degree of confidence in their likely success.</p>	<p>Provide timescale, relative to the project or plan, when they will be implemented.</p>	<p>Explain the proposed monitoring scheme and how any mitigation failure will be addressed.</p>
	<p>Approved technical specifications of such equipment will ensure appropriate discharge pollutant concentrations are adhered to.</p> <p>Authors are confident in the likely success of these mitigation measures.</p>	<p>This system will be installed during the construction phase and operational throughout the operational phase of the development.</p>	<p>This system will be installed, monitored and serviced as per manufacturers guidelines.</p>

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Table 5-5: Stage 2 Appropriate Assessment: Discharge of Untreated Foul Water - Mitigation Measures

Mitigation measures to be Introduced	How will the measures avoid adverse effects on the integrity of the site?	How will the measures reduce the adverse effects on the integrity of the site?	Provide evidence of how they will be implemented and by whom?
<p>Discharge of untreated foul water runoff from the operational phase via local drainage networks within the Sligo Bay_35 Catchment and percolation into a Karstified Regionally Important Aquifer with a high groundwater vulnerability status causing degradation of overall environmental and ecological quality of Lough Gill SAC, Cummeen Strand/Drumcliff Bay (Sligo Bay) SAC, Ballysadare Bay SAC, Cummeen Strand SPA, Ballysadare Bay SPA and Drumcliff Bay SPA can be managed by discharging foul water into the public sewer system (Sligo Wastewater Treatment Plant), or alternatively an appropriately sized on-site waste water treatment system with a percolation area can be utilised if foul wastewater proposals are not directed to public sewer.</p> <p>(see Appendix E for further details on on-site waste water treatment system requirements).</p>	<p>Installation of an appropriately sized on-site waste water treatment system with a percolation area or discharging foul water to the public sewers will reduce potential for foul water discharge runoff throughout the duration of the operational phase.</p> <p>No adverse impacts are predicted.</p>	<p>Installation of an appropriately sized on-site waste water treatment system with a percolation area or discharging of foul waste water to the public sewers will adequately treat foul waste water from the development site and minimise and manage potential contaminant concentrations in foul waste water discharge.</p> <p>No adverse impacts are predicted.</p>	<p>Equipment should be installed and maintained in accordance with the design spec and installation requirements as laid out by the equipment manufacturer. The principal contractor will be responsible for installing equipment.</p>
	<p>Provide evidence of the degree of confidence in their likely success.</p>	<p>Provide timescale, relative to the project or plan, when they will be implemented.</p>	<p>Explain the proposed monitoring scheme and how any mitigation failure will be addressed.</p>
	<p>Approved technical specifications of such equipment will ensure appropriate discharge pollutant concentrations are adhered to.</p> <p>Authors are confident in the likely success of these mitigation measures.</p>	<p>This system will be installed during the construction phase and operational throughout the operational phase of the development.</p>	<p>This system will be installed, monitored and serviced as per manufacturers guidelines.</p>

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Table 5-6: Stage 2 Appropriate Assessment

<p>Describe the elements of the project or plan (alone or in combination with other projects or plans) that are likely to give rise to significant effects on the site (from screening assessment).</p>	<p>The proposed development site is located along Caltragh Road, Co. Sligo (Grid Reference: G 68894 34602).</p> <p>The site is located approximately 1.3km south of Sligo town centre, 8.5km north of Collooney town centre and 56km southwest of Enniskillen town centre. The area surrounding the site consists of Caltragh lane and associated residential properties to the north, Caltragh road, residential dwellings and commercial properties to the east, agricultural grassland and a single residential dwelling to the south and the N4 Collooney to Castlebaldwin road to the west.</p> <p>The current site of agricultural grassland, scrub, treelines and hedgerows.</p> <ul style="list-style-type: none"> <li>○ Surface water runoff from the construction phase via local drainage networks within the Sligo Bay_35 WFD Catchment causing degradation of overall environmental and ecological quality of Lough Gill SAC, Cummeen Strand/Drumcliff Bay (Sligo Bay) SAC, Ballysadare Bay SAC, Cummeen Strand SPA, Ballysadare Bay SPA and Drumcliff Bay SPA can be managed through an effective and robust Construction Environmental Management Plan (CEMP), ensuring that best practice is applied to all aspects of the construction phase;</li> <li>○ Discharge of unrestricted flowing surface water runoff from the operational phase via local drainage networks within the Sligo Bay_35 WFD Catchment causing degradation of overall environmental and ecological quality of Lough Gill SAC, Cummeen Strand/Drumcliff Bay (Sligo Bay) SAC, Ballysadare Bay SAC, Cummeen Strand SPA, Ballysadare Bay SPA and Drumcliff Bay SPA can be managed through the implementation of appropriate Sustainable Drainage Systems (SUDS) to align on-site drainage with natural water processes; and</li> <li>○ Discharge of untreated surface water runoff from the operational phase via local drainage networks within the Sligo Bay_35 WFD Catchment and percolation into a Karstified Regionally Important Aquifer with a high groundwater vulnerability status causing degradation of overall environmental and ecological quality of Lough Gill SAC, Cummeen Strand/Drumcliff Bay (Sligo Bay) SAC, Ballysadare Bay SAC, Cummeen Strand SPA, Ballysadare Bay SPA and Drumcliff Bay SPA can be managed through the implementation of an appropriate surface water treatment in the form of a Class 1 interceptor or suitable alternative.</li> <li>○ Discharge of untreated foul water runoff from the operational phase via local drainage networks within the Sligo Bay_35 WFD Catchment and percolation into a Karstified Regionally Important Aquifer with a high groundwater vulnerability status causing degradation of overall environmental and ecological quality of Lough Gill SAC, Cummeen Strand/Drumcliff Bay (Sligo Bay) SAC, Ballysadare Bay SAC, Cummeen Strand SPA, Ballysadare Bay SPA and Drumcliff Bay SPA can be managed by discharging foul water into the public sewer system (Sligo Wastewater Treatment Plant), or alternatively an appropriately sized on-site waste water treatment system with a percolation area can be utilised if foul wastewater proposals are not directed to public sewer.</li> </ul>
<p>Conservation objectives</p>	<p><u>Lough Gill SAC Conservation Objectives</u></p> <ul style="list-style-type: none"> <li>➤ To restore the favourable conservation condition of Natural eutrophic lakes with Magnopotamion or Hydrocharition - type vegetation in Lough Gill SAC;</li> <li>➤ To restore the favourable conservation condition of Semi-natural dry grasslands and scrubland facies on calcareous substrates (Festuco-Brometalia) (* important orchid sites) in Lough Gill SAC;</li> <li>➤ To restore the favourable conservation condition of Old sessile oak woods with <i>Ilex</i> and <i>Blechnum</i> in the British Isles in Lough Gill SAC;</li> </ul>

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- To restore the favourable conservation condition of Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion*, *Alnion incanae*, *Salicion albae*)\* in Lough Gill SAC;
- To maintain the favourable conservation condition of White-clawed Crayfish (*Austropotamobius pallipes*) in Lough Gill SAC;
- To restore the favourable conservation condition of Sea Lamprey (*Petromyzon marinus*) in Lough Gill SAC;
- To restore the favourable conservation condition of Brook Lamprey (*Lampetra planeri*) in Lough Gill SAC;
- To restore the favourable conservation condition of River Lamprey (*Lampetra fluviatilis*) in Lough Gill SAC;
- To restore the favourable conservation condition of Atlantic Salmon (*Salmo salar*) in Lough Gill SAC, and
- To maintain the favourable conservation condition of Otter (*Lutra lutra*) in Lough Gill SAC.

Cummeen Strand/Drumcliff Bay (Sligo Bay) SAC Conservation Objectives:

- To maintain the favourable conservation condition of Estuaries in Cummeen Strand/Drumcliff Bay (Sligo Bay) SAC;
- To maintain the favourable conservation condition of Mudflats and sandflats not covered by seawater at low tide in Cummeen Strand/Drumcliff Bay (Sligo Bay) SAC;
- To maintain the favourable conservation condition of Embryonic shifting dunes in Cummeen Strand/Drumcliff Bay (Sligo Bay) SAC;
- To restore the favourable conservation condition of Shifting dunes along the shoreline with *Ammophila arenaria* ('white dunes') in Cummeen Strand/Drumcliff Bay (Sligo Bay) SAC;
- To restore the favourable conservation condition of Fixed coastal dunes with herbaceous vegetation ('grey dunes') in Cummeen Strand/Drumcliff Bay (Sligo Bay) SAC;
- To restore the favourable conservation condition of *Juniperus communis* formations on heaths or calcareous grasslands in Cummeen Strand/Drumcliff Bay (Sligo Bay) SAC;
- To maintain the favourable conservation condition of Petrifying springs with tufa formation (*Cratoneurion*) in Cummeen Strand/Drumcliff Bay (Sligo Bay) SAC;
- To maintain the favourable conservation condition of Narrow-mouthed Whorl Snail in Cummeen Strand/Drumcliff Bay (Sligo Bay) SAC;
- To restore the favourable conservation condition of Sea Lamprey in Cummeen Strand/Drumcliff Bay (Sligo Bay) SAC;
- To maintain the favourable conservation condition of River Lamprey in Cummeen Strand/Drumcliff Bay (Sligo Bay) SAC; and
- To maintain the favourable conservation condition of Harbour Seal in Cummeen Strand/Drumcliff Bay (Sligo Bay) SAC.

Ballysadare Bay SAC Conservation Objectives:

- To maintain the favourable conservation condition of Mudflats and sandflats not covered by seawater at low tide in Ballysadare Bay SAC;
- To maintain the favourable conservation condition of Embryonic shifting dunes in Ballysadare Bay SAC;
- To restore the favourable conservation condition of Shifting dunes along the shoreline with *Ammophila arenaria* ('white dunes') in Ballysadare Bay SAC;
- To restore the favourable conservation condition of Fixed coastal dunes with herbaceous vegetation ('grey dunes') in Ballysadare Bay SAC;
- To restore the favourable conservation condition of Humid dune slacks in Ballysadare Bay SAC;
- To maintain the favourable conservation condition of Narrow-mouthed Whorl Snail in Ballysadare Bay SAC;

	<p>➤ To maintain the favourable conservation condition of Harbour Seal in Ballysadare Bay SAC.</p> <p>Cummeen Strand SPA Conservation Objectives:</p> <ul style="list-style-type: none"> <li>➤ To maintain the favourable conservation condition of Light-bellied Brent Goose in Cummeen Strand SPA;</li> <li>➤ To maintain the favourable conservation condition of Oystercatcher in Cummeen Strand SPA;</li> <li>➤ To maintain the favourable conservation condition of Redshank in Cummeen Strand SPA; and</li> <li>➤ To maintain the favourable conservation condition of wetland habitat in Cummeen Strand SPA as a resource for the regularly occurring migratory waterbirds that utilise it.</li> </ul> <p>Ballysadare Bay Conservation Objectives:</p> <ul style="list-style-type: none"> <li>➤ To maintain the favourable conservation condition of Light-bellied Brent Goose in Ballysadare Bay SPA;</li> <li>➤ To maintain the favourable conservation condition of Grey Plover in Ballysadare Bay SPA</li> <li>➤ To maintain the favourable conservation condition of Dunlin in Ballysadare Bay SPA;</li> <li>➤ To maintain the favourable conservation condition of Bar-tailed Godwit in Ballysadare Bay SPA;</li> <li>➤ To maintain the favourable conservation condition of Redshank in Ballysadare Bay SPA;</li> <li>➤ To maintain the favourable conservation condition of the wetland habitat in Ballysadare Bay SPA as a resource for the regularly-occurring migratory waterbirds that utilise it.</li> </ul> <p>Drumcliff Bay SPA Conservation Objectives:</p> <ul style="list-style-type: none"> <li>➤ To maintain the favourable conservation condition of Sanderling in Drumcliff Bay SPA;</li> <li>➤ To maintain the favourable conservation condition of Bar-tailed Godwit in Drumcliff Bay SPA; and</li> <li>➤ To maintain the favourable conservation condition of wetland habitat in Drumcliff Bay SPA as a resource for the regularly occurring migratory waterbirds that utilise it.</li> </ul>
<p>Describe how the project or plan will affect key species and key habitats</p>	<p>The locations of proposed buildings, the nature of the construction activities and the potential proposed surface and foul water disposal methods on-site are likely to increase sediment, hydrocarbon concentrations, via drains, surface water bodies, groundwater features and other pollutant pathways. These waterbodies and features are potential pathway from the development site to Lough Gill SAC, Cummeen Strand/Drumcliff Bay (Sligo Bay) SAC, Ballysadare Bay SAC, Cummeen Strand SPA, Ballysadare Bay SPA and Drumcliff Bay SPA for potentially contaminated surface and foul water runoff, causing degradation to the sensitive SAC/SPA selection features.</p> <p>Due to the distance from the Natura 2000 site, it is not anticipated there will be direct disturbance to the qualifying features of Lough Gill SAC, Cummeen Strand/Drumcliff Bay (Sligo Bay) SAC, Ballysadare Bay SAC, Cummeen Strand SPA, Ballysadare Bay SPA and Drumcliff Bay SPA from site operations, such as the movement of people and machinery.</p>
<p>Describe how the integrity of the site (determined by structure and function and conservation objects) is likely to be affected by the project or plan.</p>	<p>Degradation of the adjacent aquatic environments from contaminated surface and foul waste water runoff as a result of construction and operational phases of the development. Such degradation would have a direct impact on priority species relying on said environments.</p>

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Mitigation measures are to be introduced to avoid adverse effects on the integrity of the site.

- Implementation of an effective and robust Construction Environmental Management Plan (CEMP);
- Installation of Sustainable Drainage Systems (SuDS);
- Installation of an appropriately sized Class 1 interceptor or similar alternative; and
- The instillation of appropriate foul water treatment in the form of connection to public sewer system or an appropriately sized waste water treatment system with a percolation area.

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## 6. Likely Cumulative Impact (In-Combination)

### 6.1 Other Plans and Projects

The potential for the proposed works to contribute to a cumulative impact on European Sites was considered. The National Planning Application Database for Sligo County Council<sup>37</sup> was consulted on the 23<sup>rd</sup> of June 2022. Additional projects identified in the townland and within close proximity to the site within the last five years were reviewed in conjunction with the Policies and Objectives of the Sligo County Development Plan 2017-2023 and were considered as part of this assessment. Table 6-1 below details such considerations.

Plans	Key Policies and Objectives directly related to European Sites and Biodiversity in the Zone of Influence	Assessment of Potential Impact on European Sites
Sligo County <sup>38</sup> Development Plan 2017 - 2023	<p><u>Objective O-H-2</u>                      Adopt and implement, in partnership with all relevant stakeholders, the County Sligo Biodiversity Action Plan 2011-2015 and subsequent biodiversity plans.</p> <p><u>Objective O-DSNC-1</u>                      Identify and protect local areas of high nature conservation value and support the management of landscape features that are of major importance for wild fauna and flora in accordance with Article 10 of the Habitats Directive.</p> <p><u>Policy P-NH-1</u>                      Protect, sustainably manage and enhance the natural heritage, biodiversity, geological heritage, landscape and environment of County Sligo in recognition of its importance for nature conservation and biodiversity, and as a non-renewable resource, in association with all stakeholders.</p> <p><u>Policy P-NH-2</u>                      Promote increased understanding and awareness of the natural heritage and biodiversity of the county.</p> <p><u>Policy P-NH-3</u>                      Protect and, where possible, enhance the plant and animal species and their habitats that have been identified under the EU Habitats Directive, EU Birds Directive, the Wildlife Act and the Flora Protection Order.</p> <p><u>Policy P-DSNC-1</u>                      Protect and maintain the favourable conservation status and conservation value of all-natural heritage sites designated or proposed for designation in accordance with European and national legislation and agreements. These include Special Areas of Conservation (SACs), Special Protection Areas (SPAs), Natural Heritage Areas (NHAs), Ramsar Sites, Statutory Nature Reserves. In addition, the Council will identify, maintain</p>	<p>The Development Plan was comprehensively reviewed, with particular reference to Policies and Objectives that relate to biodiversity, protected species and designated sites.</p> <p>There are no protected habitats within the site. The proposal includes the construction of 65 dwellings with accommodation over two levels, and hard and soft landscaping and all associated development works.</p> <p>Upon implementation of appropriate mitigation measures, there is no risk of contamination from the proposal.</p> <p>No potential for cumulative negative impacts, when considered in conjunction with the current proposal, were identified.</p> <p>No developments or projects identified within the Development Plan were found to occur in the wider</p>

<sup>37</sup> Sligo County Council Planning Applications Online, Available at: <https://www.sligococo.ie/planning/SearchPlanningApplications/>

<sup>38</sup> Sligo County Development Plan, Available at: <DraftCDP2017-2023HabitatsDirectiveAssessment.pdf> (sligococo.ie)

	<p>and develop non-designated areas of high nature conservation value that serve as linkages or ‘stepping stones’ between protected sites in accordance with Article 10 of the Habitats Directive.</p> <p><u>Policy P-DSNC-2</u></p> <p>Promote the maintenance and, as appropriate, achievement of ‘favourable conservation status’ of habitats and species in association with the NPWS.</p> <p><u>Policy P-DSNC-3</u></p> <p>Carry out an appropriate level of assessment for all development plans, land-use plans and projects it authorizes or proposes to undertake or adopt, to determine the potential for these to impact on designated or proposed designated sites in accordance with the Habitats Directive.</p> <p><u>Policy P-DSNC-4</u></p> <p>Consider development within, or with the potential to affect, Natural Heritage Areas or proposed Natural Heritage Areas, where it is shown that such development, activities or works will not have significant negative impacts on such sites or features, or in circumstances where impacts can be appropriately mitigated.</p>	<p>area surrounding the proposed development.</p>
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No additional plans or projects within the extended environs in combination with the project herein are likely to give rise to cumulative impacts to the above identified designated sites.

## 7. Assessment of Potential Impacts to Designations

The proposed development at stage one screening test of likely significance has demonstrated that the proposal is likely to increase contaminant concentrations in the sites surface and ground water networks causing further degradation to the sensitive Lough Gill SAC, Cummeen Strand/Drumcliff Bay (Sligo Bay) SAC, Ballysadare Bay SAC, Cummeen Strand SPA, Ballysadare Bay SPA and Drumcliff Bay SPA's aquatic environments from contaminated surface water runoff. The prevention of contaminants, silts and sediments from entering the sites pollution pathways hydrologically and hydrogeologically connected to Lough Gill SAC, Cummeen Strand/Drumcliff Bay (Sligo Bay) SAC, Ballysadare Bay SAC, Cummeen Strand SPA, Ballysadare Bay SPA and Drumcliff Bay SPA during construction and throughout the operational phase is therefore vital. Where this pathway can be eliminated, this will significantly reduce the potential impacts on the integrity of these sites so that no detrimental impacts are likely to occur.

The implementation and installation of the following mitigation measures will prevent the source (contaminants, silts and sediments) from entering the pathways (local surface and groundwater networks), therefore not adding to/increasing the total pollutant concentrations of the receptor Lough Gill SAC, Cummeen Strand/Drumcliff Bay (Sligo Bay) SAC, Ballysadare Bay SAC, Cummeen Strand SPA, Ballysadare Bay SPA and Drumcliff Bay SPA.

- The implementation of an effective and robust Construction Environmental Management Plan (CEMP), ensuring that best practice is applied to all aspects of the construction phase (see Appendix B);
- The installation of appropriate Sustainable Drainage Systems (SuDs) to align on-site drainage with natural greenfield water processes/runoff rates (see Appendix C);
- The installation of appropriate surface water treatment in the form of a Class 1 interceptor (see Appendix D).
- The installation of appropriate foul water treatment in the form of connection to public sewer system or an appropriately sized waste water treatment system with a percolation area that is appropriately managed by a waste water treatment management company (see Appendix E).

There are no concerning additional live projects/developments located within proximity. Therefore, it is considered that there is no additive effect for significant cumulative or in combination impacts on the Natura 2000 network to occur as a result of the development.

# Appendix A Site Layout Plan

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## Appendix B - Construction Environmental Management Plan Requirements

The Principal Contractor should implement the following mitigation measures into a CEMP to ensure environmental and ecological issues are prevented as a result of construction activities on-site:

- Construction workers should take all possible steps to avoid impacts on wildlife, habitats and designated sites. Environmental awareness and a responsible attitude towards the natural environment are essential. The environmental objectives of the construction phase of the development should include minimising the generation of pollutants (i.e., dust, sediment, waste etc.), ensure no pollution incidents occur and minimise disturbance to wildlife while protecting and enhancing biodiversity;
- Prior to any works undertaken, appropriate measures should be implemented to prevent any pollution inputs into the surrounding drains and areas likely to be affected through surface water runoff. If runoff is still likely to occur, surface water should be managed to ensure it does not run into excavations, over disturbed ground or onto haul roads.

### Surface & Ground Water Management

- Surface water drains, check dams, silt fencing, sediment traps (dynamic separator, straw bales, straw wattles etc., as deemed necessary prior to works commencing), and geotextile materials will be installed where necessary during the construction phase of the development. These measures will protect the surrounding surface and ground water, drains and waterbodies from any sediment (loose soil and debris) that may arise in the event of surface or ground water runoff on-site;
- Existing surface water channels or, where necessary new appropriately sized channels will be installed to collect and channel all surface water runoff.
- Appropriately sized gravel check dams will be installed within all sediment management surface water channels to minimise sediment mobilisation. All surface water channels will be directed to appropriately sized and designed sediment traps;
- Where dewatering from excavated areas is required, water should be pumped to a suitably sized portable settlement tank with silt bags included at the outlet to assist in sediment removal. The location of this system if required should be determined in conjunction with an ECoW on-site prior to dewatering works being undertaken;
- Stockpiles will be kept to a minimum. If soil stockpiling is required, they will be covered with geotextile material, and a silt fence will be erected at the toe of said stockpiles to minimise sediment mobilisation. A perimeter channel will be installed around the base of the stockpiles and directed towards the on-site sediment management channels, which will capture and re-treat any excess stockpile surface water runoff. Timeframes, the soil is stockpiled, and stripped grounds are exposed, will be kept to a minimum.

### Sediment Management

- Silt fencing and geotextile materials will be installed during the construction phase of the development. These measures will protect the adjacent watercourse from any sediment (loose soil and debris) that may arise in the event of surface water runoff on-site.
- Silt fencing will be installed along the site boundary to include between the adjacent watercourses and the main site;
- Appropriately sized channels will be installed, as detailed above, to collect and channel all surface water runoff. Appropriately sized gravel check dams will be installed within all sediment management surface water channels to minimise sediment mobilisation. All surface water channels will be directed to an appropriately sized and designed sediment traps;
- Earthworks should not be undertaken during heavy periods of rain;
- Daily inspection and monitoring of sediment management measures and their effectiveness will be undertaken. Maintenance measures will be implemented as required. Waste will be disposed of in accordance with the Waste Hierarchy using licenced contractors

#### Fuels, Oils, Chemicals, Liquids & Hazardous Materials

- All fuels, oils, chemicals, liquids and hazardous materials will be stored in a designated location with an impervious base and adequately bunded. This area should be located within the construction compound or at an alternative agreed location to secure these materials from possible accidental or intentional damage. This storage location must be located on level ground at least 10 meters from any drain, ditch or possible route of connectivity with the designations. This area must have appropriate signage;
- All material containers will be clearly labelled and stored in resealable containers;
- Bunding must have a minimum capacity of 110% of the volume of the largest tank or 25% of the total storage capacity, whichever is greater. Bunding will be impermeable to the substance being stored;
- Where a Contractor is responsible for materials stored in a bunded area, that Contractor will implement measures for the regular inspection of bunds and emptying of rainwater (when uncontaminated);
- Material storage areas will be at a safe distance from live construction activities;
- All fuels, oils, chemicals, liquids and hazardous materials brought on-site must be accompanied by a Safety Data Sheet (SDS). These products will be stored in accordance with any specific requirements of the SDS;
- A complete register of all SDS's in use on-site will be maintained. Copies of all SDS's will be retained;
- Careful ordering of materials to minimise quantities present on-site;

- Daily inspection and monitoring of fuels, oils, chemicals, liquids and hazardous materials management measures and their effectiveness will be undertaken. Maintenance measures will be implemented as required. Waste will be disposed of in accordance with the Waste Hierarchy using licenced contractors.

#### Cement, Concrete, Grout & On-Site Washing Facilities

- If concrete is mixed on-site, such activities will be carried out on an impermeable designated area located at least 10 meters from any watercourse or surface water drain to reduce the risk of runoff entering a watercourse;
- Surplus dry concrete, cement and grout will be used elsewhere on-site if possible. Where this is not possible, this material will be disposed of off-site at a suitable disposal facility and transported using a registered waste carrier;
- Excess concrete shall be returned to the batching plant where possible;
- Concrete mixing and delivery lorries shall return to the batching plants for washout;
- All vehicles and equipment used for on-site activities shall be washed out in a designated bunded washout area, specifically designed to contain such wash water. The washout area will be located at least 10 meters away from any watercourse or other elements sensitive to contamination to reduce the risk of runoff entering a watercourse;
- No detergents shall be used in any on-site washdown processes;
- Wash waters will be stored to allow solids to settle out and recirculated to minimise the risk of pollution. Recirculation of wash water will ensure reduced water usage on-site;
- Daily inspection and monitoring of cement, concrete, grout and on-site washing facilities management measures and their effectiveness will be undertaken. Maintenance measures will be implemented as required. Waste will be disposed of in accordance with the Waste Hierarchy using licenced contractors.

#### Air Quality – Dust Minimisation

- All construction-related traffic will have speed restrictions on unsurfaced roads to 15 kph;
- Any site roads with the potential to give rise to dust will be regularly watered, as appropriate, during dry and windy conditions;
- Water misting or sprays will be used as required if particularly dusty activities are necessary during dry or windy conditions;
- The designated public roads outside the site and the main transport routes to the site will be periodically inspected for cleanliness and cleaned as necessary;
- Material handling systems and material storage areas will be designed and laid out to minimise exposure to wind;

- The transport of soils or other material, which has significant potential to generate dust, will be undertaken in tarpaulin-covered vehicles where necessary;
- Daily inspection and monitoring of dust minimisation measures and their effectiveness will be undertaken.

### Noise Minimisation

Best Practicable Means (BPM) of noise control will be applied during construction works to minimise noise (including vibration) at neighbouring residential properties and other sensitive receptors arising from construction activities.

The general principles of noise management are given below:

Control at source:

- Equipment – noise emissions limits for equipment brought to site;
- Equipment – method of directly controlling noise e.g. by retrofitting controls to plant and machinery;
- Equipment - indirect method of controlling noise e.g. acoustic screens;
- Equipment - indirect method of controlling noise e.g. benefits and practicality of using alternative construction methodology to achieve the objective e.g. vibratory piling techniques or hydrodemolition as opposed to more conventional but noisier techniques; selection of quieter tools/machines; application of quieter processes.

Control across the site by:

- Administrative and legislative control;
- Control of working hours;
- Control of delivery areas and times;
- Careful choice of compound location;
- Physically screening site;
- Control of noise via Contract specification of limits;
- Noise Monitoring, to check compliance with noise level limits, cessation of works until an alternative method is found;

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- Many of the activities which generate noise can be mitigated to some degree by careful operation of machinery and use of tools.

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## Appendix C - Sustainable Drainage Systems

Sustainable drainage is a broad term centred on clear objectives related to both volumetric and quality control on storm runoff and the promotion of habitat diversity. The objectives are:

- Volumetric
  - Reduce runoff rate and reduce risk of flooding
  - Reduce additional runoff volumes and frequencies resulting from paved surface
  - Promote natural groundwater recharge minimising impacts on surface water bodies
- Quality
  - Minimise impact on groundwater aquifers through treatment and filtration
  - Reduce pollutant concentration in discharge
  - Control and containment of accidental spills
- Promote habitat diversity

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Paving in a rural area will result in a larger volume of runoff and a higher discharge peak rate. There is also a lesser volume of base flow to rivers and streams, thereby reducing flow rates in such water bodies. By adopting the above SuDS objectives, these effects are minimised through mimicking the greenfield site conditions, i.e. conditions prior to development.

The volumetric and qualitative effects of paving (CIRIA C697 2007) can be summarised as follows:

- Changes to streamflow
  - Increase in runoff volumes
  - Increase in peak runoff rates
  - Flooding
- Changes to stream morphology
  - Stream widening
  - Erosion
  - Loss of riparian habitat

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- Channel bed profile
- Water Quality impacts
  - Loss of pool riffle structure
  - Impacts on aquatic diversity (dissolved and particulate phase)
  - Siltation
  - Reduce O2
  - Base metals (lead, zinc, copper, nickel, chromium, cadmium) and PAHs
  - De-icing salt – normally rock salt and grit but also cyanide, phosphates as anti-caking and corrosion inhibitors, heavy metals, urea and ethylene glycol.

#### Examples of SuDs:

- Rainwater harvesting systems can collect rainwater from roofs and other paved surfaces for use on-site.
- Green roofs, where a planted soil layer is constructed on a roof to create a living surface, can reduce surface runoff.
- Pervious pavements provide a hard surface that can be used for pedestrians or vehicles while allowing rainwater to pass through to the soil or underground storage.
- Bioretention systems (including rain gardens) collect runoff, allowing it to pond temporarily on the surface before filtering through vegetation and underlying soils.
- Trees capture rainwater and provide evapotranspiration, biodiversity and shade.
- Swales, detention basins, ponds and wetlands slow the flow of water, store and treat runoff while draining it through the site and encouraging biodiversity.
- Soakaways and infiltration basins promote infiltration as an effective means of controlling runoff and supporting groundwater recharge.
- Controlled flow-limiting attenuated surface water to greenfield runoff rates to align on-site drainage with natural greenfield water processes.

For more information on SuD's, please refer to CIRIA C753 – The SuDS Manual – London, 2015

Recommended SuD's, as detailed above, include but are not limited to appropriately scaled attenuation and Hydrobreak. Installations of appropriately scaled equipment will ensure green field runoff rates.

## Appendix D - Class 1 Interceptor or Suitable Alternative Examples

A suitably sized Class 1 oil separator/interceptor. This Class 1 system should be designed to achieve a discharge concentration of Less than 5mg/l. An example of such a system is Kingspan NSB Range, as detailed below.

### Klargester Bypass Separators

NSB RANGE



Bypass separators are used when it is considered an acceptable risk to not provide full treatment for very high flows, such as where the risk of a large spillage and heavy rainfall occurring at the same time is small. Typical applications include surface carparks, roadways and lightly contaminated commercial areas.

#### Product Benefits

- Light and easy to install.
- Inclusive of silt storage volume.
- Fitted inlet/outlet connectors.
- Vent points within necks.
- Oil alarm system available (required by EN 858-1 and PPG3).
- Extension access shafts for deep inverts.
- Maintenance from ground level.
- GRP or polyethylene construction (subject to model).

#### Performance & Compliance

- > Fully compliant and tested to EN 858-1.
- > Bypass separators are tested by British standards institute (BSI).
- > Certified flow and process performance assessing effluent qualities to the requirements of EN 858-1.
- > The unit is designed to treat the 'first flush' - 10% of peak flow. The calculated drainage areas served by each separator are indicated according to the formula given by PPG3 NSB =  $0.0018A(m^2)$ .
- > Class I separators are designed to achieve a concentration of less than 5mg per litre.

## Appendix E – On-Site Wastewater Treatment System or Suitable Alternative Examples

A suitably sized on-site waste water treatment system should be installed where connection to the public sewer system is not possible. This on-site waste water treatment system should be large enough to cater for the proposed development. It is recommended that any sewage treatment system which will service the development is fit for purpose and has the ability to accept the required volumes of waste. Any outflow should be treated within the system to ensure that polluted water does not enter the downstream environments. A management contract should be drawn up with a wastewater treatment management company to ensure the appropriate management of the system. The sewage treatment system should be regularly serviced and de-sludged in accordance with manufacturers guidelines to ensure it is operating sufficiently at all times.

An example of such a system is the WCS Environmental Engineering's, HiPAF® midi and modular that caters for developments from 60 up to 2,000 population equivalent (PE) as detailed below.

## Three-stage system for safer processing

Each WPL HiPAF treatment plant includes a three-stage process - primary settlement, biological treatment (biozone) and final settlement. The segmented biozone process chambers in stage two eliminate the risk of process short-cuts and mitigates risks associated with variable loads.

### Stage

# 1

### Primary settlement

- Incoming wastewater enters the primary settlement stage where organic and inorganic matter settles
- The sludge is held in this section until it requires de-sludging
- A unique forward-feed arrangement uses an airlift to deposit wastewater into the biological treatment stage (biozone), which keeps peak flows from entering the system and prevents hydraulic surges

### Stage

# 2

### Biological treatment

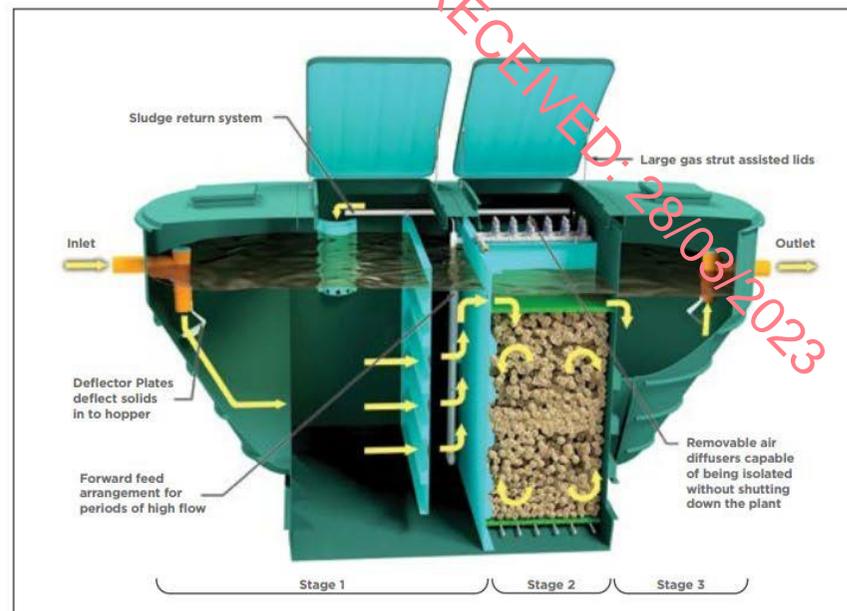
- Settled liquor enters the biological section either by displacement or via the airlift
- High-voidage plastic media, contained between two floors within the biozone, encourages the growth of bacteria and other organisms which treat the wastewater
- Air required for the treatment process is delivered by air-blowers housed in a weatherproof kiosk
- The air also helps to scour the media bed, preventing the filter from blocking
- A series of diffusers installed beneath the media bed ensure an even distribution of air

### Stage

# 3

### Final settlement

- The treated wastewater (final effluent) enters the final settlement section
- Dead biomass (humus sludge) from the process settles out
- An airlift automatically transfers settled humus sludge back to the primary settlement section for co-settlement
- The final effluent is discharged through gravity displacement to either a watercourse or a sub-surface irrigation field



WPL HiPAF midi packaged sewage treatment plant illustration (above)

### Internal Configuration

The internal sections of the plant can be accessed from the top of the unit to make servicing, maintenance and de-sludging easier. Plants are fitted-as-standard with large, stainless steel, gas strut assisted lids to give full access to the relevant parts of the plant.

Air is introduced to the WPL HiPAF unit by a series of air diffusers. Each diffuser is capable of being isolated and removed individually without the need to shut down the plant or affect air supply to the rest of the unit.

The complete absence of mechanical and electrical components within the hostile environment provides safe and clean working conditions on site.



Internal air diffusers (left) and large gas strut lids (right)

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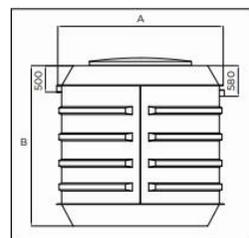
## Technical Specification

Use the tables below as an indicative guide to selecting the right packaged treatment plant for your site. For advice on the modular system or more information on the range please contact WPL or a qualified contractor.

### WPL HiPAF compact system 1 to 60 PE

Model PE	Standard Consent*	A Diameter (m)	B Height (m)	Inlet Invert (mm)	Outlet Invert (mm)
10	20:30:20	2.32	2.64	500	580
20	20:30:20	2.32	2.80	500	580
30	20:30:20	2.61	2.70	500	580
40	20:30:20	2.86	2.70	500	580
50	20:30:20	3.20	3.00	500	580
60	20:30:20	3.20	3.20	500	580

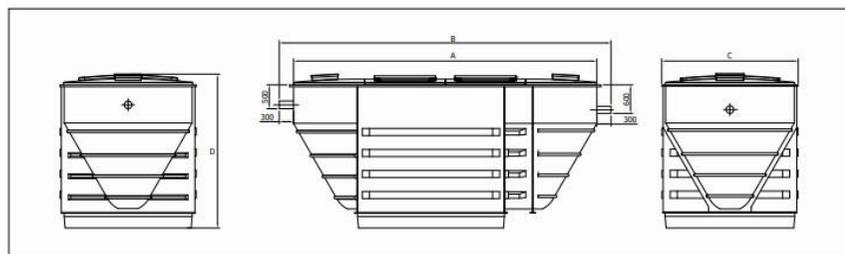
\*Typical consent standards shown, tighter consent standards available to meet all requirements specified by the EA



### WPL HiPAF midi system 60 to 300 PE

Model PE	Standard Consent**	A Length (m)	B Length w/pipes (m)	C Width (m)	D Height (m)	Inlet Invert (mm)	Outlet Invert (mm)	Weight (Tonne)
70	20:30:20	4.30	4.90	2.88	3.20	500	600	1.60
90	20:30:20	4.80	5.40	2.88	3.20	500	600	1.90
110	20:30:20	5.20	5.80	2.88	3.20	500	600	2.25
130	20:30:20	5.80	6.40	2.88	3.20	500	600	2.50
150	20:30:20	6.40	7.00	2.88	3.20	500	600	2.90
175	20:30:20	7.00	7.60	2.88	3.20	500	600	3.40
200	20:30:20	7.60	8.20	2.88	3.20	500	600	3.90

\*\* Typical consent standards shown - tighter consent standards available to meet all requirements specified by the EA. For options above 200PE please contact WPL.



The tables are an indicative guide only. All applications are specified to comply with the British Water Code of Practice for Flows and Loads. Further technical information can be found on the WPL website, visit [www.wplinternational.com](http://www.wplinternational.com).

WPL offers a complete in-house design and specification service. Each packaged treatment plant can be designed to site-specific requirements.

Each system is supplied with an installation manual and an operation and maintenance manual. Civil installation of the units can be arranged through a WPL recommended contractor.

WPL suggests that maintenance should only be undertaken by a reputable service company with British Water accredited service engineers.

### Design parameters

Design Criteria	British Water's Flows and Loads 4
Peak flow treatment	Generally 3 dry weather flow
Invert depth	0.5m as standard, other invert depths available up to 1.5m
Discharge standards	The WPL HiPAF will typically attain BOD <sup>5</sup> 20mg/l; SS 30mg/l; NH <sub>4</sub> -N 20mg/l as standard.  With biological treatment, stricter standards can be achieved, meeting BOD <sup>5</sup> 10mg/l; SS 10mg/l; NH <sub>4</sub> -N 2mg/l (with tertiary treatment). Higher standards are achievable.  With the use of additional equipment WPL can produce effluent to meet phosphate standards when required.

### Design options

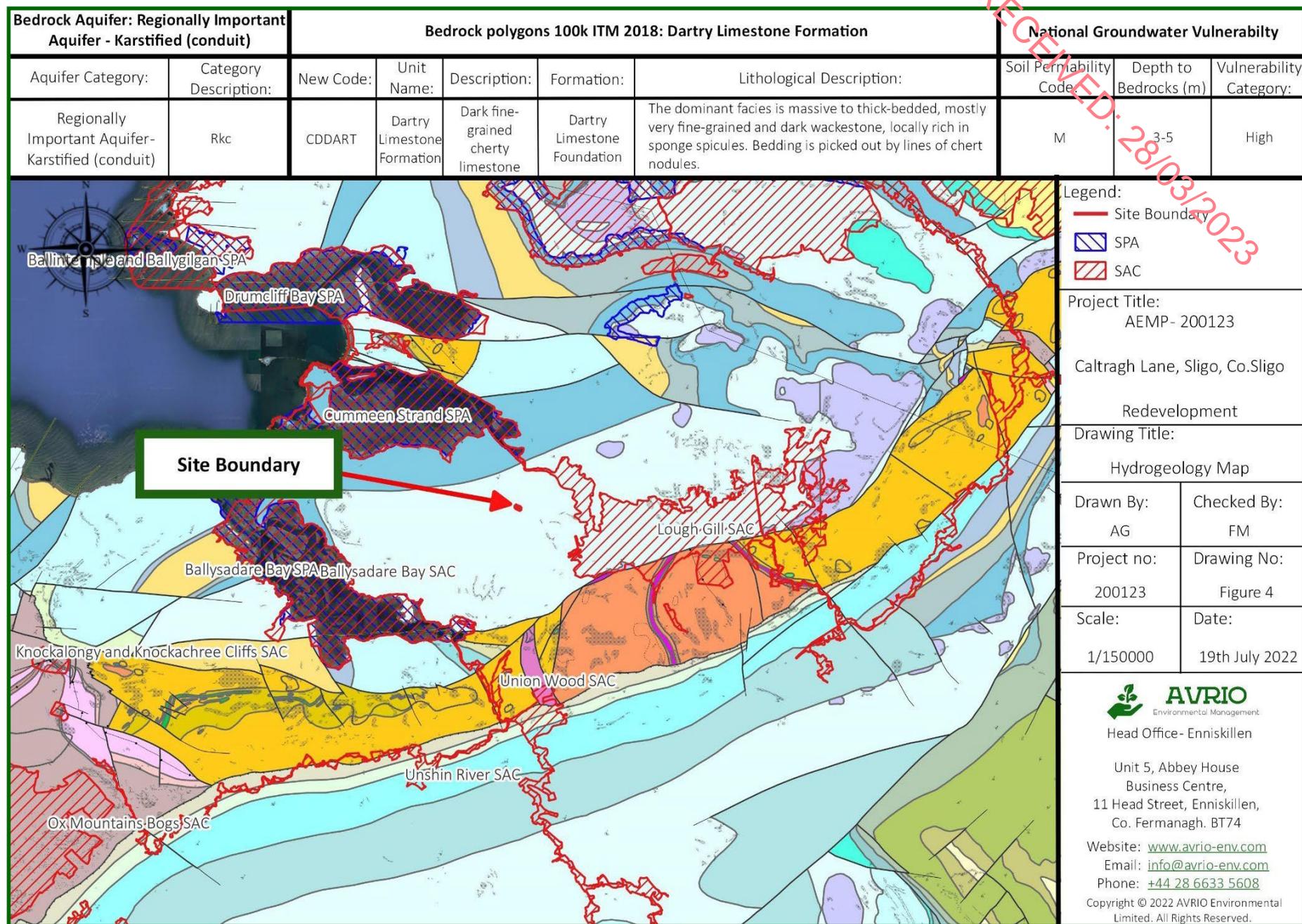
- Inverts up to 1.5m with turret extensions
- Pumped inlet flow control
- Control panels are available to cater for single and three phase electrical supplies
- Alarm beacon for mechanical failure and loss of air pressure
- Duty/standby blowers with automatic changeover to ensure an uninterrupted air supply
- Energy-saving options such as variable speed drive blowers
- GSM telemetry for remote monitoring of the plant
- WPL Sand Filters/WPL Micro-screens can improve final effluent for strict consent requirements

### Kiosk Options

Each WPL HiPAF treatment plant comes with a weatherproof kiosk to house the control panel and air blowers on site. The standard issue kiosk, which is acoustically-lined, houses a control panel, which automatically manages the operation of the plant; the air distribution manifold and one or more air blowers as required.

Features include thermostatic cut-off controls and air filtering monitoring which can alert the operator to loss of air pressure. Ten metres of high temperature resistant airline hose is supplied to connect blowers to the treatment plant - extra lengths can be supplied if the kiosk is sited further than 10m from the treatment unit.

## Appendix F - Hydrogeology of the site



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